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THE ROLE OF HEALTH EDUCATION IN A PUBLIC HEALTH PROGRAM [1]

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Since the beginning of the public health movement, public health education has been essential to progress. In the early years when the basic objectives of public health were the passage of sanitary laws, the organization of a health service, or the provision of a safe public water supply, the principal task of health education was to secure the support of leaders in the community. Although not every citizen was required to understand and act on the problems, voters usually protected the entire community by securing the legal authority or the sanitary facility.

Today public health is concerned with diseases that cannot be controlled without the effective participation of all the people. Our educational efforts must be broadened to include every individual in order that all may understand and act upon the principles of healthful living.

There are two important phases of the health education program. There is the initial task of securing public support for the concept that protection and improvement of the health of the people is a social responsibility. This phase does not require every individual member of the population to participate. The second larger and more difficult task is to accomplish the changes in individual behavior which will result in improvement of personal and family health. When the first phase has been accomplished and there has been established a public health department or a health center where all the people may secure modern services for prevention of disease, we face the broader problem of persuading each individual citizen to accept and use these services.

A wide variety of services may be included in a modern public health program: Immunization clinics; advice to pregnant women and to mothers; information on nutrition; chest X-rays for the early diagnosis of tuberculosis; broad programs for the diagnosis and treatment

[1] Read before the Second Pan American Conference on Health Education, Caracas, Venezuela, January 1947.

of venereal disease; and even the more recently developed programs for the diagnosis and treatment of cancer, and for mental health service. These services can improve the health of only those who know how to act on the health problems involved. Everyone must become familiar with the advantages of immunization against smallpox and diphtheria and secure such immunizations for himself and his children. People must be brought to realize the importance of early diagnosis of tuberculosis and they must respond in order to assure a favorable outcome for themselves as well as to protect others.

Because the methods are faily simple, requiring little inconvenience to the people, health education in the United States has had fair success. A large proportion of the population has availed itself of vaccination against smallpox and diphtheria. Even for tuberculosis and the venereal diseases, discovery is relatively simple and requires little inconvenience. In recent years, treatment for venereal diseases has been greatly simplified through the use of sulfa drugs for gonorrhea, and of penicillin for both gonorrhea and syphilis.

But a different sort of educational problem faces us in securing the participation of all the people in programs which require more complicated procedures, greater amounts of time, and more fundamental changes in individual behavior. So far as we know now, no community action like the control of water, food, or milk, will, of itself, have any effect on maternal deaths or deaths from cancer, for example. To be sure, the facilities for adequate health supervision and treatment must be in the community, but only those people who apply for examination and care will derive any benefit from the community resources. Successful work in a broad public health program, therefore, is much more difficult because, in addition to securing adequate facilities, it is necessary to inform all the individuals in the community and stimulate all of them to use the facilities.

I have emphasized the importance of this task in health education—changing individual behavior—because our future success will be commensurate only with the degree to which we are able to help people understand their health problems and actively use their new knowledge in solving such problems. In the past, individual understanding of public health problems was believed to have had a more specific role in the improvement of public health than it actually had. Community action and a rising standard of living have combined to produce dramatic results in saving life and improving health, chiefly through creating a safer environment in which the individual has lived longer but with comparatively little change in his behavior. As soon as health programs began to provide services which require action on the part of the individual citizen, the professions met with both implicit and explicit indifference on the part of the public. It came as a great surprise to many public health workers that the people did

not accept their precepts with the reformer's zeal. Only through a clear and sympathetic understanding of this individual attitude can health education of the future hope to free the people from the personal opinions and behavior which are inimical to health. Therefore, we must patiently seek the manifold causes and as patiently seek the best means of breaking down the psychological barriers restraining people from acting to protect or improve their health.

Perhaps the most significant contributing factor to indifference is the general level of health in the population; by this I mean that whether the general health level is high or is low, the public has no other frame of reference with which to compare its status and is inclined, in the absence of illness, to be satisfied with its present health status. The concept of attaining better health, or indeed of attaining the modern health worker's ideal of "optimum health," has not been accepted because such a changed status has been so little experienced. Even in the most primitive societies, where demands upon the individual's time and attention are few and simple, attention to health competes for interest and action with such paramount demands as earning a living, providing shelter, food, clothing, bringing up a family, participating in the numerous institutions of the community, many of which are related to health remotely or not at all.

If the public is satisfied with its health status, changes in individual behavior are likewise resisted because such changes are often accomplished only with great inconveniences. We have all heard stories of grateful families in remote areas who have walked many miles over mountain trails to come to the health center for needed care. And it is true that once people become dissatisfied with their health status, they will make great sacrifices to better it. But these are the success stories of health education. The slim attendance at clinics, the "lost cases" in a venereal disease control program, as compared with estimated numbers of people in need of such services, are evidence that inconveniences—distance, discomfort, even painful experiences—are a substantial barrier to changed behavior.

Closely related to these broad psychological barriers are the influences of established modes of behavior in individual families and of cultural patterns in the broadening social fields—the community, the region, the nation, and so on. Unless and until some member of the community demonstrates that a change in the mores is both beneficial and acceptable, habitual behavior will not be abandoned, or if it is, only with great reluctance. Until acceptance is complete, the return to usual behavior will occur frequently much to the dismay of public health workers who have not taken into account the tremendous magnetic power exerted by the human need to conform and to belong in one's own social group.

Because health practices are so intimately concerned with fundamental human drives, many of the cultural beliefs and practices in every society are related to health. It is this kind of "health education" in proverbs, folklore, prejudices, and pragmatic experiences that is passed on from one generation to the next. In recent years, health educators have learned that many deep-seated habits, often detrimental to individual and family health, have been formed from early experience and are retained with strong emotional bias. Lawrence Frank in a recent article[2] points out that much of the resistance to programs designed to secure better nutrition, better adherence to precepts of personal hygiene, and improvement in sexual relations, may be found in the emotional experience of childhood when the infant is being conditioned, against his will, to eat, sleep, eliminate, and deal with other people in accordance with the adult concept of acceptable behavior.

Not only early experiences with family and teachers produce emotional resistance to health education and services, but experiences with physicians, nurses, and other health personnel may result in highly emotional attitudes. Aside from the pain associated with immunizations, a visit to the dentist, and other treatments given by physicians and nurses, other experiences may turn a family away from the health center or the doctor's office as definitely as though a sign "No Admittance" had been put on the door. The type of experience I have in mind is the long wait in uncomfortable seats and forbidding quarters before seeing the doctor and then the apparent impatience of the doctors and nurses with human frailty and lack of understanding, and their failure to take into account the basic intelligence and willingness of human beings to deal with their own problems.

Happily, such experiences are much less frequent today. Doctors have come to understand that the patient's problem can be solved only by mutual understanding and cooperation. Indeed, the whole concept of health education now and for the future must be the securing of mutual understanding and cooperation among all concerned, in order that the health problems of individuals and of the community may be solved effectively.

This recital of indifference to modern health practices and of the difficulties which health educators may encounter is not intended to discourage efforts to influence individual behavior toward more healthful living. Our lack of success in the United States has made us realize, however, that such attitudes must be the basis of consideration if our programs are to become more effective. Only through clear understanding of our difficulties can we plan realistically the use of the available tools and resources for health education.

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[2] "Health Education," Lawrence K. Frank. *American Journal of Public Health*, 36:4 (April 1946), pp. 357-366.

What are some of the resources that can be utilized? The one that comes most readily to mind is the public information programs making use of mass media such as newspapers, pamphlets, lectures, radio, posters, exhibits, motion pictures, and other visual materials. At the risk of duplicating in part some of the later sessions of this conference, let us consider the part that information plays in effecting changes in individual behavior.

An effective mass information program is an important part of any successful health education activity. It involves an analysis of the information problems, the selection of messages suitable to various audiences, planning strategic use of media and distribution channels. The information program is most effective in securing acquiescence and a degree of support. It may be likened to the softening-up process accomplished by artillery bombardment before the infantry advances. In emergencies, a carefully developed mass information program may be all that is necessary to stimulate appropriate action on a specific problem.

For example, when an epidemic threatens, the radio or the newspapers can direct a large proportion of the population to the sources for prevention and care. In Seattle, Wash., last spring, when virulent smallpox was introduced by returning troops, 85 percent of the population responded to appeals through press and radio, and presented themselves for vaccination. But in the less dramatic health problems, the day-by-day business of healthful living, the single tragedies of preventable death, the mass, impersonal media need to be supplemented by other types of educational effort.

Since Thorndyke in his psychological investigations has shown that no learning takes place without interest, the previously cited general lack of interest in health accounts for the fact that large portions of the public do not respond to mass information. The citizen must be sufficiently interested to *read* the news article or pamphlet, to *listen* attentively to the radio or lecture, and to *view* actively the motion picture, in order to learn what to do and then be motivated to do it.

Unfortunately, the individuals whose health behavior is most in need of improvement are all too frequently the ones who are least inclined to read, listen, or pay attention. To obtain perspective on this problem we have only to examine our own knowledge, attitude, and behavior on some other valuable social objective, such as fire prevention, safe automobile driving, or thrift. Despite extensive educational programs on such objectives, many of us still violate the suggestions offered for our individual welfare.

The best illustration of the place of mass informational technique was the experience of the United States Government in selling war bonds. The most extensive use possible was made of all known information media, including news articles, billboards, radio exhibits,

pamphlets, motion pictures, etc., in an effort to induce people to buy bonds, not only for financing the war but also for curbing inflation. When final tabulation was made, it was found that over 80 percent of individual purchases were made on personal solicitation, which shows the need for intimate and personal contact in order to induce overt action in a large proportion of the population.

General discussion of the limitations of mass media is not to discredit their use in a well-rounded health educational program, except to remind you that bombardment is not sufficient to take a city. Rather, it indicates the need for more careful evaluation of the proportion of total health educational effort one will devote to mass procedures, and the amount that will be allocated to the other types of educational activity.

A second and equally important resource for health education is the schools. Representing as it does the institution which society has chosen to inform each generation of the accumulation of scientific fact and to apply this information to improved living, the school might well assume a major role in health education. Its teachers understand the learning process and are skilled in educational techniques. With the help of the scientific health worker to provide the content, the school should be the most potent instrument in effecting changes in the behavior of people. As a public institution it should provide a model health environment for those who attend or visit it, and should encourage nothing but the most acceptable health practices within its boundaries.

Although the school has great potentialities for effective health education not only of the children but the adults as well, we have discovered in the United States a need for improvement of our school programs. Too often there is the tacit and unwarranted assumption, both by public health and educational workers, that if you teach the child proper health practices in school, he will go home and teach his parents. Parents usually regulate the activities in their households, including many practices which affect health. If these procedures are not in accord with the health principles the child has learned at school, he will find it very difficult to change them or his parents' attitude toward them, since they have become habitual practices with which the family is satisfied. It takes more than "I learned at school we ought to eat more vegetables," to change the dietary habits of a family.

Another assumption often voiced by professional workers is that if the child in school is taught the principles of personal health, he will practice them in his daily living. But most of the behaviors which are taught (bathing, sleeping, eating, and elimination) are carried on at home under parental influence. The child is unable to practice the changed behavior he learned in school, and, as a consequence, the

routines of his parents become his. It has also been assumed that if children learn what to do about adult health problems, they will practice them when they grow up. This overlooks our tendencies to forget quickly information that is not immediately applicable. Then too, the rapid advances made by medical science bring about some modifications in the behavior the adult learned at school when a child and indicates a need for constant education in all age groups so that all can keep pace with the contributions made by medical science.

Thus the influence of the school in changing health behavior of the population is severely limited, if it does not expand its program to include education for the adults as well as for the children. Unfortunately, too many of our schools in the United States observe an age limit and do not attempt to meet the educational needs of all the people in the community.

A second hindrance to developing fully the health education potentialities of the schools in the United States has been the failure to train our teachers in the functional facts underlying healthful living. A survey of their training in the biological sciences and in health education convinces us that our major problem in the United States is to find ways in which teachers may be better prepared to assume responsibility in health education.

One last weakness in the health education work of schools in the United States has been the misplaced emphasis on esthetic practices, or personal etiquette, to the exclusion of more significant health behavior and community health problems. Too often teachers have stressed having the hair combed and a clean handkerchief, but have neglected to explain such health practices as washing hands after going to the toilet, or staying at home when one has a cold or other evidence of acute infection. In many areas, our schools have not provided a model sanitary environment; nor has their schedule of activities, including adequate time for lunch, coincided with their classroom precepts.

It is gratifying to see that the needs of children for an opportunity to practice in their schools the best of health habits are being recognized. An increasing number of our schools are being equipped with adequate sanitary faciltities, including soap, hot water, and towels. Many are offering hot lunches, efficiently prepared and served.

Last but not least of the potential influences for effective health education in the schools is the medical service. If conducted with the intention to give an appreciation of good medical practice, and to advise parents on the health of the children, the medical service can do more to stimulate proper use of medical resources than any similar effort devoted to didactic instruction. If, however, it is conducted in a perfunctory, routine fashion, with little attention to the questions of parents or children, an unfavorable attitude will be built up toward

utilizing professional advice, regardless of the competence of the physicians and nurses.

This critical review of our past practices has been made in order that we may sharpen our efforts to realize fully the potential value of the schools in health education.

The doctors and nurses, themselves, both in the health department and in private practice, are a third potent resource for health education. We have indicated their contribution in the school health service. They exercise a similar influence in all their other services to people. In fact it may be said that every visit to the clinic or the doctor's office, every visit by the public health nurse, is health education, for the visit provides the most powerful type of learning, namely, experience. If the experience is not satisfying, there will be a tendency to avoid seeking health and medical care the next time that the individual or a member of his family needs it. Too much medical and nursing personnel, therefore, need not only the skills and knowledge of their professions, but understanding and ability in the art of dealing with people.

The educational influence of a competent medical and nursing staff reaches far beyond their patients through praise of their efforts by those they have served. Other members of the public health staff also have rich opportunities for educating the people. The engineers, sanitarians, and sanitary inspectors often have a difficult task in persuading particular groups of the population to comply with sanitary laws and regulations. Recently in the United States, persons engaged in restaurant inspection and law enforcement activities have stated that health education is a necessary tool in assisting them to achieve their objectives.

In the United States we are coming to realize, however, that future progress in health education, even within the schools or by the use of mass media, depends upon community-wide participation. Thus, the prime resource for future health educational effort is in the various organized groups of the community. And this same utilization of community organization is essential in other social programs.

Many organizations, like the Red Cross, the Tuberculosis Associations, welfare and professional organizations have definite health objectives. Other civic, social or industrial groups can often be interested in the health program and can render valuable educational service in the community. Within these organizations will be found many of the recognized community leaders—individuals who have won the respect of the people for their wisdom and for valuable advice in the past. Their influence is great. The community leaders do not always have the attitudes and opinions with respect to health which are approved by modern science. But if effort is spent in giving them a thorough understanding of what is needed and how problems

can be solved, they can contribute immeasurably to better understanding among all the people. They can also become a powerful motivating force for community action and for changed behavior, through their own acceptance of scientific methods and practices.

In most communities, the clergy will be found among the influential leaders; their cooperation is a valuable resource for health education. This source of support is all the more important in communities where church institutions include schools and hospitals.

In rural areas, leaders in agricultural work will often prove the most influential group in stimulating rural people to changes of behavior. As a rule, if a county agent or a home demonstration agent has helped the people of a rural community in solving some important economic problem or in meeting a crisis, he or she is an accepted leader without whose support the health education program will meet with apathy if not outright resistance.

How can we mobilize these potential resources of a community, a region or a nation for their maximum contribution to the health of the people?

First, there must be a joint planning on common problems by all of the interested groups. The importance of planning together cannot be stressed too strongly. Attempts at cooperation too often fail because one person or one organization develops a plan and then endeavors to get the others to follow. Naturally, those who have tried to follow along become apathetic to the plan, for if it succeeds, the person who drew up the original blueprint is the only one to enjoy the satisfaction of achievement, while those who cooperated lose any real feeling of participation. They feel they are merely contributing to the planner's success.

All too often individuals or groups have their own problems and are unwilling to set aside their special interests temporarily to join with other groups in attaining an objective of more general interest. If there is joint planning on a common problem, all are working toward the same goal. Independent action produces competition of a sort that is fatal to the success of a health plan; namely, competition for the attention and action of the people, many of whom already lead overcrowded lives. Thus, the available resources for health are dispersed in many directions. On one side the people are urged to do something about tuberculosis, on another, to do something about getting a hospital, and on still another, to do something about nutrition. They are confused. In the meantime, there is the constant barrage of patent medicine and quack advertisements which calls upon them to buy innumerable products, and to take this or that medicine, use this or that device, for their health. In their wonderment, the people decide to wait until the various groups make up their minds on what is best to be done. Too often, they rely on a

friend's advice, fall back on the practices that their parents or grandparents used, or yield to the pleas of the advertisers.

Cooperative planning is an essential of success in health education. It means joint consideration of and common interest in all the possibilities for the solution of a problem and mutual agreement on the resources each group will contribute and on the activities each will perform. When there is such planning, continued cooperation is practically assured. Ivah Deering, in her book *Let's Try Thinking* says, "People do not lightly set aside plans they have helped to make."

Participants in a cooperative venture must have an interest in each others purposes, plans, resources, limitations, and responsibilities. Each has his own field of competence which must be respected by all the others. Each also has his limitations, which not only he but all the others must recognize without implying criticism. Cooperation is impossible without this basic understanding and tolerance.

In the United States we have found, too, that in a successful health education program, there must be periodic and frequent check-ups on progress and additional planning by the cooperating parties. It is not enough to agree on objectives and plan what each shall do, and then each go about the scheduled task. There is need for working together continuously, re-alloting duties, changing methods of participation according to the changing status of the program.

There must also be technical leadership. Too often unguided effort of enthusiastic people has ended in failure or in wasteful programs. To call upon the experts who know the good and bad points about any procedure and who can give the facts is not to underrate the people and the intelligent decisions they make, provided they have the facts upon which to act.

Finally, there must be a proper sharing of credit. Abuse of this requirement is perhaps the most frequent factor that interferes with cooperative effort. Some people appear to feel that credit to themselves and their organization is more important than the achievement of the objective. Certainly we do not suggest that credit is unimportant. We must account for our own activities and for the expenditure of funds in terms of accomplishment. But it isn't necessary to claim credit for *all* the results of a cooperative program. Actually a division of credit with other participants results in more appreciation of our own part in the program. The special role of education in a health plan, we believe, is to secure this meaningful cooperation between many groups and individuals with diverse interests and capacities, but with a common purpose—conservation of human resources.

Another essential is an understanding and appreciation of the special qualifications which the many different types of professional workers can contribute to health education. Perhaps one method of bring-

ing about better working relationships among professional groups is to have in the various agencies persons who have been trained in more than one special field. This idea has been put into practice in Puerto Rico, where the Health Department has employed people who had a background in education and trained them in health. The Education Department did the same. The Extension Service of Agriculture and the Labor Department also did the same. So in these different organizations, there are one or more individuals who know education, who know public health, and yet are part of the organization. These people can interpret the contributions of their organizations to the other groups. In this way the program can go forward through all the major channels which reach the people.

A few community-wide health education programs were initiated prior to the war and have proved their value. The need for the maintenance of a high level of health during the war gave a great impetus to further development of programs in which the public is stimulated to participate in the solution of individual and community problems. A type of health worker seldom used before that time was recruited to conduct such programs in each community. These workers were college graduates, with basic training in the natural and biological sciences, education, and sociology. Most of them had taught in schools. In addition, they had taken one or more years of graduate training in a school of public health. Although not physicians or nurses, they are well grounded in the fundamental public health sciences, and also have acquired skills in community organization and methods of teaching.

For want of a better name, these workers are called "public health educators." In reality, they are extension workers for health—extending to people a better understanding of how to use the findings of science for healthful living.

When the public health educators began these programs in various localities, they first sought out all of the community organizations. In many cases, this meant visiting personally a large number of individuals, for the communities in the United States have a multiplicity of organized groups. The object of these visits was to find out if the leaders of the organizations were interested in community health improvement, and if so, to invite them to participate in a joint endeavor for determining and achieving objectives in health education.

The interested community leaders then met with the local health officer and the health educator. They told what *they* considered to be health problems in the community, and obtained from the health officer the facts on the extent of the problems, what was being done to solve them, and what remained to be done. The various organizations then agreed on problems that should be tackled first, and what each could do to help. One would agree to organize study

groups in the community; another to take care of the publicity; still others to visit and secure the support of other organizations not then participating.

Soon it was recognized that methods must be found whereby *all* the citizens could be reached directly. During the war, it was possible for the community leaders, aided by the public health educator, to utilize the citizen organization created by the Office of Civilian Defense. Thus in many communities a study group on health problems was organized in every city block, with a "block leader" in charge. The doctors, nurses, and engineers of the health department, as well as the public health educator, met with these leaders to give them the technical advice and assistance they needed.

I should like to emphasize the importance of technical assistance. In order that sound information may be passed on to each citizen, community leaders and block leaders need to be carefully prepared for their task. We have found that, with the interest and participation of the health department staff, the majority of the "block leaders" develop ability to conduct effective study groups, passing on correct information to a surprising degree.

All of the known tools for education are used: pamphlets, motion pictures, exhibits, and the like. These are secured by the public health educator. During the study of a specific community problem, mass media are employed—generally local newspapers and radio stations respond readily to the requests of community leaders for space and time.

These public health educators also undertook to assist the schools in coordinating their health education program with the activities of the community for better health. They worked closely with teachers, supervisors and administrators.

The outcome of such community-wide health education has been satisfying. A recent demonstration resulted in 87 percent of the population turning out for chest X-ray examinations in a city where traditional methods, employed year after year, had brought only a few hundred people to the tuberculosis clinics. During the demonstration, volunteers, organized by the community leaders, visited *every* family in the city, explaining the program and making appointments for the X-ray examinations.

The employment of qualified public health educators in local health departments is rapidly being accepted as desired practice by local health officers. Through such workers, the health officer finds it easier to reach his community, both for effective cooperation in carrying out his program and for understanding the individual and group needs of the community. Indeed, the role of the public health educator might be stated briefly as: to build a bridge of cooperation between the health services and the community at large, over which

two-way traffic may pass. The traffic is composed of the interests, needs, and resources of the community flowing toward the health agency, and the expert knowledge, services and needs of the agency flowing toward the community. This interchange of information, aims, and activities results in more effective effort to achieve the common purpose, namely, better individual and community health.

At the present time, there are some 200 public health educators working in local departments in the United States. The demand for additional workers far exceeds the supply, and, unless some method is found to accelerate training, it is likely that the demand for public health educators will continue in excess of the number of available qualified workers.

Objective evaluation has not yet been made of the effectiveness of these public health educators and of the programs they are building. Such evaluation is the number one problem on our agenda for the future. We are confident, however, that real progress is being made in increasing community understanding and stimulating action, since concrete results have been observed in several areas.

SUMMARY

1. All progress in public health requires education. When the problem is to provide a community facility or to improve some universally used product, as the water supply, education of a majority of the people may result in the necessary legislation, authority, or funds.
2. Many diseases, however, can be controlled only through the intelligent action of all the people. The task of health education is to stimulate that action. Psychological, economic, and social barriers exist which make the task difficult.
3. A wide variety of resources, tools, and methods are available, however, to overcome the difficulties and to accomplish the task. These include mass information, the schools, and community leaders of all types. Each of these resources has its own limitations; a planned coordination of all resources is needed for effective health education.
4. The development in the United States that gives greatest promise at the present time is the trained public health educator in a local health department, whose specific task is to bring about this coordination of all community resources for the improvement of individual and community health.

NATURALLY OCCURRING HISTOPLASMOSIS IN *MUS MUSCULUS* AND *RATTUS NORVEGICUS*[1,2]

By CHESTER W. EMMONS, *Principal Mycologist*, JOSEPH A. BELL, *Senior Surgeon*, BYRON J. OLSON, *Surgeon, United States Public Health Service.*

Histoplasmosis has been known to medicine for over 40 years (*3*) and about 100 cases have now been reported, yet the extent of the natural habitat of its etiologic agent remains unknown. It has seemed probable that *Histoplasma capsulatum* does exist separate from the human host because, despite the severity and fatal termination of histoplasmosis in nearly all the reported cases, it is sporadic in occurrence and there is no evidence that it is transmitted from person to person. McLeod et al. (*7*) have reported the only instance in which there was contact between proved cases of the disease but as the patients were siblings the relationship may have been either a common exposure or person to person transmission. Para (*9*) reported a possible contact between an infant and a dog with histoplasmosis. At the present time the known facts about proved histoplasmosis suggest that it is a rare disease of man and that the human host is infected from some nonhuman source in his environment.

Proved naturally occurring histoplasmosis has been reported in the dog (*1, 2, 4, 8, 9, 11, 13, 14*) and in one mouse (*Mus musculus*) (*8*). The number of reported cases of canine histoplasmosis indicate that the dog cannot be overlooked as a possible reservoir of the disease, important in its maintenance in a given area. The disease can be transmitted experimentally to the dog (*4*), but in this laboratory close contact between a dog with the spontaneously acquired progressive form of the disease and healthy dogs kept in close contact in the same cage with it over a period of months did not result in its transmission. Dogs experimentally infected by various routes also showed a high degree of resistance to infection. The manner in which dogs spontaneously acquire the disease is not known, but it is possible that histoplasmosis is a more prevalent disease in the dog than the 10 reported cases indicate.

There are three papers in the literature which suggest that other animals may, on occasion, harbor histoplasmosis. Sangiorgi (*10*) in 1922 described a "Cryptococcus" present in the large mononuclear cells of the liver and spleen of a rat. On culture this fungus was reported to grow as a Cryptococcus and attempts to transmit the disease to experimentally inoculated animals were not successful. If the fungus observed in the tissues was actually the one which was recovered in culture it could hardly have been Histoplasma. Shortt (*12*) experimentally inoculated animals with *Herpetemonas ctenocephali*

[1] From the Division of Infectious Diseases, National Institute of Health.

[2] Read October 18, 1947, before a joint meeting of the Washington and Maryland branches of the Society of American Bacteriologists.

and other flagellates. In one rat and seven white mice so inoculated he observed an organism which resembled Darling's Histoplasma. He described the fungus as a new species, *Cryptococcus muri*, but gave no data about its cultural characteristics, and its identity therefore remains in doubt. A third case in which intracellular fungus-like bodies were observed was reported by Levine et al. (*6*), who found in the liver of a ferret, cells containing 1–20 parasites which were supposed to be either an Encephalitozoon or a Cryptococcus. Again no cultures were described and it is impossible to say with certainty whether this was actually Histoplasma. Further doubt is cast on the identity of the fungi described in these reports by the frequent isolation of a Cryptococcus from the animals studied in the present series.

During the course of an intensive study (*8*) of histoplasmosis in a rural county in Virginia where four human cases and three canine cases of histoplasmosis have been reported, a search was made for an animal reservoir of histoplasmosis. This search was stimulated by the above mentioned reports and by a previous successful search for a rodent reservoir of coccidioidomycosis (*5*). From November 1945 through August 1947, 1,620 animals, mostly small rodents, were collected. Table 1 shows the numbers of various animals collected according to season.

TABLE 1.—*Animals collected according to season*

Season collected	House mouse (*Mus musculus*)	Common rat (*Rattus norvegicus*)	Meadow mouse (*Microtus spp.*)	White-footed mouse (*Peromyscus spp.*)	Short-tailed shrew (*Blarina brevicuadata*)	Pine mouse (*Pitymys pinetorum*)	Cat (*Felis domestica*)	Dog (*Canis familiaris*)	Jumping mouse (*Zapus hudsonius*)	Opossum (*Didelphis virginiana*)	Woodchuck (*Marmota monax*)	Rabbit (*Sylvilagus flo.idanus*)	Fox (*Vulpes and Urocyon*)	Mink and weasel (*Mustela spp.*)	Racoon (*Procyon lotor*)
November 1945	[1] 86	1	9	2	15	1	----	----	----	----	----	----	----	----	----
March-May 1946	28	46	63	2	15	----	4	2	----	----	----	----	----	----	----
June-August 1946	222	5	27	8	23	----	----	5	1	----	----	----	----	----	----
September-November 1946	245	6	57	22	11	1	1	----	----	3	9	22	----	----	----
December 1946-February 1947	144	2	20	16	7	----	----	----	----	----	----	10	7	4	5
March-May 1947	103	68	19	33	4	----	----	----	----	----	1	----	----	----	----
June-August 1947	[1] 108	[2] 94	1	18	1	----	----	----	----	----	2	10	----	----	----
Total	936	222	196	101	76	2	5	7	1	3	13	42	7	4	5

[1] 1 mouse with histoplasmosis trapped.
[2] 5 rats with histoplasmosis trapped (5 additional rats with histoplasmosis trapped since the preparation of this paper).

Collections of animals were made primarily around the premises where human or canine cases of histoplasmosis had occurred, but eventually the search was extended to other nearby farms where mice or rats were reported to be numerous. The fur-bearing animals listed were obtained through the cooperation of a fur dealer who saved the carcasses for examination, but who did not have accurate information about the localities from which the animals were taken.

With the possible exception of some of the latter all the animals included in this report came from Loudoun County, Va.

Mice were caught in box traps and, when possible, brought alive to the laboratory. Many specimens of Microtus, Pitymys and Blarina were found dead in the traps or died en route to the laboratory, especially in cold weather. Most of the larger animals were caught in steel traps and were killed before being taken to the laboratory. The rabbits reported were collected by shooting. The use of freshly killed animals in this and other studies (*5*) has been found essential for the successful isolation of pathogenic fungi.

Before autopsy at the laboratory the ventral surfaces of animals were thoroughly wetted with a cresol solution, and the autopsy was performed with sterile instruments. Cultures were made routinely from the spleen, liver, adrenal, urinary bladder, and lungs by streaking some of the tissue over the surfaces of Sabouraud agar slants. The cultures were incubated at 30° for 2 to 4 weeks before being read and discarded. The entire viscera of small animals and portions of organs from larger animals were fixed in formaldehyde until the cultures were read, and the tissues were then discarded or examined microscopically as indicated by the results of culture. We are indebted to Dr. L. L. Ashburn of the Pathology Laboratory for the examination of these selected tissues.

Many species of fungi were isolated from these animals. Most of these were obviously saprophytes and it is assumed that they grew from air-borne spores which merely contaminated the tissues. Species of Penicillium, Aspergillus, and Streptomyces were very commonly isolated from the lung, and it is probable that in many cases these fungi were present in the lungs as ungerminated but viable spores which had been inhaled prior to the animal's death. The frequent isolation of *Aspergillus clavatus* from the lungs of rats suggests that there may be some degree of pathogenicity in this species, but the possibility of heavy contamination of the rat's environment with consequent inhalation of conidia was not excluded. Further experimental tests of the pathogenicity of this species are being made. Beauveria and Rhodotorula were isolated from several animals. A species of Cryptococcus was isolated from 81 animals. Its frequent occurrence in mice and rats and its pathogenicity for experimental animals merits further study which will be reported in a subsequent paper. *Blastomyces lanuginosa* was isolated from one mouse.

Histoplasma capsulatum was isolated from 1 house mouse, as previously reported (*8*), and from 10 rats. The mouse was trapped at a farmhouse where one of the dogs with histoplasmosis had lived. The rats were trapped at 3 farms where there was no previously known history of histoplasmosis. The mouse was caught in November and the 10 rats in June, July, August and September. The strains of *H.*

capsulatum isolated were similar and they were entirely typical of strains isolated from human cases.

During the course of the study several animals with gross lesions were observed. The most common were encysted tapeworms in the livers of rats and mice. Occasional animals had enlarged spleens and some liver abscesses were found, but Histoplasma was not isolated from any animal presenting these findings. No gross lesions were observed in the animals from which Histoplasma was isolated and the first indication of its presence was its growth in culture. Examination of the tissues revealed the presence of small focal lesions in spleen or liver. Histological studies will be reported in a later paper.

In each of the infected animals Histoplasma was isolated from one or more of the tissues routinely cultured, as shown in table 2. The technic used, however, permitted transfer of infected blood from organ to organ. A separate set of sterile instruments was used for each animal, but it was not deemed feasible to use a separate set for handling each organ of each of the 1,620 animals. Failure to isolate Histoplasma from each organ of each infected animal was due in some cases to apparent lack of widespread infection, since part of the inoculated tubes remained sterile, and in other cases to contamination of cultures and loss of Histoplasma because of overgrowth of more rapidly growing fungi or bacteria. The most frequent isolations were

TABLE 2.—*Isolation of* Histoplasma capsulatum *from naturally infected rodents tabulated according to tissues from which isolations were made*

Animal No.	Spleen	Liver	Adrenal	Bladder	Lung
Mouse 1120	Histoplasma	Histoplasma	Sterile	Histoplasma	Histoplasma.
Rat 1690	Sterile	Histoplasma	Sterile	Sterile	Bacteria.
Rat 1697	Histoplasma	Histoplasma	Histoplasma	Sterile	Penicillium.
Rat 1742	Histoplasma	Staphylococcus (2 colonies).	Alternaria	Streptomyces	Penicillium.
Rat 1783	Staphylococcus	Histoplasma	Sterile	Sterile	Penicillium.
Rat 1808	Histoplasma	Histoplasma	Histoplasma	Histoplasma	Aspergillus clavatus.

from the liver and spleen. The isolation of Histoplasma in the absence of gross lesions in these wild rodents with spontaneous infection is in accord with long standing experimental infection in laboratory animals. White mice and guinea pigs commonly recover from the acute phase of the disease and survive indefinitely. Guinea pigs have been observed in this laboratory for periods of over 2 years after experimental infection. When killed, the liver and spleen were normal in size and there were no gross abnormalities, yet Histoplasma was readily recovered in culture. A more detailed study of this will be reported.

This is the first reported instance in which *Histoplasma capsulatum* has been isolated in culture from naturally infected wild mice and rats. It was previously known by the same criterion from man and dogs only. This extension of the host range of histoplasmosis may be an

important step in explaining its worldwide distribution and its sporadic appearance in a fatal form in man.

SUMMARY

Histoplasmosis was found in 1 mouse and 10 rats trapped in Loudoun County, Va. The diagnosis was proved in these spontaneously infected animals by isolation of typical strains of *Histoplasma capsulatum* in culture and its demonstration in tissue sections. Blastomyces was recovered from one mouse.

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DEATHS DURING WEEK ENDED OCTOBER 18, 1947

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Oct. 18, 1947	Corresponding week, 1946
Data for 93 large cities of the United States:		
Total deaths	8,780	8,743
Median for 3 prior years	9,021	
Total deaths, first 42 weeks of year	385,797	379,850
Deaths under 1 year of age	703	749
Average for 3 prior years	652	
Deaths under 1 year of age, first 42 weeks of year	31,084	27,392
Data from industrial insurance companies:		
Policies in force	67,088,351	67,321,559
Number of death claims	8,975	10,263
Death claims per 1,000 policies in force, annual rate	7.0	7.9
Death claims per 1,000 policies, first 42 weeks of year, annual rate	9.2	9.5

INCIDENCE 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

REPORTS FROM STATES FOR WEEK ENDED OCTOBER 25, 1947

Summary

A total of 333 cases of poliomyelitis was reported for the current week, as compared with 415 last week, 715 for the corresponding week last year, and a 5-year (1942–46) median of 489. Of the 11 States reporting more than 10 cases, the largest numbers were recorded in Ohio 50 (last week 78), New York 39 (last week 56), Illinois 27 (last week 25), Michigan 21 (last week 23), and Pennsylvania 19 (last week 28). The total since March 15 (average date of seasonal low incidence) is 8,584, as compared with 21,910 for the same period last year and a 5-year median of 11,555 for the period. The 7 States reporting the largest numbers since March 15, aggregating approximately 57 percent of the total (last year 33 percent) are as follows (figures for the corresponding period last year in parentheses): Ohio 1,237 (617), New York 1,017 (1,211), Illinois 760 (2,247), California 584 (1,826), Michigan 551 (880), Pennsylvania 405 (225), Massachusetts 322 (293).

The reported incidence of influenza declined from 1,688 to 1,576 for the current week, as compared with 1,410 for the same week last year and a 5-year median of 1,417. Only 3 States reported more than 39 cases, aggregating 1,256, or nearly 80 percent of the total, as follows (last week's figures in parentheses): Texas 605 (775), South Carolina 384 (349), Virginia 267 (298). The same States reported 83 percent of the total for the corresponding week last year.

Nine cases of anthrax were reported—5 in New York (last week 1), and 2 each in Pennsylvania and Arkansas. The total for the year to date is 54, as compared with 15 for the same period last year. During the 4-week period since September 27 (average date of seasonal low incidence), 9,495 cases of whooping cough have been reported as compared with 6,183 for the period last year and a 5-year median of 7,289. Cumulative figures since the first of the year for the dysenteries (combined), Rocky Mountain spotted fever, and tularemia are above the corresponding 5-year medians.

Deaths recorded during the week in 93 large cities of the United States totaled 8,679, as compared with 8,780 last week, 8,739 and 8,814 respectively, for the corresponding weeks of 1946 and 1945, and a 3-year (1944–46) median of 8,814. The total to date is 394,476, as compared with 388,589 for the corresponding period last year. Infant deaths totaled 702, as compared with 703 last week, and a 3-year median of 629. The cumulative total is 31,786, as compared with 28,181 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended Oct. 25, 1947, and comparison with corresponding week of 1946 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46
	Oct. 25, 1947	Oct. 26, 1946		Oct. 25, 1947	Oct. 26, 1946		Oct. 25, 1947	Oct. 26, 1946		Oct. 25, 1947	Oct. 26, 1946	
NEW ENGLAND												
Maine	0	0	0	----	----	----	1	70	2	0	1	1
New Hampshire	0	0	0	----	----	----	----	16	8	0	0	0
Vermont	0	0	0	----	----	----	1	49	49	1	0	0
Massachusetts	2	24	3	----	----	----	54	185	176	2	0	5
Rhode Island	0	0	0	2	----	----	----	2	2	0	0	1
Connecticut	0	1	0	1	4	4	9	25	9	2	2	2
MIDDLE ATLANTIC												
New York	3	24	20	(1)	[1] 3	[1] 4	107	85	83	6	5	17
New Jersey	1	4	6	5	4	4	68	30	22	1	1	4
Pennsylvania	16	12	13	(2)	[2] 2	[2] 2	----	127	112	11	5	7
EAST NORTH CENTRAL												
Ohio	10	11	15	3	4	4	33	92	23	2	4	4
Indiana	7	14	14	10	----	12	3	9	9	0	0	1
Illinois	2	6	10	----	4	5	102	18	18	3	7	8
Michigan [3]	4	1	10	2	----	1	229	36	39	2	2	3
Wisconsin	7	3	3	23	8	9	70	34	34	1	1	2
WEST NORTH CENTRAL												
Minnesota	5	8	8	1	----	----	83	5	5	1	2	2
Iowa	2	4	2	----	----	----	15	1	3	1	4	0
Missouri	25	11	5	12	8	5	----	----	1	1	0	5
North Dakota	1	4	2	----	----	----	28	----	2	0	2	0
South Dakota	1	1	1	----	----	----	21	1	1	0	0	1
Nebraska	0	7	3	----	2	2	----	1	6	0	0	0
Kansas	1	5	4	35	----	----	8	2	10	1	0	0
SOUTH ATLANTIC												
Delaware	0	0	0	----	----	----	----	1	1	2	0	0
Maryland [3]	3	5	6	2	2	2	2	6	5	2	1	1
District of Columbia	0	1	0	----	1	1	4	3	3	1	0	1
Virginia	6	13	15	267	194	182	10	26	19	1	2	4
West Virginia	6	2	2	26	6	7	61	5	3	2	1	0
North Carolina	38	20	43	----	----	2	3	25	10	3	1	2
South Carolina	28	1	11	384	49	211	2	1	6	1	0	0
Georgia	27	15	30	12	5	17	6	15	4	0	0	2
Florida	11	13	13	----	4	2	2	2	2	0	1	1
EAST SOUTH CENTRAL												
Kentucky	21	31	22	----	----	1	2	----	4	0	2	1
Tennessee	8	18	15	5	4	15	6	9	5	0	4	3
Alabama	19	15	39	26	44	44	2	3	3	2	5	5
Mississippi [3]	17	14	17	5	----	----	1	----	----	0	0	1
WEST SOUTH CENTRAL												
Arkansas	12	20	20	22	15	19	3	8	4	0	3	1
Louisiana	3	7	7	----	----	1	----	2	2	0	0	1
Oklahoma	5	15	9	45	22	22	1	3	4	2	4	0
Texas	28	29	54	605	930	925	74	54	34	4	6	4
MOUNTAIN												
Montana	0	1	1	5	----	----	65	20	17	0	0	0
Idaho	1	0	0	13	4	2	1	5	5	0	0	0
Wyoming	0	0	0	----	----	----	4	----	1	1	0	0
Colorado	6	3	8	17	23	23	4	7	7	0	0	0
New Mexico	0	2	2	----	----	1	2	4	2	0	0	1
Arizona	8	2	2	39	43	44	4	30	5	0	0	0
Utah [3]	0	0	0	----	----	----	2	1	4	0	0	0
Nevada	0	0	0	----	----	----	----	1	1	0	0	0
PACIFIC												
Washington	3	4	6	----	----	----	14	33	33	0	2	2
Oregon	8	1	6	5	13	9	12	8	23	2	2	1
California	14	19	33	4	12	19	71	60	60	4	7	8
Total	359	401	537	1,576	1,410	1,417	1,190	1,120	1,331	62	77	97
43 weeks	9,478	12,914	11,789	313,308	201,458	91,225	191,259	645,852	551,026	2,932	5,079	7,015
Seasonal low week [4]	(27th) July 5–11			(30th) July 26–Aug. 1			(35th) Aug. 30–Sept. 5			(37th) Sept. 13–19		
Total since low	3,181	4,286	4,541	11,795	11,261	11,152	5,757	5,767	6,234	291	413	520

[1] New York City only. [2] Philadelphia only.
[3] Period ended earlier than Saturday.
[4] Dates between which the approximate low week ends. The specific date will vary from year to year.

Telegraphic morbidity reports from State health officers for the week ended Oct. 25, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended—		Median	Week ended—		Median	Week ended—		Median	Week ended—		Median
	Oct. 25, 1947	Oct. 26, 1946	1942-46	Oct. 25, 1947	Oct. 26, 1946	1942-46	Oct. 25, 1947	Oct. 26, 1946	1942-46	Oct. 25, 1947 [5]	Oct. 26, 1946	1942-46
NEW ENGLAND												
Maine	0	4	2	6	39	30	0	0	0	1	0	1
New Hampshire	0	5	1	7	8	8	0	0	0	0	1	0
Vermont	4	5	2	1	6	7	0	0	0	0	0	0
Massachusetts	6	29	21	64	54	121	0	0	0	4	4	4
Rhode Island	0	2	0	6	3	3	0	0	0	0	0	0
Connecticut	4	8	8	12	21	21	0	0	0	2	0	0
MIDDLE ATLANTIC												
New York	39	79	48	111	107	168	0	0	0	4	5	7
New Jersey	12	6	11	18	47	47	0	0	0	1	1	1
Pennsylvania	19	15	15	63	99	139	0	0	0	5	13	6
EAST NORTH CENTRAL												
Ohio	50	18	18	106	173	204	0	0	0	[6]1	4	4
Indiana	14	21	5	33	65	52	0	1	0	1	4	1
Illinois	27	96	38	49	91	138	0	0	0	4	1	3
Michigan [3]	21	48	17	76	129	112	0	0	0	1	2	1
Wisconsin	7	26	13	39	49	60	0	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota	11	45	13	46	33	46	0	0	0	0	0	0
Iowa	8	28	18	16	31	41	0	0	0	1	2	0
Missouri	7	31	12	14	21	33	0	0	0	0	3	2
North Dakota	0	6	0	2	7	9	0	0	0	0	0	0
South Dakota	0	4	0	4	7	12	0	0	0	1	0	0
Nebraska	2	19	4	4	17	17	0	0	0	0	0	0
Kansas	4	28	11	15	21	60	0	0	0	0	0	0
SOUTH ATLANTIC												
Delaware	0	1	1	2	6	4	0	0	0	0	1	1
Maryland [3]	5	6	1	19	10	35	0	0	0	1	0	1
District of Columbia	0	1	2	12	11	14	0	0	0	0	0	0
Virginia	13	4	4	26	40	77	0	0	0	4	1	6
West Virginia	5	3	1	36	74	74	0	0	0	2	1	1
North Carolina	14	4	4	33	34	113	0	0	0	2	2	2
South Carolina	4	0	2	3	1	10	0	0	0	1	1	1
Georgia	3	8	1	18	18	36	0	0	0	2	4	4
Florida	0	6	4	2	6	7	0	1	0	0	0	0
EAST SOUTH CENTRAL												
Kentucky	3	4	4	29	52	50	0	0	0	2	4	4
Tennessee	4	2	2	34	24	41	0	0	0	2	1	2
Alabama	3	3	3	17	24	36	0	0	0	4	0	3
Mississippi [3]	2	4	2	7	10	14	0	0	0	0	2	3
WEST SOUTH CENTRAL												
Arkansas	0	11	0	4	6	7	0	0	0	2	0	2
Louisiana	2	7	4	5	13	13	0	0	0	3	1	1
Oklahoma	1	5	1	9	4	20	0	0	0	2	1	0
Texas	2	14	14	21	26	57	0	0	0	7	5	8
MOUNTAIN												
Montana	1	2	0	16	6	12	0	0	0	2	0	0
Idaho	10	5	2	5	11	11	0	0	0	0	1	0
Wyoming	0	3	1	0	5	1	0	4	0	0	0	0
Colorado	3	13	7	23	33	21	0	0	0	0	0	2
New Mexico	2	3	2	10	5	6	0	0	0	0	0	1
Arizona	0	2	1	5	19	11	0	0	0	2	1	1
Utah [3]	1	5	5	5	9	9	0	0	0	1	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	6	18	9	28	45	39	0	0	0	0	1	1
Oregon	3	4	4	17	16	18	0	0	0	1	0	0
California	11	54	36	74	130	148	0	0	0	8	4	2
Total	333	715	489	1,152	1,666	2,355	0	6	6	74	71	103
43 weeks	9,196	22,377	11,952	68,953	96,107	113,474	152	306	336	[6]3,334	3,535	4,786
Seasonal low week [4]	(11th) Mar. 15-21			(32nd) Aug. 9-15			(35th) Aug. 30-Sept. 5			(11th) Mar. 15-21		
Total since low	8,584	21,910	11,555	6,850	9,812	14,319	5	27	29	[6]2,849	3,060	3,970

[3] Period ended earlier than Saturday.
[4] Dates between which the approximate low week ends. The specific date will vary from year to year.
[5] Including paratyphoid fever reported separately as follows: Massachusetts 4 (salmonella infection); New York 1; Indiana 1; Oklahoma 1; Texas 1; California 4.
[6] Delayed report (included in cumulative totals only): Typhoid fever, Ohio week ended October 4, 1 case.

Telegraphic morbidity reports from State health officers for the week ended Oct. 25, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Whooping cough			Week ended Oct. 25, 1947							
	Week ended—		Median 1942–46	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Oct. 25, 1947	Oct. 26, 1946		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	23	6	8								1
New Hampshire	1	3	2								
Vermont	53	9	16								2
Massachusetts	119	141	128		1				2		2
Rhode Island	21	32	6								1
Connecticut	65	17	32								2
MIDDLE ATLANTIC											
New York	229	140	243	9	1					1	7
New Jersey	163	118	118								
Pennsylvania	146	139	154		1						1
EAST NORTH CENTRAL											
Ohio	166	52	86					[7]			1
Indiana	83	17	17	1							1
Illinois	50	90	96	9	1		1		2		13
Michigan [3]	153	196	128	15							9
Wisconsin	124	155	130				2				15
WEST NORTH CENTRAL											
Minnesota	71	6	20	1	4		1				2
Iowa	22	9	9				3				31
Missouri	16	17	16				1				5
North Dakota	23		6	6			1				1
South Dakota	5	1	1								1
Nebraska	1	2	9								
Kansas	39	16	18				2				1
SOUTH ATLANTIC											
Delaware	6	1	1								
Maryland [3]	77	24	50			3					
District of Columbia	27	7	10								
Virginia	33	82	25			50	1		1		1
West Virginia	18	13	13								
North Carolina	76	30	50		1				1	1	
South Carolina	72	3	27	2	2					1	4
Georgia	7	2	6	1	8				1	5	4
Florida	3	15	6	7					2	3	1
EAST SOUTH CENTRAL											
Kentucky	27	11	32	1							
Tennessee	28	14	17	1		4	1				2
Alabama	13	14	20	2			1			3	2
Mississippi [3]	3						1		1		1
WEST SOUTH CENTRAL											
Arkansas	29	9	16	10		1			5		1
Louisiana	7	1	1	1			2			1	
Oklahoma	17	1	2	2				1	2		1
Texas	220	120	99	9	278	35			1	12	11
MOUNTAIN											
Montana	32	1	18			1					
Idaho	6		3								1
Wyoming	5	1	2								
Colorado	18	18	15	1							2
New Mexico	5	4	5			1					
Arizona	13	6	7			13					1
Utah [3]	17	2	12						1		1
Nevada											
PACIFIC											
Washington	17	11	13	1							
Oregon	7	8	8								1
California	96	56	87	3	9		1				2
Total	2,452	1,620	2,023	82	306	108	19	1	19	27	132
Same week: 1946	1,620			54	265	89	14	3	14	54	72
Median, 1942–46	2,023			40	277	94	12	4	7	109	[8] 87
43 weeks: 1947	131,424			2,463	13,254	8,463	541	[7] 535	1,206	1,695	5,207
1946	82,058			2,012	13,768	5,558	543	549	775	2,942	4,307
Median, 1942–46	104,825			1,618	13,982	6,674	552	445	689	3,588	[8] 4,139

[3] Period ended earlier than Saturday.

[7] Delayed reports (included in cumulative totals only): Rocky Mountain spotted fever, Ohio 2 (August cases). [8] 2-year average, 1945–46.

Anthrax: New York 5, Pennsylvania 2, Arkansas, 2. *Leprosy:* Louisiana 1, Texas 1.

Alaska: Week ended October 18, 1947—influenza 14, septic sore throat 2, impetigo 1, whooping cough 1; week ended October 25—chickenpox 5, typhoid fever 1.

Territory of Hawaii: Bacillary dysentery 1, leprosy 1, measles 5, endemic typhus fever 3, whooping cough 26.

WEEKLY REPORTS FROM CITIES*

City reports for week ended October 18, 1947

This table lists the reports from 89 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	1	0	------	0	1	0	1	0	0	7
New Hampshire:												
Concord	0	0	------	0	------	0	0	0	0	0	0	------
Vermont:												
Barre	0	0	------	0	------	0	0	0	0	0	0	------
Massachusetts:												
Boston	2	0	------	0	14	1	14	5	15	0	1	9
Fall River	0	0	------	0	------	0	0	0	0	0	0	7
Springfield	0	0	------	0	------	2	1	0	1	0	0	3
Worcester	0	0	------	0	------	0	2	0	8	0	0	------
Rhode Island												
Providence	1	0	------	0	------	0	4	1	1	0	0	26
Connecticut:												
Bridgeport	0	0	------	0	------	0	0	0	0	0	0	2
Hartford	0	0	------	0	3	0	0	0	0	0	0	5
New Haven	0	0	------	0	------	0	0	0	5	0	0	21
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	------	0	3	1	3	0	0	2
New York	14	1	4	0	31	1	36	12	19	0	2	47
Rochester	0	0	------	0	------	0	1	7	5	0	0	6
Syracuse	0	1	------	0	------	0	2	2	3	0	0	16
New Jersey:												
Camden	0	0	------	0	------	0	1	0	0	0	0	------
Newark	0	0	------	0	2	0	5	1	2	0	0	17
Trenton	0	0	------	0	------	0	0	0	0	0	0	2
Pennsylvania:												
Philadelphia	1	0	1	0	4	1	9	1	16	0	0	52
Pittsburgh	0	0	1	1	1	5	13	1	7	0	0	19
Reading	0	0	------	0	3	0	1	0	1	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	1	1	------	1	3	9	4	0	0	4
Cleveland	0	0	------	0	------	0	5	13	11	0	0	68
Columbus	2	0	------	0	2	0	2	5	7	0	0	5
Indiana:												
Fort Wayne	0	0	------	0	------	0	0	0	0	0	0	5
Indianapolis	0	0	------	0	1	0	3	0	2	0	0	4
South Bend	0	0	------	0	1	0	0	0	0	0	0	------
Terre Haute	0	0	------	0	------	0	1	0	0	0	0	------
Illinois:												
Chicago	1	0	------	0	32	1	23	12	17	0	1	24
Michigan:												
Detroit	0	0	------	0	1	1	4	8	17	0	1	43
Flint	2	0	------	0	------	0	2	2	3	0	0	------
Grand Rapids	0	0	------	0	------	0	3	0	1	0	0	12
Wisconsin:												
Kenosha	0	0	------	0	1	1	0	0	0	0	0	------
Milwaukee	0	0	------	0	3	0	3	4	5	0	1	26
Racine	0	0	------	0	1	0	0	0	3	0	0	6
Superior	0	0	------	0	------	0	0	0	1	0	0	7
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	------	0	0	0	3	0	0	27
Minneapolis	0	0	------	0	43	0	5	0	11	0	0	13
St. Paul	1	0	------	0	4	0	5	0	2	0	0	19
Missouri:												
Kansas City	0	0	------	0	------	0	2	1	4	0	0	1
St. Joseph	0	0	------	0	------	0	0	0	2	0	0	------
St. Louis	2	0	3	0	------	2	5	1	4	0	1	5

* In some instances the figures include nonresident cases.

City reports for week ended October 18, 1947—Continued

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo	0	0	------	0	2	0	0	0	0	0	0	------
Nebraska:												
Omaha	0	0	------	0	1	0	1	3	1	0	0	------
Kansas:												
Topeka	0	0	------	0	3	0	1	0	1	0	0	1
Wichita	0	0	------	0	------	0	3	1	0	0	0	3
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	------	1	0	0	0	0	0	------
Maryland:												
Baltimore	1	0	------	0	------	0	5	2	6	0	0	80
Cumberland	2	0	------	0	------	0	1	0	0	0	0	1
Frederick	0	0	------	0	------	0	0	0	0	0	0	------
District of Columbia:												
Washington	0	0	------	0	------	0	5	1	18	0	0	24
Virginia:												
Lynchburg	0	0	------	0	------	0	1	0	0	0	0	------
Richmond	0	1	------	0	------	0	1	0	1	0	0	------
Roanoke	0	0	------	0	------	0	0	0	1	0	0	------
West Virginia:												
Charleston	0	0	------	0	------	0	0	0	0	0	0	------
Wheeling	0	0	------	0	------	0	0	0	0	0	0	------
North Carolina:												
Raleigh	1	0	------	0	------	0	0	0	1	0	1	------
Wilmington	0	0	------	0	------	0	0	0	0	0	0	------
Winston-Salem	1	0	------	0	------	0	0	1	0	0	0	3
South Carolina:												
Charleston	1	0	24	0	------	0	2	0	0	0	1	1
Georgia:												
Atlanta	3	0	1	0	------	0	3	0	1	0	0	------
Brunswick	0	0	------	0	------	0	0	0	0	0	0	------
Savannah	0	0	------	0	------	0	3	0	1	0	0	3
Florida:												
Tampa	1	0	------	0	------	0	6	0	0	0	0	3
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	2	0	------	0	------	0	4	0	1	0	0	3
Nashville	0	0	------	0	------	0	0	2	3	0	0	3
Alabama:												
Birmingham	0	0	------	0	------	0	4	0	1	0	0	------
Mobile	1	0	2	1	------	0	2	0	0	0	0	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	1	0	------	0	2	0	0	0	0	3
Louisiana:												
New Orleans	1	0	------	0	------	0	3	2	1	0	1	------
Shreveport	0	0	------	0	------	0	2	0	1	0	1	------
Oklahoma:												
Oklahoma City	0	0	------	0	------	0	2	0	2	0	0	1
Texas:												
Dallas	0	0	------	0	------	0	0	0	0	0	0	------
Galveston	0	0	------	0	------	0	1	0	0	0	0	------
Houston	4	0	1	1	------	0	7	0	3	0	0	------
San Antonio	1	0	------	0	------	0	4	0	0	0	0	------
MOUNTAIN												
Montana:												
Billings	0	0	------	0	16	0	0	0	1	0	0	1
Great Falls	0	0	------	0	1	0	0	0	1	0	0	------
Helena	0	0	------	0	------	0	0	0	0	0	0	------
Missoula	0	0	------	0	------	0	0	0	0	0	0	------
Colorado:												
Denver	1	0	7	0	3	0	2	0	6	0	1	22
Pueblo	0	0	------	0	------	0	2	0	1	0	0	7
Utah:												
Salt Lake City	1	0	------	0	2	0	2	0	0	0	0	------

City reports for week ended October 18, 1947—Continued

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza cases	Influenza deaths	Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
PACIFIC												
Washington:												
Seattle	0	0	------	0	2	0	1	4	0	0	0	1
Spokane	0	0	------	0	3	0	1	0	4	0	0	5
Tacoma	0	0	------	0	------	0	0	0	0	0	0	------
California:												
Los Angeles	3	0	------	0	4	2	3	2	11	0	0	19
Sacramento	0	0	------	0	------	0	1	0	0	0	0	4
San Francisco	0	0	1	0	9	0	5	0	1	0	0	1
Total	50	3	48	4	193	19	239	104	252	0	12	700
Corresponding week, 1946[1]	68	------	24	8	209	------	222	------	317	0	18	496
Average 1942–46[1]	83	------	52	[2] 11	[3] 289	------	[2] 281	------	489	0	19	638

[1] Exclusive of Oklahoma City.
[2] 3-year average, 1944–46.
[3] 5-year median, 1942–46.

Dysentery, amebic.—Cases: New York, 8; Minneapolis, 1; Memphis, 2; New Orleans, 1; Los Angeles, 1.
Dysentery, bacillary.—Cases: Worcester, 1; New York, 2; Charleston, S. C., 3; Nashville, 1; Los Angeles, 1.
Dysentery, unspecified.—Cases: Baltimore, 1; San Antonio, 4.
Rocky Mountain spotted fever.—Cases: New York, 1.
Typhus fever, endemic.—Cases: Atlanta, 1; Memphis, 1; New Orleans, 2.

Rates (annual basis) per 100,000 population, by geographic groups, for the 89 cities in the preceding table (latest available estimated population, 34,533,300)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza case rates	Influenza death rates	Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
New England	7.8	0.0	2.6	0.0	44	7.8	57.5	15.7	81	0.0	2.6	209
Middle Atlantic	6.9	0.9	2.8	0.5	19	3.2	32.9	11.6	26	0.0	0.9	75
East North Central	3.1	0.0	0.6	0.6	26	2.5	30.0	32.5	44	0.0	1.8	125
West North Central	6.0	0.0	6.0	0.0	105	4.0	43.8	11.9	56	0.0	2.0	137
South Atlantic	16.3	1.6	40.9	0.0	0	1.6	44.1	6.5	47	0.0	3.3	188
East South Central	17.7	0.0	11.8	5.9	0	0.0	59.0	11.8	30	0.0	0.0	35
West South Central	15.2	0.0	5.1	2.5	0	0.0	53.3	5.1	18	0.0	5.1	10
Mountain	16.5	0.0	57.8	0.0	182	0.0	49.6	0.0	74	0.0	8.3	248
Pacific	4.7	0.0	1.6	0.0	28	3.2	17.4	9.5	25	0.0	0.0	47
Total	7.6	0.5	7.3	0.6	29	2.9	36.2	15.7	38	0.0	1.8	106

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended October 4, 1947.—During the week ended October 4, 1947, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		2		11	34	14	32	24	37	154
Diphtheria		1		13	7		4	4		29
Dysentery:										
Amebic				•	1					1
Bacillary				2						2
Encephalitis, infectious						3	2			5
German measles				5	3		2	1	2	13
Influenza		16			5	2			1	24
Measles		1		99	40	3	8	6	9	166
Meningitis, meningococcus		1		1		1	1			4
Mumps		7	1	9	73	9	3	1	10	113
Poliomyelitis		1		4	63	15	6	7	8	104
Scarlet fever		4	2	24	41	11		4	2	88
Tuberculosis (all forms)		4	13	75	28	38	1	27	64	250
Typhoid and paratyphoid fever				5	3	1		1		10
Undulant fever				1	4			1		6
Veneral diseases:										
Gonorrhea		28	6	117	106	39	21	38	84	439
Syphilis		17	3	65	73	9	9	13	37	226
Other forms									1	1
Whooping cough			1	10	63	8	5	20	24	131

NEW ZEALAND

Notifiable diseases—4 weeks ended September 27, 1947.—During the 4 weeks ended September 27, 1947, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	17		Hookworm disease	1	
Diphtheria	43	4	Malaria	1	
Dysentery:			Puerperal fever	4	
Amebic	1		Scarlet fever	76	
Bacillary	1		Tuberculosis (all forms)	185	68
Encephalitis, lethargic	2	2	Typhoid fever	5	2
Erysipelas	20		Undulant fever	4	
Food poisoning	3				

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

China—Shanghai.—For the week ended October 4, 1947, 13 cases of cholera were reported in Shanghai, China.

Egypt.—Cholera has been officially reported daily in Egypt as follows: October 14, 1947, 353 cases, 123 deaths, including 8 cases with 3 deaths in Cairo and 1 fatal case in Port Said; October 15, 520 cases, 175 deaths, including 2 cases with 1 death in Alexandria, 2 cases with 1 death in Cairo, and 2 cases in Port Said; October 16, 733 cases, 308 deaths, including 1 fatal case in Alexandria and 4 cases in Cairo; October 17, 731 cases, 151 deaths, including 4 cases with 3 deaths in Alexandria, and 5 cases in Cairo; October 18, 667 cases, 279 deaths, including 19 cases with 9 deaths in Alexandria, and 3 cases with 2 deaths in Cairo. Provinces reporting the highest incidence are Dakahliya, Gharbiya, and Sharkiya.

Plague

Peru.—For the month of September 1947, plague was reported in Peru as follows: Lambayeque Department, Chiclayo Province, 4 cases, 1 death; Libertad Department, Otuzco Province, 2 cases; Lima Department, Chancay Province, 6 cases, 3 deaths.

Smallpox

British East Africa—Nyasaland.—For the week ended September 6, 1947, 138 cases of smallpox with 17 deaths were reported in Nyasaland, British East Africa.

Colombia.—For the month of September 1947, 265 cases of smallpox with 3 deaths were reported in Colombia.

Typhus Fever

Colombia.—For the month of September 1947, 271 cases of typhus fever with 3 deaths were reported in Colombia.

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