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EDITORIAL [1]

WORLD HEALTH

Every day we perceive with growing concern the increasing gravity of the problem of health as an international challenge. Millions of persons in many nations are destitute, ill-fed, and shabbily housed. Enfeebled by war and its aftermath, they are the easy prey of disease; impoverished, they cannot, alone, utilize effectively the public health and clinical weapons which persons in nations more fortunately situated take for granted. In consequence, disease spreads from nation to nation; epidemics flourish; unnecessary misery and death thrive unchecked.

There can be no isolationism in the field of health. The fight against disease is not a national or racial problem; it is a task for the whole of humanity. No nation is safe if another nation is vanquished by disease. The fortunate and relatively healthy nations, inspired by intelligent self-interest and humane consideration, will necessarily have to come to the aid of stricken nations, and, through money, professional personnel, and equipment, distribute existing resources to the needy and suffering areas of the world.

On July 22, 1946, representatives of 61 nations signed the constitution of the World Health Organization, which is the first fully empowered international agency in public health. This organization is dedicated to aggressive action toward health, which is the fundamental right of every human being. By pooling the knowledge and skills of all nations, the classic scourges of mankind can be eliminated.

This is particularly true of tuberculosis, which in the United States, has been steadily declining in importance as a public health problem, largely because of the unified and vigorous efforts of official and volun-

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[1] This is the final editorial by Dr. Hilleboe, who, on July 1, 1947, assumed his duties as Commissioner of Health, New York State Department of Health. Editorials in future issues will be written by Dr. Francis J. Weber, Medical Director, Chief, Tuberculosis Control Division.

tary agencies of control. Eradication of this disease can be achieved, if the proved methods of control, now so highly refined and thoroughly developed, are vigorously and simultaneously applied throughout the world.

The time has come to state the essential elements of a comprehensive and flexible public health program for tuberculosis workers in the field of international health. It is believed that such a pattern, as described in the ensuing article, may well be utilized in any nation of the world. A framework of such a nature permits growth and change and prevents rigidity. To be sure, the details of an international control program properly should be developed by the World Health Organization. The international application of such a plan, however, will speed the hour of our victory over tuberculosis.

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INTERNATIONAL CONTROL OF TUBERCULOSIS

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Tuberculosis, which now flourishes among the ill-fed millions of the world, has reversed its downward trend in the war-devastated nations, and once again among the infectious diseases, is the chief cause of death. Indeed, in many areas, the disease is epidemic; facilities are poor or nonexistent; physicians and nurses are overworked and insufficient in number; other workers necessary for effective case finding, medical care and isolation, and rehabilitation are few and often imperfectly trained. Patently, the problem is so enormous as to stagger the imagination and frustrate action. Yet, work of an international scope must go forward, if present suffering is to be alleviated and future generations protected. Such control activities, all preventive and therapeutic measures, must be founded on indisputable epidemiological principles. We must utilize fully all our knowledge; clarify and extend the awareness of our common objectives, and employ with vigor and realism our techniques, if we are to achieve our aim.

The all-inclusive objective of any sound tuberculosis control program is the immediate prevention and the eventual eradication of tuberculosis from the peoples of the world. But when one perceives the gravity and magnitude of such an undertaking and faces the universal tempest of tribulation which now afflicts the nations of Europe, Asia,

and the islands of the Pacific, it becomes apparent that the attack against tuberculosis on a world-wide scale must first be planned in such a way as to anticipate and comprehend all possibilities and contingencies. Poverty, shortages of food, political and economic uncertainty, with their attendant distortions and hungers, complicate the task and make necessary a cautionness of approach, a deliberateness of attack, and a realism of philosophy that will permit us to do as much as we can with present resources and will prevent an attempt to do too much with too little.

Twenty years ago the medical and public health professions lacked the knowledge and organization to combat tuberculosis on an international scale. Indeed, the task was too great for even regional attack. Today, however, successful control programs in such countries as the United States, and the Scandinavian countries have thrown light on the most fruitful objectives at which to aim in a destructive assault upon tuberculosis. Moreover, the experience gained from such programs has refined old techniques and created new ones. We know now what to do and how to do it. We have done the map work and the strategy; we have acted vigorously and successfully in a few campaigns in some of the nations of the world; and now we are ready for global planning and attack.

Since the discovery of the *Mycobacterium tuberculosis* by Robert Koch in 1882, we have known the bacterial cause of this disease. In the last 50 years, epidemiologists have provided us with invaluable methods in case finding, diagnosis and treatment, and facts concerning some of the racial and age-group characteristics of the disease. They also have given us many helpful distinctions of recognition, such as the difference between infection and disease, exogenous and endogenous infection, the importance of resistance and susceptibility, environmental and constitutional factors. Moreover, they have developed tools to measure statistical probabilities of morbidity and mortality, and the social and economic aspects of tuberculosis.

Clinicians and surgeons have made startling advances in the treatment of tuberculosis. Between 1905 and 1915 significant progress in sanatorium treatment and health education were realized. Definite attempts were made to provide healthy environments for the tuberculous and isolation was regarded as mandatory. In this decade pneumothorax treatment was initiated, and rest was accepted as basic in the treatment of the disease.

Between the years 1915 and 1925 (the years of World War I and its aftermath), chest surgery, especially thoracoplasty, was tried and found effective. Early diagnosis was encouraged; many public sanatoria were established throughout the world; and ancillary services in health departments, ministries, and government laboratories

were instituted. The beginnings of control on a mass basis, especially the use of tuberculin tests, made this the period when modern control measures began.

The epidemiological aspects of tuberculosis were particularly emphasized in the next decade, 1925 to 1935. Extensive examination of contacts was undertaken, public dispensary systems were developed and a more exact knowledge of morbidity and mortality was attained. Increasing emphasis was placed on early diagnosis, with the objective of discovering cases in early stages when they might be easily arrested. Modern production methods made possible the wider distribution of X-ray equipment, and there followed an increased use of the X-ray for diagnostic purposes. In Europe at this time, Calmette and Guerin began experimenting with BCG vaccine, with the aim of demonstrating that a limited immunity could be given to children in hazardous environments. Everywhere, tuberculosis specialists used the pneumothorax treatment more selectively, and pneumonolysis and bronchoscopy came into their own.

Between the years 1935 and 1945 all control methods came to their highest peak of development. Mass radiography, with the development of the photofluorograph and the automatic phototimer; experiments in chemotherapy and antibiotics; greatly expanded research in epidemiology; health education; the development of official national control programs, and the expansion of control methods in industry, general hospitals, and the armed forces, marshalled the power of science and shaped the knowledge and understanding of men in the fight against tuberculosis. In surgery, the thoracoplasty operation was refined and used more extensively, and pneumonectomy was introduced. Global war, with its severe dislocations and demands, challenged the ingenuity of medical science in this field, and all methods of control were carried to every corner of the world. In spite of the rigors of wartime, the death rate from tuberculosis in the United States in 1945 was down to 40.1 per 100,000 population.

Now in the year 1947, we must set up an inclusive and flexible pattern that could be used in any country of the world. The immediate future requires a practical program, integrated action, and widespread information about tuberculosis as an individual, community, national and international problem.

From the beginning of recorded time, tuberculosis has been recognized as a scourge of man. It has been, and still is, the plague of civilized man. Everywhere it has struck down unsuspecting people without regard to race, age, sex, or previous state of health. Even those who survive have become, in many instances, carriers of hidden subclinical disease. These persons were sources of infection to others,

and thus the disease has perpetuated itself wherever man has lived. Although no person is exempt, always the poverty-stricken have been the chief victims of tuberculosis. As civilization extended its frontiers into the wilderness, savage and barbarous peoples, owning no resistance to the disease, were killed in uncounted numbers. There is no way of knowing how many people have been killed by tuberculosis in the course of centuries; but the mere thought of such catastrophe creates one more somber scene in the history of human suffering.

Now in this place and time, when we are challenged by conditions that follow an annihilating war, we must know more than merely that the extent and seriousness of the problem are great and profound. We must find out, with precision and exactitude, where tuberculosis is, whom it attacks, and what the resources are for combating the disease as now it thrives throughout the world.

Because the reporting of deaths from tuberculosis has been uneven and imperfect from nation to nation, it is impossible at the present time to state with mathematical accuracy the precise extent of the disease. At the moment we are sufficiently informed to be aware of the extent of our ignorance. Therefore, one of our first tasks is to find out the numerical strength and the power of our tuberculosis opposition. In every country there should be provided as soon as possible adequate statistical personnel for the purpose of developing a uniform and accurate method of recording morbidity and mortality. Such complex and widespread enterprise would entail the establishment of a common center which would receive and record, analyze and publish reports from all the nations of the world. Immediately available reports from workers in the field would permit the international program planning body to develop and put into operation a preliminary program for world-wide application. Time is so important; we must start the attack at once.

The general objectives of any public health program must provide for the maintenance of health, the improvement of well-being, and an increase in the length of productive life of all the people. Avoiding dangerous infectious diseases, like tuberculosis, is an extremely important activity in protecting the public health. In the fight against tuberculosis, health workers function effectively in two principal fields: (1) the increase of human resistance by general and specific measures, (2) prevention of spread of the disease. Proper nutrition, healthy environment, hygienic living, increase the general resistance of the individual person against all diseases. Against tuberculosis, BCG vaccination is the only practical means to increase specific resistance. Isolation and treatment of infectious persons, preventive treatment of those whose disease may become infectious are the measures applied to prevent spread of the disease.

There are five well-defined fields of activity in which we must work and direct our efforts on a planned basis, if tuberculosis is to be systematically eliminated: (1) Prevention, (2) case finding, (3) isolation and medical care, (4) rehabilitation and after-care, (5) social and economic protection of afflicted families. No one of these activities can be effective alone. They all must operate coordinately and in proper sequence.

The prevention of tuberculosis is inextricably involved in all the objectives and techniques of tuberculosis control. No single measure is known that absolutely will prevent tuberculosis. There is, however, one means, BCG vaccination, which shows real promise in reducing morbidity and mortality from this disease, especially in unprotected groups greatly exposed to massive infection. BCG has demonstrated its usefulness in the Scandinavian countries, in South America, in Canada and the United States. Indeed, it is plain that in areas of great poverty where hope of economic improvement is remote, BCG vaccination will be for a time the only practical device for reducing the number of new cases of tuberculosis. In order to make BCG vaccination effective on a large scale, it will be necessary to establish, in strategic places throughout the world, recognized laboratories for the preparation and distribution of a safe and potent vaccine. Although there is some objection to the use of BCG in some quarters, studies by competent workers in Europe, especially in the Scandinavian countries, and reports from North and South American investigators demonstrate a relationship between vaccination and decreased incidence of the disease among children and some adults over limited periods of time. The safety, however, of the vaccine has been definitely established, and where there is inadequacy or complete absence of isolation facilities, lack of personnel and agencies for control, and where persons, particularly children in susceptible racial groups, are subject to massive exposures to tuberculosis, with little likelihood of any change, BCG vaccination should be given immediate consideration. Indeed, it would appear that BCG vaccine holds more promise for the reduction and control of tuberculosis than such a drug as streptomycin, even though the results of the latter in individual cases are impressive and spectacular. Necessarily, epidemiologists must convince clinicians that prevention will contribute far more than treatment in the control of tuberculosis.

Quarantine measures can be effective as a preventive measure in countries where sanatoria are plentiful. It is unlikely, however, that home quarantine can ever be very effective. Nevertheless, this method will have to be used, with home nursing supervision, until beds are provided.

In order to control and eradicate tuberculosis we must know how

many cases there are and where they are. Case finding is the device of initial importance in a control program, but it fails if it is not complemented by all other measures of control. The principal case-finding method is mass X-ray. However, mass X-ray is only a screening method and must be followed by laboratory and clinical study before diagnosis is made and treatment recommended. Epidemiologists have estimated that if we are to defeat tuberculosis quickly we must X-ray the chests of at least 80 percent of the adult population in a definite period of time. The principal tool in case finding is the photofluorograph which permits the examination of as many as 1,000 people in an 8-hour working day. Photofluorographs should be placed strategically in various regions in the world, in clinics, dispensaries, general hospitals, industry, and even in the offices of private practitioners. Mobile units could be utilized and deployed from central stations to areas where no equipment exists. Carefully planned and adequately manned, such a program of case finding by means of X-ray could in a few years uncover hundreds of thousands of hidden cases of tuberculosis. Indeed, cases in all stages of advancement would be discovered and the extent of the tuberculosis problem would be made plain. The scope of our endeavors would thereupon be expanded appropriately to meet the challenges of the problem. Private practitioners and clinicians can cooperate by means of medical supervision and health counselling of ambulatory cases especially. Public health nurses could do much to facilitate the examination of contacts and to carry on health education. Laboratories must be established for the demonstration of tubercle bacilli in the sputa of those who are expectorating or in the excretions of all who have been found to have abnormal pulmonary findings on X-ray film. No program can be regarded as complete if it depends on the X-ray alone for the discovery of tuberculosis cases. It cannot be emphasized too strongly that laboratories of the highest quality must be established as rapidly as possible, so that case finding will be exact and medical care effective.

To sum up, control is not effective unless case finding is followed by: (1) clinical and laboratory examination to establish diagnosis; (2) disposition of each type of case depending on the presence or absence of active tuberculosis, cavity, or on the extent of lesions and symptoms; (3) examination of contacts of old and newly-discovered cases and repeated examinations if exposure continues; (4) interval tuberculin testing of samples of selected age groups of the population to determine whether the infection rate each year is increasing or decreasing. If the infection rate continues to decrease, repetition of mass survey is not necessary.

A highly important public health aspect of tuberculosis control is

medical care and isolation of persons with infectious tuberculosis. When the whole world scene is envisioned, facilities for bed rest and chest surgery, together with the necessary equipment and personnel to do the job, makes this objective one of the most difficult of attainment. Work should go forward immediately to provide the proper organization, money, and men to obtain these facilities in the years to come, for tuberculosis cannot be eradicated if infectious cases are not removed from the population. This objective, indeed, has a twofold value: it protects the public health and it returns the individual citizen to happy and productive life. Coupled with an extensive case-finding program, sound medical care and adequate isolation can effect measurably the eventual elimination of tuberculosis from the population of the world.

The third part of any sound program, whether it be applied nationally or internationally, is rehabilitation. If we are to defeat tuberculosis we must keep people well when once their disease has been arrested. Briefly, rehabilitation is the restoration of tuberculous persons to the fullest physical, mental, social, vocational and economic usefulness of which they are capable. Tuberculosis is a relapsing and debilitating disease, and the patient needs competent medical, social and economic guidance toward readjustment upon his return from the sanatorium. In terms of the individual, rehabilitation practices are plainly humanitarian in nature, and should start soon after the diagnosis is made. Once a person has had tuberculosis, he is never completely the same again. He should not be required to return to a job that will tax him physically and mentally beyond his power. He must not return to a social milieu that formerly he found intolerable. It is plainly a waste of human flesh and spirit to cure and then to kill. It is not uncommon for persons to return to sanatoria two, three, and four times because of relapsing disease which was a consequence of maladjustment or a return to a deleterious environment. Moreover, such a state of affairs is costly to the community. The United States now expends in tax-monies approximately $100,000,000 a year for the medical care and isolation of tuberculous persons. Repetitious treatment is absurdly wasteful.

The whole medical approach can be crippled if it is not complemented by a generous plan of public assistance for the needy families of the tuberculous. This is particularly true when tuberculosis effects the breadwinner in a family, and his dependents are thrown upon public resources for support. In addition, it is unlikely that the patient will quickly recover from his disease if he fears that his family is in want. Because tuberculosis is a long-term disease, whole families will be left alone without their usual means of financial support. Most tuberculous persons are poor. Rarely do they have property or savings.

They must turn to their fellow citizens for help. Given such help over a short period of time, the head of the family will return to the community as a producer of wealth once more. Denmark, for example, has an effective system of disability insurance which could well be followed by other countries.

It is not enough simply to recognize and describe one's objectives in a tuberculosis control program. It is also necessary to have clearly defined and firmly established techniques for the achievement of those objectives. These techniques are as follows: (1) Determination of the extent of the problem; (2) recruitment and training of professional personnel; (3) provision of physical facilities for preventive services, diagnosis and treatment; (4) education of the public; (5) demonstrations; (6) distribution of monies; (7) research; (8) cooperation with private and official agencies; (9) legislation necessary for control of infectious cases; and (10) review and evaluation of the program.

In the field of tuberculosis the first technique is the determination of the extent of the problen. This entails the extensive study of tuberculosis morbidity and mortality, and other epidemiological data. Age-specific mortality rates by sex and race will have to be ascertained. Proportionate mortality in the various age, sex, racial and geographical groups throughout the world, and the tuberculosis mortality in cities of 100,000 or over must be known before an effective program can go forward. Knowledge of hospital and clinic facilities and laboratories, the number of available professional personnel, will further aid us in indicating what has been done and what in future must be done. Indeed, from such studies the nations of the world will be guided toward the development of a sound tuberculosis control program. It will be necessary for all the nations concerned to cooperate wholeheartedly in an attempt to define their own problems.

It is well known that throughout the world there is a most serious shortage of physicians, nurses and professional people of all kinds. Therefore, one of the most important techniques that works toward the realization of the objectives of tuberculosis control is the recruitment and training of professional persons. It will be necessary to establish in medical schools everywhere undergraduate and postgraduate courses in public health, with particular emphasis on tuberculosis control. Physicians now practicing and students now in training must be taught X-ray film interpretation. Public health methods, statistics, epidemiology, radiology, and laboratory techniques should be widely and intensively taught; special training in tuberculosis control for persons on staffs of health departments or in ministries in every country of the world should be instituted. Public health nurses, and medical social workers and other professional people

must be given opportunity to study the problems of tuberculosis and the chance to practice in the field as the world program goes forward.

It must be said that it is on this foundation of trained and dedicated persons, that the success of a tuberculosis control program depends. A program is people, not words. The sick turn not to a program but to the ministering hands of the doctor and the nurse. If we are to have an organization and not just a dream, we must begin to provide immediately for the training of young men and women in every nation of the earth.

The provision of physical facilities for preventive services, diagnosis and treatment, where they are most needed throughout the world, will require the most careful planning and the closest teamwork of all the workers in all the countries concerned. It will be necessary first to conduct an inventory of all the existing establishments for the tuberculous—the sanatoria, the laboratories, and clinics, wherever they now exist—so as to determine what can be done now and, with the extent of the problem known, measure the quantity and nature of the institutions that must be constructed and maintained in the years to come. Such an inventory will include a survey of the needs for each type of facility, and will require an agreement on the most effective method of obtaining funds to construct and maintain them. Moreover, an ethnologic and geographic study will have to be carried out in order to determine the most propitious type and most practical location of these facilities. When these factors are established, the number and kind of personnel necessary will be made plain. It will be necessary also to plan for the improvement and expansion of health department facilities, for herein will exist the supervisory functions of the whole movement.

It goes without saying that this is a task that will consume the energies of many men and women over a period of many years. This problem is far from being solved even in wealthy and resourceful countries. The United States, for instance, still suffers from a lamentable shortage of sanatorium beds. State governments, private associations, and the Federal Government of the United States have been insisting for many years that in order to control tuberculosis, even in a country where that disease is not the most serious public health problem, an additional 50,000 beds are necessary. Fortunately, the Congress of the United States recently passed the Hospital Survey and Construction Act which, in due course, will supply this deficiency. But in countries not so fortunately situated, aid from an outside source, is an inescapable requirement. Therefore, one of the first tasks of any worldwide organization to control tuberculosis will be the establishment of a committee of experts to study the needs and

to make arrangements for the realization of a sufficient number of proper facilities.

Leadership must be provided by sending to areas of need experts in epidemiology, bacteriology, treatment, and public administration, to demonstrate newer methods of control. Private physicians, hospital administrators, and public health officers will have to be acquainted with the newest devices and equipment for the diagnosis and treatment of tuberculosis. Such an undertaking will necessitate the deployment of experts to countries where the need is greatest to demonstrate the photofluorograph, BCG vaccination, laboratory analysis of sputa, record keeping, statistical methods, and the most realistic rehabilitative practices.

Such a program as this envisions the initial training of a sufficient number of professional persons to carry on these activities. It also demands the early production of sufficient equipment to be loaned at large for demonstration purposes. But this is not so insuperable a task as at first it may seem. Teaching and demonstration do not have to go on formally in classrooms or in laboratories equipped with the latest devices. All practitioners, experts, and workers in the field of tuberculosis control must become teachers. There is nothing very difficult about the simple weapons of combat in the campaign against tuberculosis. Each nation with a good program could well afford to lend several experts for short periods of time to devastated countries, where they will teach key professional people how to become leaders in tuberculosis control in their own countries. If every man would teach two others, a large supply of knowledgeable practitioners will soon be available. Aside from the desirable democratic aspects of this approach, the bureaucratic imposition of authority would be avoided. Every man in the movement would become a specialist, and, in consequence, specialism would end.

It is not enough, however, to educate professional persons only. The resources for assault exist in the minds of the people. Their knowledge is the gold; their energy is the force; and their performance is the propellent against any socially obnoxious entity.

To be successful, a control program in communities of any size must have the acceptance, support, and participation of the people. Health education and community organization are essential techniques if we are to enlist the services of men and women in all communities everywhere. Awakened consciousness of the seriousness of tuberculosis and collective action to defeat the disease will require educational and organizational services for both professional and lay persons.

In the United States, the National Tuberculosis Association, lately reinforced by the Tuberculosis Control Division of the United States Public Health Service, has led the way in educating the general public

about tuberculosis. Year in and year out, health education materials and methods, including books, pamphlets, speeches, the movies and the radio, are utilized to inform the public and stimulate it to action. A measure of the effectiveness of such an educational campaign can be seen in the willingness of the Congress of the United States to provide public monies for a continuing Federal program of attack. Another measure of such a program is what the people say when they are questioned about tuberculosis. On June 7, 1947, the American Institute of Public Opinion published the result of a coast-to-coast survey of the knowledge of tuberculosis among the ordinary citizens of the country. The survey showed that today 70 percent of the people are aware that tuberculosis is an infectious disease. It was only a few years ago that most of the people believed that tuberculosis was an inherited disease and was somehow a consequence of "bad blood." The survey also shows that 83 percent of the people know that a tuberculous person can get well. Within the memories of the young, there was a time when almost all the people thought that tuberculosis and death were synonymous. It is a matter of interest and keen satisfaction to observe that this survey shows that 42 percent of the persons interviewed have had X-rays of the chest. This has been done without great fanfare, excessive organization, or great expenditures of money. Indeed, this survey clearly demonstrates that our present educational methods are effective, and it suggests that similar methods extended to the world will have comparable success.

Any program must provide for the allocation of money to impoverished regions for the establishment of a sound campiagn of control. This is an immediate international problem. The sovereign States of America exist together in unity while maintaining considerable individual independence. This is a situation comparable to the nations which comprise the United Nations. It is not unrealistic to assume that the distribution of monies available for the control of tuberculosis throughout the world would be somewhat similar in method to that which is practiced in the United States. Simply stated, this is the practice in the United States: Annually, money is requested from Congress after study and consultation with public health consultants in the various districts and States of the United States, to determine the actual needs of the several States. The formula of allocation at present utilized by the United States Public Health Service is as follows: 10 percent of the money available is allocated to the States on a basis of population; 10 percent on a basis of financial need; and 80 percent on the basis of the extent of the tuberculous problem in a given State. Such factors as the need to recruit and train personnel, the necessity to develop case-finding and follow-up activities, the status of diagnostic and treatment facilities, are all

controlling factors in any determination of allocation of money. The knowledge which delimits the force and scope of these factors has its source in documented appraisals based on uniform evaluation schedules, which are made by expert consultants. It is possible that a similar method of approach, designed to disinter facts and truths of the tuberculosis problem in the separate nations of the world would have a realism of application comparable to that which has been experienced in the United States. It is plain, however, that the details of fiscal policy, when an international program is envisioned, would have to undergo an original orientation determined by the exigencies of current possibilities.

No program of control can go forward with speed and certainty if research scientists do not constantly review old knowledge, seek out new, and apply practically among the people discoveries in the laboratory and field.

Wartime scientific accomplishments have clearly revealed the value of planned, coordinated research in arriving at the solution of disease problems. The achievement of atomic fission was not the consequence of the work of a single man. The story of the community of effort that led to this discovery is widely known. Much organization of time, brains, energy, and money, applied now to current tuberculosis problems, could bring, in a future not far away, a cure for all those who suffer from the ravages of the tubercle bacillus. The complexities of our age demand collective effort in research, a constant interchange of information, and an avoidance of unnecessary and unrewarding duplication of effort. Research activities should properly take action within those five areas categorically described as objectives. In case finding we need to know more about the possibility of the photofluorograph. It is not unlikely that this instrument can be simplified even further, so that a machine of low cost and practical flexibility may be developed. Recent studies show that there is too great a variation in the reading of X-ray films and that the diagnostic error is excessively high. It is plain that teaching in this field must be improvised and guesswork dismissed for the employment of exactitude.

Many of the grave problems that confront us in the fight against tuberculosis can be solved by researchers. We must know more about the mode of spread of this insidious disease. We must know why it selects certain age groups and races. And certainly we must learn the secret of its completely successful defense against every drug and biologic now known. The increasingly widespread use of BCG vaccine as a preventive against tuberculosis, the accumulating knowledge concerning the effectiveness of streptomycin, permit us to hope that research men will discover some chemotherapeutic agent that will prevent entrance of tubercle bacilli into the body, or kill them after

they have become secure, or arrest the progress of their destructiveness. As the problem becomes clearer, researchers will face the challenge and find the future answer to this whole question. For the present, we should not dally in an atmosphere of hope. It must be stressed that, if we are to be wholly effective in our drive against tuberculosis, we must couple the use of an antibiotic with sound case-finding techniques, so as to discover early cases and to treat them at once. Although we may complicate the issue indefinitely, it is plain that in the researcher we have the dreamer who has the magic to make the dream come true.

Speed of travel now makes tuberculosis a matter of national and international concern, whereas formerly it was a family and community problem. Persons migrating from high-mortality areas to low-mortality areas must be stringently screened. Enactment and enforcement of laws and reasonable regulations to control tuberculosis are required. We should, however, guard against indiscriminate exercise of legal authority to isolate infectious persons. Education, persuasion, and superior facilities are better than force in protecting the nations of the world and individual citizens.

It will be necessary for any international organization to take into cognizance the already existing associations which are dedicated to the defeat of tuberculosis. In almost every nation of the world, there are men and women who are devoted to the control and eradication of tuberculosis. It will be necessary to establish working relationships with such organizations, so as to eliminate duplication of effort and promote harmonious agreement, if we are to extend our practical campaign. In the United States the pioneer work of the National Tuberculosis Association in all aspects of control has been invaluable in achieving a successful program.

We have presented an outline of the general objectives, the special fields of activity, and the public health techniques necessary to control and eradicate tuberculosis in a definite period of time. It is not possible to apply at once all of these measures in every country. Existing conditions and available resources will largely determine what first steps must be taken to halt the devastation of tuberculosis among the people. Even in countries with no resources, few trained people, and great poverty, the situation is not hopeless. There are some measures that will produce effective results. However, it will be necessary for the more fortunate nations to assist the ravaged countries in instituting programs of control.

First, we must offer to send experts into those countries to meet with potential leaders in tuberculosis control. The single procedure of presenting to a small group of physicians the latest medical knowledge on tuberculosis and showing that their situation is not completely

hopeless, will be enough to encourage them to institute a program, especially if some trained personnel from the outside is initially provided. There is one preventive measure that can be used almost at once, even in the absence of local trained personnel, money, or other measures, and that is BCG vaccination. Such materials as tuberculin, BCG vaccine, syringes and needles can be supplied easily from some outside source at slight expense. One team, consisting of one doctor and two nurses can be brought in to start the program, to train local workers, and to demonstrate the ease with which one team can do tuberculin tests and later vaccinate 2,000 persons a day. In 1 month's time the local team can be trained to assume all practical operations, except the preparation of tuberculin and BCG. This team in turn can train other teams, and soon a great area can be covered. This mass vaccination of the uninfected population can be performed without X-ray facilities, dispensaries or laboratories. All that is required is leadership, a few trained people, and inexpensive supplies.

The next step is to combine mass vaccination with the simplest method of discovering infectious cases. This is done simply by asking each person, at the time of his tuberculin test, if he is expectorating. If he is producing sputum, a sample is taken and sent to a central laboratory. If there is not yet one established in a particular country, the specimens can be sent by air to an outside laboratory. When an infectious case is found, the danger can be explained to the family, and the patient can be instructed in the disposal of the sputum. Proper training and conduct in this respect can have good results, even if the person must live in the same room with his contacts. Even this partial diminution of intensity of exposure should reduce in some degree the spread of infection. When many families with infectious members are found, it might be possible to segregate such families in one part of a city, or even to concentrate them in one community by themselves.

From these slight beginnings, the public will realize quickly that protection against this dangerous disease is being provided. In consequence, the aroused interest of the people will impel them to support and to participate in an expanding program of tuberculosis control. If such a program is to realize further developments, it is important that physicians from countries with few or no resources be given sound training in the control of tuberculosis, so that in the future they will be enabled to take the leadership in this field within the boundaries of their own nations. To realize this essential aim, funds must be made available to train selected young doctors abroad.

Training centers must be established in such countries as the United States of America, Russia, and those of western Europe, in which

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education in the special fields of tuberculosis control may be practically provided. These fields are (1) the epidemiology of tuberculosis, (2) tuberculosis-bacteriology (bacteriological diagnosis of tuberculosis, preparation of tuberculin and of BCG vaccine), (3) tuberculosis therapy, and (4) the planning and administration of a tuberculosis control program.

This realistic approach to the tuberculosis problem is based upon the actual experience of one of the authors (J. H.) in many of the devastated areas of postwar Europe. In six European countries, Danish teams within a short time accomplished much with few resources. By following their example, nations with adequate funds and trained personnel could soon extend ample assistance to all those nations which cannot now help themselves.

In countries with some resources, additional measures should be immediately instituted to train personnel, to get more facilities and to scrutinize current resources for their maximum exploitation and for the development of those that will be needed in the future.

In countries like the United States and Denmark, where facilities are relatively plentiful, it is immediately necessary to establish a time-plan for Nation-wide case-finding programs, follow-up activities, examination of contacts, annual tuberculin testing of samples of the population, and to provide for the continuance of all existing measures of control and the development of new techniques as their practicality becomes manifest.

Neither hopelessness because of the absence of facilities nor complacency in the presence of partial measures need defeat the purposes of tuberculosis control. A control program can begin with few resources which can be rapidly augmented. It must be made plain that an effective program is an expanding one and that no program is ever complete until all the proved techniques of control are operating vigorously toward the achievement of our common objectives.

This, then, is the problem and a suggested method of approach. It is not a matter which should overwhelm us with its difficulty, or is it a problem which should confuse us in its complexity. Tuberculosis is a disease that sorrows mankind; it kills men and women and changes the life direction of the bewildered survivors. It is an instrument of death, a crippler of the curious and brave. There is no need to complicate our offensive; we need only to master our methods and cooperate our means. We need simply to convince the mass of men that poverty and disease are unnecessary in a being's flight from birth to death, in order to accomplish this humane task—the destruction of tuberculosis.

CATALOGING X-RAY EXPERIENCES

By Fred Jenner Hodges, *M. D. Professor of Roentgenology, University of Michigan Medical School*

Confronted with a continuous succession of busy days, each of them crowded with the more or less urgent problems of individual patients, it is not an event of wonder that clinical radiologists resent the time they must expend on necessary clerical activities. To suggest that such apparently immoderate exercise might prove to be of interest and profit; to recommend that it is wisdom to sort and catalogue diagnostic statements into a preconceived system are acts that provoke stony looks from radiologists and a flood of remonstrances that the "paper work" of our specialty is already too burdensome. The only valid justification for the clerical aspect of medicine is the protection of patients and doctors and the advancement of medical knowledge, which all forms of record keeping seek to accomplish. To be sure, there can be no doubt of the necessity to maintain a bookkeeping system in which medical experiences are stored. But medical records, however precisely prepared and carefully filed, constitute a liability of mounting proportions so long as they remain unused. Viewed solely in the light of their medico-legal importance, such records are of limited value because the probability of subsequent court action is very slight in relation to the great number of patients involved. One's memory of details can serve dependably only for relatively brief periods. Permanent medical records—X-ray records in our particular instance—can represent a very material treasure if they are prepared with accuracy and forethought and if, above all, they are thoroughly used.

The following is a description of the operation of a system which has been devised and employed in the Department of Roentgenology at the University of Michigan. This presentation is evidential support of the contention that it is profitable to catalog X-ray experiences.

The total work load of the X-ray Department of the University Hospital for the decade, beginning July 1, 1935, and ending June 30, 1945, consisted of 502,168 individual patient visits. Of these, 148,517 required action in the division of radiation therapy while the remaining 353,651 demanded some kind of X-ray diagnostic procedure.

In figure 1, the classification of these visits according to specific type is listed by years. This is a sufficiently large volume of radiological activity to present a real problem in the indexing and cataloging of findings for future scrutiny and referral. To attempt the task at the end of the period of accumulation would be discouraging.

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN
JULY 1, 1935 – JUNE 30, 1945

Total Work Load, Dept. of Roentgenology
502,169 Patient Visits

	DIAGNOSIS						THERAPY		
YEAR	BONES-JOINTS	CHEST	GASTRA-INTESTINAL	GENITO-URINARY	SKULL	BEDSIDE	X-RAY TREATMENTS	RADIUM	EXAMINATION ONLY
35-36	11,041	11,895	5,370	1,321	3,848	1,586	10,175	444	2,067
36-37	10,793	12,749	5,725	1,550	3,615	1,343	12,808	349	2,141
37-38	12,374	13,084	5,617	1,865	3,708	1,574	12,134	236	2,612
38-39	12,622	13,787	6,050	1,893	3,424	1,481	12,578	210	2,605
49-40	9,554	11,392	5,198	1,625	2,938	1,152	11,307	187	2,072
40-41	10,302	12,848	5,639	1,804	3,010	1,284	13,530	232	2,176
41-42	11,829	10,378	6,528	2,270	3,686	1,408	12,837	316	2,163
42-43	11,010	8,995	5,591	1,956	3,136	1,266	12,776	349	2,174
43-44	11,787	9,888	5,974	1,992	3,561	1,248	12,457	246	2,251
44-45	13,037	10,121	6,128	2,001	3,446	1,354	12,341	295	2,449
10 YEAR TOTALS	114,349	115,137	57,820	18,277	34,372	13,696	122,943	2,864	22,710
GRAND TOTALS	353,651.		PATIENT VISITS TO DIAG. DIVISION				148,517	PATIENT VISITS TO THERAPY DIVISION	

NOTE: THESE FIGURES ARE AVAILABLE BY MONTHS AND DAYS; HAVE BEEN LISTED HERE IN COMPACT FORM.

FIGURE 1

Acutally, indexing and cataloging, planned in advance, was carried out at the time when written reports of each patient-visit were being prepared; when the facts regarding each incident were readily available and clear in mind. According to plan, pertinent details of each patient-visit to the therapy division and all findings reported in every diagnostic report were translated into code and transferred to tabulating cards.

For the moment, let us turn our attention to the consequent realizations of indexing and cataloging diagnostic observations. The procedure employed involved the use of punch-card apparatus and differed somewhat from the simplified hand-scoring method described by Hodges and Lampe.[1]

In the course of reporting the results of more than a third of a million X-ray examinations, a considerably larger number of individual diagnostic observations or statements were made and duly catalogued. In figure 2 specific observations, which were recorded during the 10-year period, are shown, by years, in 10 convenient anatomical divisions, or "fields." It is the purpose of this chart to indicate the great volume and variety of experiences which are accumulated by a radiological group. It also reveals the magnitude of the task which any one person would encounter, if he were to attempt to consolidate such experiences into usable form without some practicable method of presorting and cataloguing. Even with a breakdown no more detailed than is permitted by the separation of observations into 10 broad fields, the search for radiological material which bears on any one subject is markedly facilitated. Very little more effort expended at the time of reporting provides for a quality of indexing which helps

[1] Hodges and Lampe: Filing and Cross-Indexing Roentgen-Ray Records: Demonstration of a Simple and Efficient Method, American J. of Roentgenology and Radium Therapy. XLI (June 1939).

"All diagnostic statements are classified in advance under 10 separate categories numbered 0-IX for entry on Hollerith punch cards. Each category known as a diagnostic field is subdivided into 40 headings. The 10 fields are designated as follows:

0—Sinuses, Mastoids, Bones of Face, Mandible.
I—Skull.
II—Spine.
III—Upper Extremity.
IV—Lower Extremity.
V—Thoracic Cage, Mediastinum, Soft Tissues of Neck, Cardiovascular System.
VI—Lungs and Pleura.
VII—Intrathoracic Tuberculosis.
VIII—Gastrointestinal.
IX—Genitourinary Tract.

"After roentgenograms on each patient referred to the X-ray Department are interpreted, the diagnostic statements used are translated into code according to the cataloguing plan. One punch card for each field used is prepared daily in the record division of the hospital, carrying not only the coded diagnostic information but necessary identifying information regarding the patient. These cards are presorted and filed by fields. At the end of each calendar year machine sorting is used to arrange the cards in detailed order within the field, following which pertinent information is transferred to readable form by printing machines, and the annual yield of the department is bound in four volumes."

greatly to recapture those experiences that are encountered in the course of radiological practice.

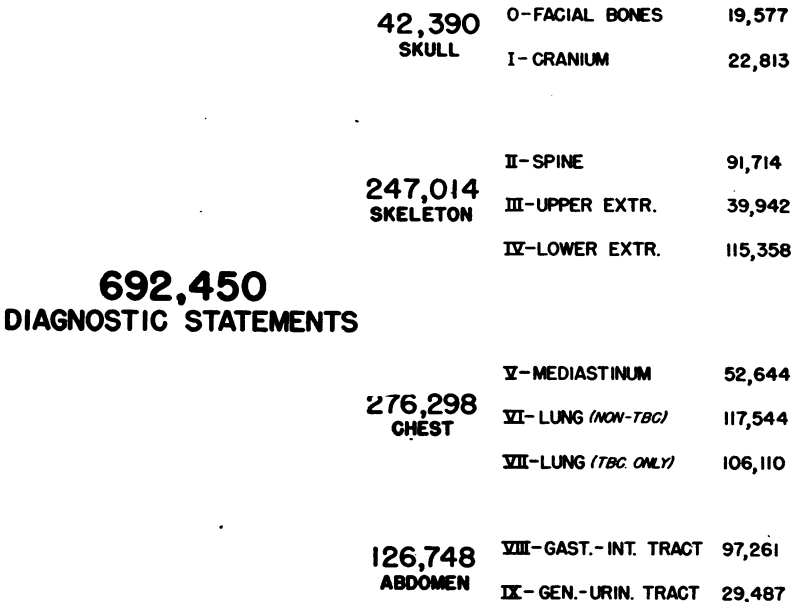

FIGURE 2

All statements to be catalogued are distributively filed in ten diagnostic categories or "fields." The catalogue of diagnostic statements in the field of the gastrointestinal tract, as used at the University Hospital, is shown in figure 3 with figures to indicate the number of times each diagnostic statement was used during the single year 1941–42. At a glance, one can determine the number of times that a single codable statement has been used, and can calculate the number of patients to whom that particular statement applies. Punch cards filed in this particular category can be utilized in sorting machines to segregate all entries under any one of 40 separate varieties. For example, the total experience of the department with such entities as gastric ulcers, biliary calculi, colonic neoplasms, etc , can be scrutinized with great speed and accuracy.

To eliminate unrewarding repetition, to save time and effort, and to avoid the necessity of providing increasing storage space for accumulating cards, the content of the X-ray diagnostic catalogue is sorted by fields and by individual entries at the completion of each year of operation. With a mechanical tabulating machine, the catalogued material is printed, 50 entries to a page, and bound into 4 volumes, 1 each for skull, skeleton, chest, and the gastrointestinal and genitourinary tracts.

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN

GASTRO-INTESTINAL TRACT FINDINGS 1941–1942

DIAGNOSIS	REPORTS	PATIENTS
NORMAL UPPER G.I.	2120	2081
ESOPHAGUS		
Intrinsic lesion	12	11
Cardiospasm	32	30
Diverticulum	34	32
Neoplasm	31	29
Foreign body	14	12
EXCEPT AS ABOVE	52	47
STOMACH AND SMALL BOWEL		
Intrinsic lesion	39	37
Diverticulum:	129	124
Diaphragmatic hernia	69	63
Ulcer: gastric	109	81
" : duodenal	487	397
" : other than above	30	28
Neoplasm:	139	132
Obstruction,	130	118
EXCEPT AS ABOVE	245	227
BILIARY TRACT		
Cholecystogram, normal	1638	1610
" , faint	258	256
" , non viz.	612	571
Biliary stone	255	229
Abnormal liver shadow	58	55
EXCEPT AS ABOVE	137	115
COLON		
NORMAL COLON	2027	2000
Intrinsic lesion	50	45
Diverticulosis	189	185
Colitis: ulcerative	60	47
Neoplasm	85	79
EXCEPT AS ABOVE	191	192
ABDOMEN GENERALLY		
NORMAL SCOUT FILM	184	175
Calcification abdomen	165	161
Extra-alimentary mass	140	129
Intestinal obstruction	123	87
Fistula	38	33
Subphrenic abscess; free air	68	44
EXCEPT AS ABOVE	233	191
POST-OPERATIVE	211	165
SINUS TRACT INJECTION	31	26
DEVELOPMENTAL IRREGULARITY	17	15
DIAGNOSIS INDETERMINATE	346	317
SPECIAL INTEREST	137	124
TOTAL ALL DIAGNOSIS	10,925	10,290

FIGURE 3

Figure 4 represents the significant entries for the single year 1938–39 from the gastrointestinal and genitourinary volume on the page which is devoted solely to the particular item—"Ulcers other than gastric and duodenal." This entry has been selected for purposes of illustration because, during the course of an entire year's work, findings such as these are so uncommon that no more than one page of space is required. It will be perceived that, except for entries which indicate the significance of various columns, all information that is presented on the page has been reduced to numerical code. Although this diagnostic item has been listed 32 times, "ulcers other than gastric and duodenal" have been reported in only 23 patients. In the listing of reexaminations, of which there have been several, registration numbers, age, sex, and referring service have been omitted. Since all films in the record of a given patient, without consideration of date, size, or type of film, are stored in a single portfolio that bears the person's name and permanent registration number, original film data is easily available according to patient number. To that end, the listings in the bound volumes follow the numerical sequence of registration numbers, because films are stored in similar sequence

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN

"ULCER, OTHER THAN GASTRIC OR DUODENAL" 1938-'39

DATE	SERVICE	SEX	AGE	PATIENT NUMBER
10-21-38	9	1	39	141005*
1- 3-39				
11-14-38				
8-28-38	16	1	52	158359*
3-14-39	16	1	41	169868
3- 7-39				
1-11-39	16	1	46	244617
10-13-38	16	1	68	324381*
10-26-38	9	1	66	329640
11- 7-38				
9-15-38				
9-13-38				
11-26-38	16	2	56	341561
1-19-39	16	1	69	372129
6- 7-39	9	1	47	388265*
11-14-38	4	1	49	424795
7-25-38	9	1	56	427448*
1- 6-39	9	1	41	431426*
10-25-38				
10- 7-38				
10- 3-38	9	2	50	431509
10-20-38	16	1	59	432608
11-21-38	9	1	40	434244
2-14-39				
11-23-38	9	2	65	434388
12-15-38	16	1	42	435018
1- 4-39	16	1	55	436176
1-13-39	16	2	52	436655
1-31-39	9	1	54	437403*
1-31-39	9	1	45	437574*
2-13-39	2	2	44	438003
4- 5-39	9	1	42	441046*
32 Reports				23 Patients

FIGURE 4.

rather than by date or by alphabetical arrangement. Examination of the material printed in the annual index volumes provides one with considerable information and does not necessitate withdrawal of portfolios from files or reference to medical histories. It will be observed that in the instances of 9 of the 23 patients, listed under the particular diagnostic statement under consideration, an asterisk follows the entry. This indicates that the material in the patient's

record is of "Special Interest." Such entries are frequent, as one might expect, for those patients who, after surgical procedures, exhibit X-ray evidence of marginal and jejunal ulcers.

Another excerpt from one of the bound index volumes is reproduced in figure 5. Herein are represented the catalogued entries which

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN

"Aneurysm – Aorta, Innominate, Etc." 1939-'40

DATE	SERVICE	SEX	AGE	PATIENT NUMBER
11-15-29	22	1	42	289228
4-18-40	9	1	67	395348*
3-14-40	9	1	47	403536*
5-16-40	9	1	62	431243
8- 9-39	4	1	49	441160
7-18-39	29	1	46	446143
7-31-39	5	1	48	447571
1- 8-40	9	2	60	448115*
9-14-39				
9-19-39				
8-23-39	22	1	50	448734
10- 9-39	4	1	49	451123
12- 1-39	9	1	55	453374
2-13-40	9	1	65	456461
2- 7-40				
2- 8-40				
3- 1-40	4	1	47	457472
3-18-40	6	1	75	458149
5-10-40	9	1	52	460631
5- 7-40				
5- 9-40	9	1	62	460841
5- 8-40				
5-23-40	9	1	52	461600
23 Reports				17 Patients

FIGURE 5

concern the observed evidences of aneurysms as presented in the chest volume for the year 1939–40.

Figure 6 reproduces the index page from the skull volume for 1936–37 and presents entries of observed indications of deformity or displacement of the ventricular system. One should appreciate that each entry refers to a different patient number. This is not difficult to understand since, once observed, it is scarcely good practice to repeat the diagnostic procedure of encephalalography or ventriculography.

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN

"DISPLACEMENT OR DEFORMITY OF VENTRICULAR SYSTEM" 1936-'37

DATE	SERVICE	SEX	AGE	PATIENT NUMBER
5-12-37	22	1	27	242689
7- 8-36	16	2	17	301965
12-14-36	10	1	48	341987*
11- 9-36	10	2	30	343622
10- 6-36	10	1	42	364159
4-23-37	10	1	14	373231*
8-24-36	10	2	21	383766
9-26-36	22	2	59	384766
9-28-36	10	2	29	389672
4-19-37	10	1	58	390817
11-20-36	10	2	15	392426*
5-28-37	22	1	41	394546
2-11-37	10	1	10	395962
2- 1-37	22	1	20	396369*
2-24-37	22	2	27	397463
5-27-37	22	2	8	402272
6-26-37	16	1	57	404262
17 Reports				**17 Patients**

FIGURE 6

The utility of the Special Interest category is indicated in figure 7, wherein, for the year 1941–42 all conditions that involve skeletal parts of the upper extremity have been listed by the tabulating machine. In only one instance is it found that repeated examinations have been listed. This single occurrence is a consequence of the unusual nature of the findings and of the fact that they were observed over a period of two calendar years. This patient suffered from blastomycosis that involved the lung and a number of bones throughout the body. By utilizing the Special Interest pages of the index volumes, one can find, quickly and surely, diagnostic material of great instructional value.

Because Special Interest material is so extensively used in teaching medical students and is closely investigated by advanced students engaged in postgraduate radiology, the typists who transcribe current X-ray reports are instructed to prepare an extra carbon copy when the Special Interest category is specified in coding. Such material depicts the radiologist's reasons for Special Interest listing, and it is bound in semiannual volumes, with typewritten indices for each month.

Figure 8 presents an excerpt from the index of bound Special

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN

"SPECIAL INTEREST – Skeleton, Upper Extremity" 1941-'42

DATE	SERVICE	SEX	AGE	PATIENT NUMBER
8-27-41	2	1	68	302045*
7-30-41	16	1	18	309450*
6-25-42	32	1	67	434329*
6-11-42	15	2	13	469110*
7- 8-41	15	1	8	484613*
9-19-41	2	1	15	486435*
11-10-41	16	2	47	486443*
12- 2-41	6	1	62	486558*
5-13-42	9	2	32	487498*
1-13-42				
10-28-41				
9-27-41				
8-27-41				
10- 9-41	32	1	50	491097*
11-13-41	14	1	15	493207*
12- 1-41	15	1	6	494026*
1-20-42	2	1	30	496686*
2-28-42	15	1	1	499336*
4-13-42	15	1	1	501928*
4-27-42	9	1	69	503007*
6- 2-42	6	1	20	503173*
5- 8-42	13	2	25	503528*
6-11-42	15	1	6	505939*
23 Reports				**19 Patients**

FIGURE 7

Interest Reports (volume for January–December 1942). Carbon copies of the original X-ray reports follow the index in numerical sequence for the month in question. Easy access to the patient's clinical record as well as to his X-ray portfolio is afforded by the inclusion of name and number. Since this material is accumulated currently in looseleaf form and is bound at shorter intervals than is the detailed index, the simple device of including the diagnostic field enables one to select, without delay, Special Interest material on related subjects. If one is fortunate enough to have freely available tabulating facilities at all times, it is possible to withdraw detailed material from the index punch cards at any time and for any period within the current year. In actual practice, however, there is rarely real need for such a high degree of accessibility.

We have found, over the years, that the profitable yield from the plan of cataloguing daily all radiological diagnostic material has

CATALOGUED RADIOLOGICAL EXPERIENCES
UNIVERSITY OF MICHIGAN

Excerpts From Index of Bound "SPECIAL INTEREST" Reports
(Volume for Jan-Dec, 1942)

PATIENT NUMBER	NAME	FIELD	REASON FOR SELECTION
416518	Brindley	VIII	Neoplastic Mass in rectum—seen in double contrast only.
433772	Simon	III	Calcification, supraspinatus tendon.
440859	Leonard	VIII	Disappearance of findings interpreted as gastric neoplasm three years ago.
477940	Gunn	VIII	Good example of purposeful diaphragmatic herniation following resection of esophageal carcinoma.
487498	Nachtweich	I, III, IV, VI	Virtual complete healing of 17 scattered blastomycotic bone lesions.
496621	Cramer	III, IV	Hyperparathyroidism. Recalcification after excision of parathyroid tumor.
509530	Briggs	I	Internal Carotid arteriogram, normal.
510418	Kanouse	V	Calcification, cardiac valves.

FIGURE 8

justified the required time and effort. Indeed, it has far exceeded our expectations. Conceived as a means of opening a great storehouse of experience to interested investigators, who would study various phases of diagnostic radiology as they are applied to sizeable patient groups, the scheme has exceeded our most fulsome anticipations. A number of clinical investigations that involved a great variety of subjects has been greatly facilitated and rendered practicable by means of the annual index volumes. Untold hours of searching and hand tabulating have been eliminated and final coverage of greater accuracy has been made possible in analyzing, for example, the efficacy of brain tumor localizing methods, the practical utility of cholecystography, or the results which follow thoracoplasty.

Daily cataloguing of X-ray observations and opinions exerts a beneficial effect upon the reporting habits of radiologists. Loose, meaningless comments, fraught with ambiguity, cannot be translated easily into code. Knowing that he must convert the sense of his ultimate impressions into an orderly system of rubrics, which, when decoded after sorting, will recapture the real meaning of his comments, the interpreter of radiological findings soon finds it expedient to pay attention to his diction, to phrase his statements of opinion and fact in terse meaningfull English, which will concur with the anatomical breakdown of the coding plan. On those occasions when it is necessary to catalogue any particular category as "Diagnosis Indeterminate," the radiologist is encouraged to advertise in his report this thoroughly honorable state of affairs and not to seek concealment behind equivocal or oblique language. However lengthy and involved such descriptions and discussions may be, they must necessarily reduce themselves, in "opinions" or "impressions," to clearly expressed statements which can be denominated in code.

Habitual cataloguing has greatly assisted and improved our teaching activities. The great diversity and complexity of material which must be presented to students in the field of diagnostic radiology become less imposing when separated into the 10 major compartments which have made our indexing plan workable. Within all fields, the tabulation of individual entries soon provides a clear picture of the actual practical importance of each. Exact information derived from experience tempers the natural urge to place excessive emphasis on spectacular matters rather than upon the basic, commonplace, and, therefore, the more important considerations which should be taught to undergraduate medical students. Postgraduate students are greatly assisted in obtaining source material for presentation at conferences and seminars, and they, too, profit by frequent reminders that only a small percentage of the clinical material examined may be expected to yield vivid findings.

We have learned to place little reliance upon memory in the need to recall serviceable incidents from our experiences. Too often our casual statements of supposed fact, which honestly we believed to be true, have failed even to approximate the true state of affairs as demonstrated by the diagnostic index. These experiences urge us to make increasing use of accumulated, recorded information. Reference to the printed index volumes often stimulates clinical investigations which are suggested by surprising incidence figures, or quickens a desire to learn to what extent diagnostic opinions have been true or erroneous.

Perhaps, above all, the indexing of radiological observations enables each member of a changing group of workers to acquire experience at an accelerated rate. At each meeting of our staff, case material is presented from files which would have been virtually inaccessible without the index volumes. At such times there are perceived those carefully selected examples of radiological expressions of disease, which, in the press of daily activities, have long been forgotten by most of us or may never have been seen by some of us. For the younger men in training, such reviews are invaluable, because the stored experiences of other men in other years greatly simplify recently acquired lessons in diagnosis.

The building of a significantly representative library of satisfactory teaching films has been greatly facilitated by the cataloging process. This library has been built according to the indexing plan, with each subdivision, spectacular and commonplace, represented in its true light. When it became obvious that the serious problem of finding adequate storage space for a constantly accumulating volume of films would require some solution other than the continuous enlargement of housing facilities, the plan of transferring antiquated, long untouched film records to microfilm was accepted. Before the original films which had been accorded the distinction of Special Interest were relinquished, they were transmitted on permanent loan to the film library. This very considerable mass of material is now being cataloged, again according to the basic plan, and will be reproduced separately and in the proper sequence of diagnostic fields, so that a greater volume of worth-while teaching material may be made available to students who, at their leisure, use reading machines.

What seems to be an uninteresting and tedious bookkeeping task, representing one more encumbrance to the busy life of a radiologist, is really a highly profitable activity, for which there is no substitute and which none of us can well afford to neglect.

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 JULY 12, 1947

Summary

A total of 124 cases of poliomyelitis was reported for the current week, as compared with 94 last week, 427 for the corresponding week last year, and a 5-year (1942–46) median of 297. Increases of more than 3 cases were recorded in only 4 States—Pennsylvania (from 1 last week to 7), Illinois (3 to 9), Missouri (1 to 5), and Georgia (2 to 6). A decline was reported in California (from 31 to 22). Only 6 other States reported more than 3 cases—New York 8, Texas 6, Ohio, Minnesota, and Nebraska 5 each, and Virginia and North Carolina 4 each. A total of 809 cases has been reported since March 15 (the approximate average date of seasonal low incidence), as compared with 2,123 for the corresponding period last year and a 5-year median of 1,324. States reporting more than 16 cases each since March 15 are as follows (figures for the corresponding period last year in parentheses): California 250 (174), New York 61 (95), Texas 53 (363), Illinois 36 (94), Nebraska 28 (18), Florida 26 (289), Ohio 23 (45), Washington 20 (30), Missouri 19 (42), Minnesota 17 (80), and Georgia 17 (40).

No case of smallpox was reported during the week. Of 92 cases of typhoid fever reported (last week 65), 16 occurred in Texas (last week 11), 8 in California (last week 3), and 7 in Georgia (last week 2). One case of psittacosis was reported, in Michigan, and 2 cases of rabies in man were reported in North Carolina.

Of a combined total of 666 cases of dysentery (last week 530), 431 occurred in Texas, 106 in Virginia, and 35 in South Carolina. Of a total of 163 cases of undulant fever, Iowa reported 41 and Illinois 19. The total for the year to date is 3,116, as compared with 2,637 for the same period last year. A total of 3,943 cases of whooping cough was reported, as compared with 3,194 last week.

Deaths recorded during the week in 93 large cities of the United States totaled 8,915, as compared with 8,053 last week, 8,770 and 8,157, respectively, for the corresponding weeks of 1946 and 1945, and a 3-year (1944–46) median of 8,770. The total for the year to date is 267,606, as compared with 265,179 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended July 12, 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
	July 12, 1947	July 13, 1946		July 12, 1947	July 13, 1946		July 12, 1947	July 13, 1946		July 12, 1947	July 13, 1946	
NEW ENGLAND												
Maine	0	2	0				10	99	36	0	0	1
New Hampshire	0	0	0				1	10	3	0	0	0
Vermont	0	0	0				37	101	37	0	0	0
Massachusetts	6	7	5				222	962	232	4	4	4
Rhode Island	0	0	0				20	51	38	0	0	1
Connecticut	0	0	1	1	1	1	217	138	66	1	1	2
MIDDLE ATLANTIC												
New York	14	15	8	[1] 2		[1] 1	566	1,149	485	6	10	18
New Jersey	0	2	3	2	2	2	287	710	170	4	6	6
Pennsylvania	14	9	9	(2)	[2] 1	(2)	72	386	181	3	8	8
EAST NORTH CENTRAL												
Ohio	4	12	5	2	1	2	236	354	64	2	2	7
Indiana	3	1	3	3		3	74	33	18	[5] 2	5	3
Illinois	3	7	7	2	2	2	222	110	110	5	6	6
Michigan [3]	4	4	4	1	7	1	153	230	195	0	5	8
Wisconsin	1	1	2	1	18	10	365	560	352	2	0	3
WEST NORTH CENTRAL												
Minnesota	4	2	1				127	21	52	0	3	3
Iowa	5	4	1				77	43	39	0	2	2
Missouri	0	1	1	2	1	1	45	23	24	7	1	7
North Dakota	1	2	2				31	9	9	0	0	0
South Dakota	0	4	1				10	6	8	0	0	0
Nebraska	1	0	1	1		2	28	4	12	0	1	1
Kansas	6	9	2				14	23	27	0	2	2
SOUTH ATLANTIC												
Delaware	0	0	0				3	6	1	0	0	0
Maryland [3]	5	6	1		1	1	13	236	40	0	0	2
District of Columbia	0	1	1	1			7	51	24	0	1	1
Virginia	4	2	2	59	47	44	66	102	57	4	4	4
West Virginia	1	4	3	4			35	4	19	0	0	1
North Carolina	5	9	9				26	98	61	3	0	0
South Carolina	2	2	2	181	64	67	39	86	12	0	0	2
Georgia	0	4	4	4	4	4	60	34	20	3	1	1
Florida	3	6	4	12	7	4	10	14	14	1	1	3
EAST SOUTH CENTRAL												
Kentucky	0	5	4				1	7	10	0	1	4
Tennessee	8	7	3	5	11	5		20	15	1	0	2
Alabama	2	11	5	4	6	6	21	41	16	2	0	3
Mississippi [3]	2	3	4	1			4			1	3	3
WEST SOUTH CENTRAL												
Arkansas	2	2	4		9	9	26	11	12	0	2	2
Louisiana	2	5	3	2	6	4	7	10	10	1	2	3
Oklahoma	1	5	3	4	5	7	5	34	10	2	1	0
Texas	10	25	24	262	276	276	93	266	135	4	3	4
MOUNTAIN												
Montana	0	3	1				29	52	31	1	0	0
Idaho	0	0	0	7	4		3	11	[3]	0	0	0
Wyoming	1	0	0	4			2	3	9	0	0	0
Colorado	6	3	4	8	9	9	22	47	33	0	0	0
New Mexico	0	0	0				14	20	3	0	0	0
Arizona	0	0	2	1	6	14	4	30	15	0	0	0
Utah [3]	0	0	0				5	31	31	0	0	0
Nevada	0	0	0						5	0	0	0
PACIFIC												
Washington	7	4	3				5	16	74	0	0	2
Oregon	2	0	2	4		2	9	63	43	0	0	1
California	9	8	18	4	18	18	67	414	414	4	6	12
Total	138	197	182	584	506	506	3,390	6,729	3,255	63	81	128
28 weeks	6,435	8,825	6,628	300,450	189,238	78,995	176,379	626,672	523,593	[5] 2,223	4,110	5,656
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	138	197	182	333,425	551,486	114,857	199,266	652,796	561,606	[5] 3,195	5,614	8,108

[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.
[5] Delayed report: Meningitis, Indiana, week ended June 14, 2 cases, included in cumulative totals only.

Telegraphic morbidity reports from State health officers for the week ended July 12, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and para typhoid fever		
	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46
	July 12, 1947	July 13, 1946		July 12, 1947	July 13, 1946		July 12, 1947	July 13, 1946		July 12, 1947[6]	July 13, 1946	
NEW ENGLAND												
Maine	0	0	1	7	8	9	0	0	0	1	1	1
New Hampshire	0	4	0	1	6	3	0	0	0	1	0	0
Vermont	0	0	0	0	2	3	0	0	0	1	0	0
Massachusetts	3	0	2	25	43	84	0	0	0	2	5	3
Rhode Island	1	0	0	0	6	5	0	0	0	0	1	0
Connecticut	1	4	3	5	4	4	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	8	15	15	85	135	116	0	0	0	4	3	7
New Jersey	2	6	2	28	44	30	0	0	0	3	3	2
Pennsylvania	[7] 7	1	3	50	83	73	0	0	0	0	4	8
EAST NORTH CENTRAL												
Ohio	5	13	10	54	57	57	0	0	0	4	8	8
Indiana	2	3	3	12	10	14	0	3	1	1	14	7
Illinois	9	23	6	33	43	53	0	0	0	4	10	3
Michigan [5]	2	11	4	50	70	46	0	0	1	0	1	4
Wisconsin	0	4	1	18	19	34	0	0	0	3	2	2
WEST NORTH CENTRAL												
Minnesota	5	40	1	6	12	17	0	0	0	0	1	1
Iowa	2	8	2	17	8	9	0	0	0	0	0	1
Missouri	5	14	4	11	3	11	0	0	0	1	2	4
North Dakota	2	1	0	1	2	3	0	0	0	0	0	0
South Dakota	0	5	0	1	0	4	0	0	0	0	0	0
Nebraska	5	12	0	9	4	4	0	0	0	1	0	0
Kansas	0	18	5	6	11	14	0	0	0	0	0	1
SOUTH ATLANTIC												
Delaware	0	0	0	2	1	1	0	0	0	2	0	0
Maryland [5]	0	3	1	5	5	17	0	0	0	1	1	2
District of Columbia	0	1	1	3	2	7	0	0	0	0	0	1
Virginia	4	3	3	8	22	11	0	0	0	2	1	6
West Virginia	1	1	1	12	6	9	0	0	0	4	0	4
North Carolina	3	1	1	16	16	16	0	0	0	3	2	5
South Carolina	2	3	3	3	1	2	0	0	0	1	4	6
Georgia	6	2	2	4	8	7	0	0	0	7	4	6
Florida	3	24	2	3	2	2	0	0	0	1	1	4
EAST SOUTH CENTRAL												
Kentucky	2	5	5	10	6	7	0	1	0	3	3	7
Tennessee	0	1	5	6	6	12	0	0	0	2	6	6
Alabama	0	14	6	1	5	8	0	0	0	4	0	7
Mississippi [5]	0	6	2	0	4	3	0	0	0	2	5	5
WEST SOUTH CENTRAL												
Arkansas	2	20	7	1	6	6	0	2	1	1	9	9
Louisiana	1	18	1	1	4	4	0	0	0	1	5	6
Oklahoma	1	15	8	4	2	3	0	0	0	5	4	4
Texas	6	54	45	18	33	26	0	0	0	16	28	25
MOUNTAIN												
Montana	0	6	0	3	1	5	0	0	0	0	1	0
Idaho	2	0	0	0	5	2	0	0	0	1	2	1
Wyoming	2	0	0	1	6	5	0	0	0	0	0	0
Colorado	2	31	1	11	36	21	0	0	0	0	0	0
New Mexico	0	1	1	3	7	3	0	0	0	0	0	0
Arizona	1	1	0	0	8	5	0	0	0	0	1	1
Utah [5]	1	0	0	2	4	6	0	0	0	1	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	3	5	2	15	15	15	0	0	0	1	1	0
Oregon	1	5	2	6	5	9	0	0	0	0	0	0
California	22	25	22	47	69	69	0	0	0	8	1	3
Total	124	427	297	604	855	855	0	6	6	92	134	148
28 weeks	[7] 1,420	2,590	1,679	60,176	83,792	93,978	141	264	278	1,604	1,821	2,160
Seasonal low week [4]	(11th) Mar. 15–21			(32nd) Aug. 9–15			(35th) Aug. 30–Sept. 5			(11th) Mar. 15–21		
Total since low	[7] 809	2,123	1,324	86,862	122,363	132,299	195	340	395	1,119	1,346	1,575

[5] Period ended earlier than Saturday.
[4] Dates between which the approximate low week ends. The specific date will vary from year to year.
[6] Including paratyphoid fever reported separately, as follows: Massachusetts 2 (salmonella infection); New Jersey 1; Nebraska 1; Delaware 1; Maryland 1; South Carolina 1; Florida 1; Oklahoma 1; Texas 2; California 2.
[7] Delayed report: Poliomyelitis, Pennsylvania, week ended June 28, 2 cases, included in cumulative totals only.

Telegraphic morbidity reports from State health officers for the week ended July 12, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Whooping cough			Week ended July 12, 1947							
	Week ended—		Median 1942–46	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	July 12, 1947	July 13, 1946		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	34	6	21	-----	-----	-----	-----	-----	-----	-----	2
New Hampshire	4	2	3	-----	-----	-----	-----	-----	-----	-----	-----
Vermont	17	19	27	-----	-----	-----	-----	-----	-----	-----	4
Massachusetts	150	104	104	-----	10	-----	-----	-----	-----	-----	2
Rhode Island	8	29	19	-----	-----	-----	-----	-----	-----	-----	-----
Connecticut	46	30	30	-----	-----	-----	-----	-----	-----	-----	8
MIDDLE ATLANTIC											
New York	228	124	236	8	2	-----	2	1	-----	-----	7
New Jersey	261	150	221	1	-----	-----	-----	2	-----	-----	1
Pennsylvania	209	84	235	-----	15	-----	-----	3	-----	-----	6
EAST NORTH CENTRAL											
Ohio	191	79	155	-----	-----	-----	-----	2	-----	-----	5
Indiana	45	29	46	-----	-----	-----	-----	-----	1	-----	[9] 1
Illinois	134	141	141	4	-----	-----	4	-----	3	-----	19
Michigan [3]	264	148	148	1	1	-----	1	-----	-----	-----	10
Wisconsin	151	149	149	-----	-----	-----	-----	-----	-----	-----	6
WEST NORTH CENTRAL											
Minnesota	50	10	20	-----	-----	-----	-----	-----	-----	-----	9
Iowa	[8] 29	28	28	-----	-----	-----	-----	-----	-----	-----	41
Missouri	51	15	23	-----	-----	-----	-----	1	1	-----	-----
North Dakota	10	2	2	-----	-----	9	-----	-----	-----	-----	1
South Dakota	2	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
Nebraska	37	3	24	-----	-----	-----	-----	-----	-----	-----	-----
Kansas	68	27	48	-----	-----	-----	-----	-----	-----	-----	4
SOUTH ATLANTIC											
Delaware	1	8	2	-----	-----	-----	-----	-----	-----	-----	-----
Maryland [3]	90	41	70	-----	-----	-----	-----	-----	-----	-----	-----
District of Columbia	28	21	15	-----	-----	-----	-----	1	-----	-----	-----
Virginia	277	117	115	-----	-----	106	1	8	1	-----	2
West Virginia	16	21	35	-----	-----	-----	-----	1	-----	-----	-----
North Carolina	82	134	207	1	-----	-----	-----	2	2	3	1
South Carolina	172	36	66	1	34	-----	-----	-----	1	[8] 2	-----
Georgia	78	20	20	-----	1	-----	-----	-----	2	12	6
Florida	77	33	29	3	-----	-----	-----	-----	-----	3	1
EAST SOUTH CENTRAL											
Kentucky	28	15	25	1	-----	-----	-----	1	-----	-----	-----
Tennessee	27	49	45	-----	-----	1	-----	-----	-----	-----	1
Alabama	63	22	31	1	-----	-----	-----	1	-----	1	2
Mississippi [3]	11	-----	-----	2	1	-----	-----	-----	3	-----	1
WEST SOUTH CENTRAL											
Arkansas	42	11	20	8	1	1	-----	-----	7	-----	3
Louisiana	8	1	1	4	-----	-----	-----	-----	3	2	1
Oklahoma	54	21	21	3	1	-----	-----	-----	2	-----	2
Texas	544	224	253	12	386	33	-----	1	2	16	9
MOUNTAIN											
Montana	11	1	14	-----	-----	-----	-----	-----	1	-----	-----
Idaho	8	4	4	-----	-----	-----	-----	2	1	-----	-----
Wyoming	8	9	4	-----	-----	-----	-----	-----	1	-----	-----
Colorado	64	29	35	-----	-----	-----	-----	-----	1	-----	4
New Mexico	46	11	10	-----	-----	1	1	-----	-----	-----	-----
Arizona	17	14	14	-----	-----	9	-----	-----	-----	-----	-----
Utah [3]	24	18	35	-----	-----	-----	-----	-----	1	-----	1
Nevada	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
PACIFIC											
Washington	30	20	20	-----	-----	-----	-----	-----	-----	-----	2
Oregon	20	46	27	-----	-----	-----	1	-----	-----	-----	-----
California	128	71	190	2	2	-----	4	-----	-----	1	1
Total	3,943	2,176	2,923	52	454	160	14	26	33	40	163
Same week, 1946	2,176	-----	-----	65	375	102	17	28	28	129	129
Median, 1942–46	2,923	-----	-----	43	599	358	13	28	19	124	[9] 113
28 weeks: 1947	[8] 84,800	-----	-----	1,567	8,713	5,625	191	219	830	[8] 1,039	[8] 3,116
1946	53,039	-----	-----	1,220	9,902	3,524	260	220	531	1,535	2,637
Median, 1942–46	70,366	-----	-----	934	9,902	3,524	260	221	518	1,535	[9] 2,622

[3] Period ended earlier than Saturday.

[8] Delayed reports: Whooping cough, Iowa, week ended June 21, 15 cases (included in cumulative total since June 28); undulant fever, Indiana, week ended June 14, 5 cases; typhus fever, South Carolina, week ended June 21, 1 case (instead of 2).

[9] 2-year average, 1945–46.

Psittacosis: Michigan, 1 case.

Alaska, week ended July 12: Typhoid fever 3; influenza 5; lobar pneumonia 5; chickenpox 1; German measles 2; diarrhea, unspecified 1.

Territory of Hawaii, week ended July 12: Influenza 3; measles 1; leprosy 2; poliomyelitis 1; scarlet fever 1; endemic typhus fever 4; whooping cough 4.

WEEKLY REPORTS FROM CITIES [1]

City reports for week ended July 5, 1947

This table lists the reports from 87 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	------	0	1	1	0	0	1	0	0	2
New Hampshire:												
Concord	0	0	------	0	------	0	0	0	0	0	0	------
Vermont:												
Barre	0	0	------	0	3	0	0	0	0	0	0	------
Massachusetts:												
Boston	7	0	------	0	46	1	10	3	6	0	1	29
Fall River	0	0	------	0	15	0	0	0	0	0	0	2
Springfield	0	0	1	0	1	0	1	0	1	0	0	------
Worcester	0	0	------	0	9	0	4	1	0	0	0	3
Rhode Island:												
Providence	1	0	------	0	16	0	1	1	1	0	0	2
Connecticut:												
Bridgeport	0	0	------	0	2	0	0	0	0	0	0	------
Hartford	0	0	1	0	22	0	0	0	0	0	0	5
New Haven	0	0	------	0	11	0	0	0	1	0	0	8
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	------	0	3	0	2	0	0	3
New York	11	0	6	0	233	4	47	4	36	0	0	52
Rochester	0	0	------	0	------	0	1	4	1	0	0	8
Syracuse	0	0	------	0	------	0	1	0	2	0	0	17
New Jersey:												
Newark	0	0	1	0	10	0	3	0	5	0	0	28
Trenton	0	0	------	0	1	0	0	0	0	0	0	1
Pennsylvania:												
Philadelphia	2	0	------	0	7	1	13	0	21	0	0	37
Pittsburgh	0	0	------	0	5	0	4	1	13	0	0	54
Reading	0	0	------	0	------	0	3	0	1	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	1	0	------	0	------	0	2	0	2	0	0	2
Cleveland	1	0	------	0	56	2	4	2	12	0	0	78
Columbus	1	0	------	0	44	0	1	0	4	0	0	7
Indiana:												
Fort Wayne	0	0	------	0	2	0	0	0	0	0	0	5
Indianapolis	1	0	------	0	1	0	2	0	5	0	1	5
South Bend	0	0	------	0	------	0	0	0	0	0	0	2
Terre Haute	0	0	------	0	------	0	0	0	0	0	0	------
Illinois:												
Chicago	0	0	------	0	55	2	18	0	21	0	0	33
Springfield	1	0	------	0	------	0	3	0	0	0	0	2
Michigan:												
Detroit	2	0	------	0	7	0	8	0	13	0	0	71
Flint	0	0	------	0	1	0	3	0	0	0	0	------
Grand Rapids	0	0	------	0	4	0	1	0	1	0	0	17
Wisconsin:												
Kenosha	0	0	------	0	6	0	0	0	0	0	0	1
Milwaukee	0	0	------	0	17	0	2	0	5	0	0	14
Racine	0	0	------	0	2	0	0	0	4	0	0	10
Superior	0	0	------	0	------	0	0	0	0	0	0	------
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	------	0	0	1	0	0	0	3
Minneapolis	0	0	------	0	30	0	5	0	3	0	0	5
St. Paul	0	0	------	0	78	0	1	0	1	0	0	23
Missouri:												
Kansas City	0	0	------	0	------	0	2	0	2	0	0	15
St. Joseph	0	0	------	0	------	0	0	0	0	0	0	8
St. Louis	0	1	------	0	30	3	12	0	3	0	1	26

[1] In some instances the figures include nonresident cases.

City reports for week ended July 5, 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	9	0	0	0	0	0	0	5
Nebraska:												
Omaha	1	0	------	0	------	0	1	0	0	0	0	------
Kansas:												
Topeka	0	0	------	0	------	0	0	0	1	0	0	2
Wichita	0	0	------	0	1	0	4	0	0	0	0	7
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	------	0	0	0	0	0	0	1
Maryland:												
Baltimore	1	0	3	0	7	0	7	0	6	0	0	90
Frederick	0	0	------	0	------	0	0	0	0	0	0	------
District of Columbia:												
Washington	0	0	------	0	4	0	4	0	2	0	0	8
Virginia:												
Lynchburg	0	0	------	0	1	0	1	0	0	0	0	------
Richmond	0	0	------	0	6	0	3	0	1	0	0	1
Roanoke	0	0	------	0	3	0	0	0	0	0	0	------
West Virginia:												
Charleston	0	0	------	0	------	0	0	0	0	0	0	------
North Carolina:												
Raleigh	0	0	------	0	------	0	0	0	0	0	0	2
Winston-Salem	0	0	------	0	1	0	3	0	1	0	0	2
South Carolina:												
Charleston	0	0	------	0	2	0	0	0	0	0	0	1
Georgia:												
Atlanta	0	0	------	0	------	0	2	0	2	0	0	5
Brunswick	0	0	------	0	------	0	0	0	0	0	0	------
Savannah	0	0	------	0	------	0	0	0	1	0	0	3
Florida:												
Tampa	0	0	------	0	1	1	5	0	2	0	0	6
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	1	0	5	0	0	0	1	9
Nashville	0	0	------	0	------	0	0	0	0	0	0	4
Alabama:												
Birmingham	0	0	------	0	6	2	1	0	0	0	0	1
Mobile	0	0	------	3	------	0	0	0	0	0	0	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------		------	0	0	0	0	0	0	3
Louisiana:												
New Orleans	1	0	------	0	5	0	1	0	1	0	1	3
Shreveport	0	0	------	0	------	0	3	0	0	0	0	------
Oklahoma:												
Oklahoma City	0	0	------	0	------	1	0	1	0	0	0	1
Texas:												
Dallas	0	0	------	1	20	0	1	1	2	0	2	5
Galveston	0	0	------	0	------	0	1	0	0	0	0	------
Houston	3	0	------	0	------	0	3	1	1	0	0	4
San Antonio	0	0	------	0	1	0	3	0	0	0	0	7
MOUNTAIN												
Montana:												
Billings	0	0	------	0	3	0	0	0	0	0	0	------
Great Falls	0	0	------	0	4	0	0	0	0	0	0	3
Helena	0	0	------	0	1	0	0	0	0	0	0	1
Missoula	0	0	------	0	------	0	1	0	0	0	0	------
Idaho:												
Boise	0	0	------	0	------	0	0	0	0	0	0	------
Colorado:												
Denver	6	0	------	0	1	0	3	0	6	0	1	6
Pueblo	0	0	------	0	3	0	1	0	0	0	0	2
Utah:												
Salt Lake City	0	0	------	0	1	0	1	0	2	0	0	2

City reports for week ended July 5, 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								
PACIFIC												
Washington:												
Seattle	0	0	------	0	3	0	3	0	4	0	0	3
Spokane	0	0	------	0	-------	0	0	0	0	0	1	11
Tacoma	0	0	------	0	-------	0	0	0	0	0	0	1
California:												
Los Angeles	1	0	------	0	19	1	2	8	6	0	0	23
Sacramento	0	0	------	0	-------	1	3	0	1	0	0	1
San Francisco	3	0	2	0	24	0	4	2	1	0	1	2
Total	44	1	14	4	342	19	221	30	207	0	10	804
Corresponding week, 1946*	36	------	20	6	1,547	------	186	------	238	0	21	402
Average 1942–46*	47	------	22	[2] 7	[3] 1,593	------	[2] 231	------	370	0	21	877

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

Dysentery, amebic.—Cases: New York 4; Detroit 1; Baltimore 1; Richmond 1; New Orleans 2.
Dysentery, bacillary.—Cases: Providence 1; Charleston, S. C., 3; San Antonio 2; Sacramento 1.
Dysentery, unspecified.—Cases: Baltimore 1; Houston 1; San Antonio 13.
Rocky Mt. spotted fever.—Cases: Kansas City 1; Washington, D. C., 1.
Tularemia.—Cases: New Orleans 1.
Typhus fever, endemic.—Cases: New York 1; Mobile 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 87 cities in the preceding table (latest available estimated population, 34,374,700)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		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
			Case rates	Death rates								
New England	20.9	0.0	5.2	0.0	329	5.2	41.8	13.1	26	0.0	2.6	133
Middle Atlantic	6.1	0.0	3.3	0.0	120	2.3	35.1	4.2	38	0.0	0.0	94
East North Central	4.3	0.0	0.0	0.0	119	2.4	26.8	1.2	41	0.0	0.6	150
West North Central	2.0	2.0	0.0	0.0	294	6.0	49.7	2.0	20	0.0	2.0	187
South Atlantic	1.7	0.0	5.1	0.0	43	0.0	42.7	0.0	26	0.0	0.0	203
East South Central	0.0	0.0	0.0	17.7	41	11.8	35.4	0.0	0	0.0	5.9	83
West South Central	10.2	0.0	0.0	2.5	66	2.5	30.5	7.6	10	0.0	7.6	58
Mountain	47.7	0.0	0.0	0.0	103	0.0	47.7	0.0	64	0.0	7.9	111
Pacific	6.3	0.0	3.2	0.0	73	3.2	19.0	15.8	19.	0.0	3.2	65
Total	6.7	0.2	2.1	0.6	128	2.9	33.6	4.6	32	0.0	1.5	122

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended June 21, 1947.—During the week ended June 21, 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		43	1	172	287	76	73	76	125	853
Diphtheria			1	13	7	1		2		24
Dysentery:										
Amebic					1					1
Bacillary				6	1	1				8
German measles				10	33		9	12	4	68
Influenza		42			7	2			12	63
Measles		6		100	240	80	40	63	73	602
Meningitis, meningococcus		1	1		3		2	1		8
Mumps		61		20	399	22	37	22	63	624
Poliomyelitis	1							2	3	6
Scarlet fever		6	15	31	63	5	2	3	11	136
Tuberculosis (all forms)		8	14	108	31	20	10	11	31	233
Typhoid and paratyphoid fever			1	6						7
Undulant fever				6	2					8
Venereal diseases:										
Gonorrhea	2	17	9	99	88	37	26	54	91	423
Syphilis		13	7	68	64	18	2	11	41	224
Other forms									5	5
Whooping cough			2	5	55	14	5	21	52	154

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

India—Calcutta.—For the week ended June 28, 1947, 152 cases of cholera with 43 deaths were reported in Calcutta, India.

Siam (Thailand).—For the week ended June 7, 1947, 75 cases of cholera with 54 deaths were reported in Siam (Thailand).

Plague

China.—Plague has been reported in China as follows: Chekiang Province—Wenchow, May 11–20, 1947, 11 cases; Fukien Province—Amoy, June 1–10, 1947, 5 cases.

Smallpox

Egypt—Port Said.—For the week ended July 5, 1947, 1 case of smallpox was reported in Port Said, Egypt.

Great Britain—England.—For the week ended July 5, 1947, 1 case of smallpox was reported in Barnsley and 1 case in Bilston, England.

Mexico—Toluca.—For the week ended June 28, 1947, an outbreak of smallpox occurred in Toluca, Mexico, where 55 cases were reported.

Typhus Fever

Tunisia.—For the period June 21–30, 1947, 71 cases of typhus fever were reported in Tunisia.

Yellow Fever

Colombia.—Yellow fever has been reported in Colombia as follows: Boyaca Department—Vasquez Territory—Chanares, May 21, 1947, 1 death; Santander Department—Municipality of Velez—Jordan, June 1–15, 1947, 1 death.

Gold Coast—Western Province—Bogosu.—On June 24, 1947, 1 fatal case of suspected yellow fever was reported in Bogosu, Western Province, Gold Coast.

DEATHS DURING WEEK ENDED JULY 5, 1947

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

	Week ended July 5, 1947	Corresponding week, 1946
Data for 93 large cities of the United States:		
Total deaths	8,053	7,884
Median for 3 prior years	7,884	
Total deaths, first 27 weeks of year	258,684	256,409
Deaths under 1 year of age	627	626
Median for 3 prior years	658	
Deaths under 1 year of age, first 27 weeks of year	20,630	16,695
Data from industrial insurance companies:		
Policies in force	67,256,797	67,211,715
Number of death claims	9,442	9,665
Death claims per 1,000 policies in force, annual rate	7.3	7.5
Death claims per 1,000 policies, first 27 weeks of year, annual rate	9.7	10.2

SMALLPOX IMMUNIZATION REQUIREMENT OF HAITI

The following notice appeared in the April 1947 issue of the Monthly Epidemiological Report published by the Pan American Sanitary Bureau:

> "*Haiti.*—The Haitian Department of Public Health is also requiring a certificate of smallpox vaccination from visitors to the country, as a provisional precautionary measure."