Public Health Reports

Vol. 57 • MAY 1, 1942 • *No. 18*

THE STORY OF THE NATIONAL LEPROSARIUM (U. S. MARINE HOSPITAL), CARVILLE, LOUISIANA

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INTRODUCTION

Leprosy is one of the oldest diseases of the human race, its origin lost in antiquity. Yet for centuries it has been one of the most misunderstood and dreaded diseases of mankind. Any person who became afflicted with leprosy was condemned to a hopeless life of isolation. Even to the present day an unjustified fear of leprosy lingers among the general public.

But there is no cause for this leprophobia. The fact is that leprosy is an infectious, moderately contagious disease, which is transmitted from the sick to the well in some uncertain manner. It is not so contagious as tuberculosis, yet few people fear contact with a tuberculous person. The danger of exposure to leprosy is slight and not sufficient to warrant the widespread terror of earlier times.

It is noteworthy that leprosy is most feared in countries where the disease is scarce and the danger of contagion relatively insignificant, whereas in certain tropical countries where leprosy is most prevalent and the risk of contagion greatest, it is generally regarded with indifference by the natives. This illustrates the adage that familiarity breeds contempt, for in such countries those afflicted with leprosy are seldom prevented from mingling with the public.

Although there is little danger of contracting leprosy in most civilized nations, where it is a rare disease, it must be admitted that the only sure means of eradicating leprosy from any land is segregation. Segregation today does not involve the hardships of former times. The modern leprosarium is a humane institution where every effort not inconsistent with treatment or incompatible with public safety is made to permit the leading of a normal life. Within the last generation, new approaches to the treatment of the disease have

offered a more hopeful outlook to the patients. An ever-increasing number of patients is being discharged from leprosariums as "arrested" and no longer a menace to the public.

Although leprosy is one of the oldest known diseases, it was not until 1873 that its causative agent, the "leprosy bacillus," was discovered by the Norwegian scientist, G. Armauer Hansen. Prior to that time, the disease had been confused with other conditions; now it can be identified more easily.

LEPROSY IN THE UNITED STATES

The origin and spread of leprosy in the United States is most interesting. Following its introduction from foreign lands, it generally did not spread, finding unfavorable soil in the native-born population of most localities. The State of New York is a good example of this relative immunity. Five or six cases of leprosy are encountered there annually. The Board of Health institutes a thorough investigation of each reported case. It has been found that, with possibly one or two exceptions, leprosy has never originated in New York State. Leprosy in New York and most other eastern States is an imported disease. In the majority of cases the infection has been traced to the West Indies, South America, the European nations bordering the Mediterranean, and other infected countries.

In the central and northern States only occasional cases of leprosy have been found, usually among immigrants. Minnesota, Iowa, and Wisconsin have been an exception to this rule. There leprosy was introduced by Norwegian and Swedish settlers in the middle of the 19th century. Altogether, between 160 and 200 Scandinavians afflicted with leprosy settled in these States, the largest number of them in Minnesota. Although no new cases of leprosy developed in the Scandinavian settlement during the first 50 years, seven cases occurred between 1895 and 1916, most of them in families of the imported cases. None have occurred since then, showing that although the disease spread temporarily in Minnesota and the neighboring States, it did not thrive there and soon was extinguished.

Leprosy is constantly being introduced into California and the other Pacific Coast States by Chinese immigrants, as well as by Filipinos and Hawaiians. Most of these immigrants are in the latent state of the disease upon entering the country, and leprosy may not manifest itself until years later. In the southern part of the State, the disease is introduced by Mexicans. So far, comparatively few native-born Californians have contracted leprosy in California. These number 14 or 15 cases among 194 patients admitted to the Carville leprosarium from that State.

Geographically, we recognize the Gulf Coast States as the most active focus of leprosy in the United States. Here, especially in

certain parts of Florida, Texas, and Louisiana, leprosy has become a public health problem.

The origin of leprosy in Florida can be traced to the early Spanish settlers and their imported African slaves. Romans's history of Florida, written in 1776, describes the existence of leprosy among the Negroes of that State. Since then, the disease has, no doubt, also been imported from Cuba and other islands of the West Indies. In certain parts of Florida, leprosy has become endemic and is being slowly transmitted from one generation to the next.

In Texas, leprosy has established a foothold, mostly along the Rio Grande. The early cases in this State came from Mexico, but today the disease is communicable on Texas soil. The records of the United States Marine Hospital at Carville indicate that 192 cases of leprosy were admitted from Texas and that there were 138 natives of that State admitted, most of whom were infected in Texas.

Today there is a greater incidence of leprosy per population in Louisiana than in any other State of the Union. Two possible sources of leprosy in Louisiana were considered by that eminent student of leprosy, Isadore Dyer. These were: importation from the West Indies, and origination among the Acadians, who came from Canada between 1756 and 1760. The former is the more probable source of the two.

THE LOUISIANA LEPER HOME

Although leprosy continued to spread in southern Louisiana, particularly among the Acadian descendants, it was not until 1894 that any constructive action was taken against the disease. In that year the State legislature passed an act creating a Board of Control, whose function was to provide a home for sufferers of leprosy. By the end of the year a temporary site had been leased for 5 years in Iberville Parish. This was the old Indian Camp plantation, about 80 miles up the Mississippi River from New Orleans.

On November 30, 1894, eight patients were transported from New Orleans by night on a coal barge towed by a tug. The next morning they arrived at their new home. About a year after the opening of the home, the Board of Control, realizing that the patients were not receiving sufficient attention, requested the Sisters of Charity to care for them. A contract was drawn up between the Community of Sisters and the State of Louisiana, whereby the Sisters assumed the gratuitous domestic charge and nursing care of the patients. Four Sisters volunteered their services and came to stay with the patients. The Sisters took up residence in the old colonial home of the abandoned plantation, while the patients were housed in the old slave cabins. This was a temporary arrangement while a site more convenient for administrative purposes was being sought nearer New Orleans.

In 1900 the State legislature appropriated a sum of money sufficient for the purchase of such a site and the building of a leprosarium. Unfortunately, misguided neighbors were so strongly opposed to this plan that, when the transfer of the patients was proposed, they burned the buildings.

Thereafter attempts to find a new location for the leprosarium were abandoned and, instead, new cottages, housing 10 patients each, were constructed on the plantation to replace the old slave shacks. Gradually, suitable housing to accommodate comfortably a hundred patients and a new building for use as a dining room and kitchen were provided. This was the condition of the efficiently functioning Louisiana Leper Home in 1920, when the Federal Government negotiated to take it over.

Many years previously the Federal health authorities had already become aware of the necessity for more stringent measures to check the progress of leprosy in the United States. A committee of experts testified before Congress that leprosy existed in practically every State of the Union, that the disease had been present for a number of years, that it was on the increase, and that the only known means of effectively controlling it was segregation. By 1916 the information gathered through scientific investigations in previous years had been compiled: it indicated the advisability of Congressional provision for a home where all persons afflicted with leprosy might be cared for and treated.

However, not until February 3, 1917, did Congress enact legislation and provide funds for the establishment of a national leprosarium to be under the administration of the United States Public Health Service.

Because of World War I, action on this legislative measure was postponed for several years. Then a committee of Public Health Service officers was appointed to select a suitable site for the proposed leprosarium. Great difficulty was experienced in this task. No State cared to cede territory to the Government for use as a leper colony. Finally, the matter was settled by purchasing from the State of Louisiana on January 3, 1921, the property occupied by the Louisiana Leper Home.

THE NATIONAL LEPROSARIUM

The State of Louisiana then transferred the patients, hospital, and grounds to the United States Public Health Service. At a flag raising ceremony, the National Leprosarium was officially opened on February 1, 1921, with O. E. Denney as its first medical officer in charge. There were at that time 90 patients in the home. It immediately became necessary to enlarge and rehabilitate the existing buildings,

because of the expected rapid increase in population. Soon new patients were admitted from many States and the census of the institution quickly rose to 172.

On March 4, 1923, the sum of $645,000 was appropriated by an act of Congress, in order to expand further the capacity of the leprosarium. This building program was completed in 1924, when housing facilities for approximately 425 patients became available.

The act of Congress of February 3, 1917, authorizing the construction of the National Leprosarium had directed the Surgeon General of the Public Health Service to prepare rules and regulations for the type of patients to be admitted. These regulations stipulated that there should be admitted to the leprosarium:

(1) Any person afflicted with leprosy who presents himself or herself for care, detention, and treatment, or

(2) Who may be apprehended under authority of the United States Quarantine Acts, or

(3) Any person afflicted with leprosy duly consigned to said home by the proper health authorities of any State, Territory, or the District of Columbia.

Leprosy was the first disease for which the United States Government made specific regulations pertaining to the transportation of infected persons. Since 1912 the Interstate Quarantine Regulations have provided rules for the safe transport of persons who present symptoms of leprosy.

After the necessary State permits are received, patients are transferred to the leprosarium accompanied by a medical officer of the Public Health Service. A compartment is provided for the patient who is strictly isolated during the trip. All dishes and utensils are disinfected before leaving the compartment, all secretions or discharges are disinfected and properly disposed of, and the space occupied is disinfected upon being evacuated by the patient. As now practiced by the Public Health Service, the transportation of persons with leprosy is effected without exposing the public to any danger of infection.

In this country there is evidence that the greatest menace of leprosy is to the health of the other members of an afflicted person's household. The risk of contagion is considerable, especially to children, in the intimacy of the family circle. The patient should realize that the greatest boon of his segregation at a leprosarium is the protection it insures his family. The high incidence of leprosy in certain families is well demonstrated in the records of the Carville Marine Hospital and has frequently been commented upon by certain writers and experts on the subject. So the concealment of a person with leprosy by his family often strikes home again, as it may lead to the infection

of other members of the family. Concealment and transmission of leprosy within the family group seems an important cause in keeping the disease alive in this country. On the other hand, the rather feeble contagiousness of leprosy among nonrelatives is striking. At the Carville leprosarium, during the 47 years of its operation, not a single case of leprosy developed among the professional or other employees in spite of their proximity to the patients.

RECENT IMPROVEMENTS IN THE NATIONAL LEPROSARIUM

Until recently most of the buildings of the Federal leprosarium at Carville were of wooden frame structure and therefore a fire hazard. Starting in the spring of 1940, at a cost of approximately two and a half million dollars, the Government undertook to rebuild the institution almost completely, in order to make it fireproof. This building program was completed by the end of 1941. Facilities have been increased to take care of 480 ambulatory patients, in addition to the 65 hospital rooms for bed patients. At present the leprosarium at Carville can be considered the finest and most modern in the world.

The visitor who approaches the Federal leprosarium at Carville for the first time is surprised to see such imposing buildings in an otherwise rural district. After he enters the reservation of 350 acres, he is impressed by the fact that it is a self-sustaining community, resembling a small town. There is a power plant for the generation of electricity, the manufacture of ice, and the operation of a central steam-radiator heating system. A modern sand filtration plant with attached chlorinating apparatus furnishes over 200,000 gallons of potable water a day. Both hot and cold water is piped to all the buildings of the colony. The water consumption per capita is above that of most large cities in the United States. This meets with the approval of the administrative force, since cleanliness is conducive to health and the source of supply, the Mississippi River, is inexhaustible. There are two modern sanitary laundries, one for the patients, the other for the personnel. A large sanitary dairy with pasteurization and cold storage facilities produces 180 gallons of Grade A milk a day. Cattle are raised to furnish beef products. Protestant and Catholic churches and their respective resident chaplains afford the patients religious comfort. A well-equipped fire department is ready to function at all hours. The sewage system with its septic tanks and the incinerator plant for the disposal of garbage assure the complete sanitation of the community and protection of the neighboring public. An extensive drainage system demands constant attention to prevent a mosquito nuisance and a possible malaria menace. Besides the numerous buildings for the use of the patients and the large nurses'

home, there are 25 residences for doctors, administrative, clerical, mechanical, and other employees. All the personnel are employees of the Federal Government; there are no volunteer workers. Paved roads connect the different parts of the reservation.

Passing from the personnel to the colony side of the estate, the visitor comes first to the hospital where the bed patients are treated. This is a two-story concrete building containing 44 rooms for men and 21 rooms for women patients. In addition, it contains a first-class operating room, an adequate X-ray department, a dental clinic, a bacteriologic and pathologic laboratory, a physiotherapy department, dressing-room clinics for men and women, offices, and examining rooms.

The ambulatory patients, who are by far in the majority, are domiciled in 16 two-story concrete buildings. Each of these buildings contains, on each floor, 15 individual bedrooms, bathrooms, a reception room, and front and back porches. The front porches are connected upstairs and downstairs by concrete passageways, screened and covered for the protection of the patients in going about the colony.

Every effort has been made to provide the patients with the comforts of home; for the most part, they are contented and well satisfied with all that is being done for them. They can pursue their avocations and enjoy a variety of community activities. Each patient has his own room with adequate modern fireproof furniture. He may arrange and decorate his room to suit his taste. Visitors are allowed, as in other hospitals. There are no restrictions in correspondence with relatives or friends except that all outgoing mail is disinfected.

On each side of the hospital is a building for occupational therapy. Each of these two-story buildings has 18 rooms. These are used as sewing room, music room, school room, photography room, barber shop, tailor shop, pressing shop, carpenter shop, shoemaker's shop, bicycle repair shop, radio repair shop, rooms for various other arts and crafts, and finally the printing offices of the patients' local paper, "The Star." This is an interesting monthly periodical, the purpose of which is "radiating the light of truth on Hansen's disease." It contains many splendid articles from the pens of patients. Its outside circulation is increasing. Occupational therapy in its different forms is a useful part of the patients' treatment. Occupation has a good moral effect upon the patient; it prevents brooding upon his malady. The employment of 98 patients on a small salary basis by the Government serves the same purpose. It also affords them ready cash for the purchase of the little luxuries not furnished by the Government. The Government provides all patients with food, clothing,

toilet articles, books, magazines, newspapers, a golf course, tennis courts, baseballs, basketballs, and other sporting equipment, and three motion-picture shows each week.

The new recreation building has filled a long-felt need at the National Leprosarium. This beautiful, spacious, two-story structure is the feature of the new construction program which has pleased the patients most. It cost approximately $140,000 and was well worth the price for the recreational facilities it affords this group of shut-in citizens from practically every State of the Union. A modern motion-picture theater, a canteen operated by patients for the benefit of the patients, smoking rooms for men and women, and a splendid library with many excellent books are on the first floor. On the top floor is a huge ball or concert room with an orchestral platform on one side. Here frequent dances are given by the patient body. Baton Rouge and New Orleans bands come to play the latest swing music.

The patients are served their meals cafeteria style at 7 a. m., noon, and 5 p. m. The dining room adjoins a clean, well-equipped kitchen. Menus are carefully planned; the food is well cooked, tasty, and nutritious. The meals served can be compared to those of a first-class hotel. Food plays a direct part in the fight against the disease and no effort is spared to provide the best.

ACTIVITIES OF THE NATIONAL LEPROSARIUM

The medical, surgical, and nursing services are qualified to cope with the disease. The nursing is in the hands of 19 Sisters of Charity, some of whom were retained by the Federal Government from the Louisiana State regime. The Sisters are graduate nurses and have always given satisfactory service. The patients appreciate their gentle manner and tender nursing care.

The medical staff consists of five medical officers, one dentist, and three consultants from New Orleans. One of the consultants, Ralph Hopkins, was visiting physician to the Louisiana Leper Home. He has been making weekly visits to the Carville institution ever since, a period of 40 years.

In addition to keeping up with all new developments in general medicine, the medical staff specializes in leprosy. The medical library is well stocked with books and medical journals dealing with the subject.

Besides general institutional care, the patients are given any special treatment which may be thought beneficial to their condition. With few exceptions all of the patients take some form of treatment. During the last year 200 patients were taking chaulmoogra oil by mouth and more than 150 were taking routine intramuscular injections of chaul-

FIGURE 1.—Airplane view of the National Leprosarium, Carville, La.

FIGURE 2.—Catholic and Protestant churches, left and right.

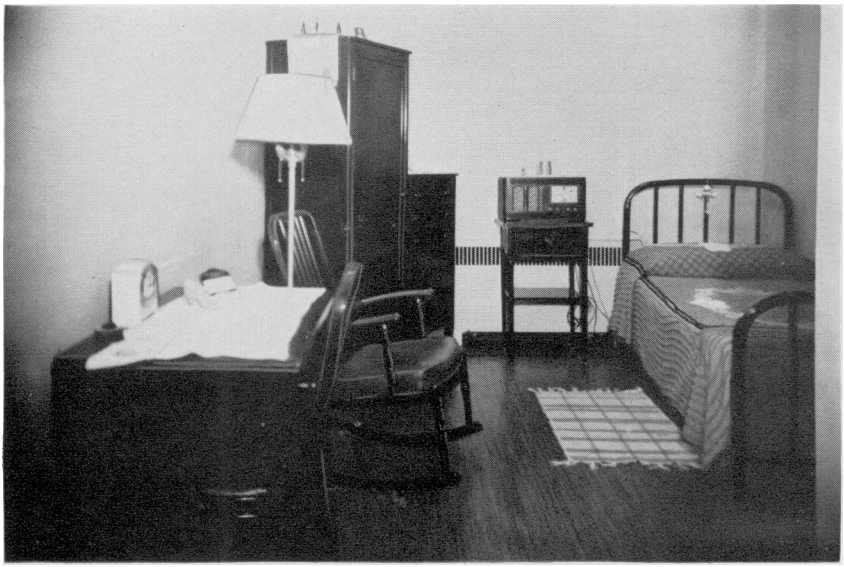

FIGURE 3.—A patient's bedroom.

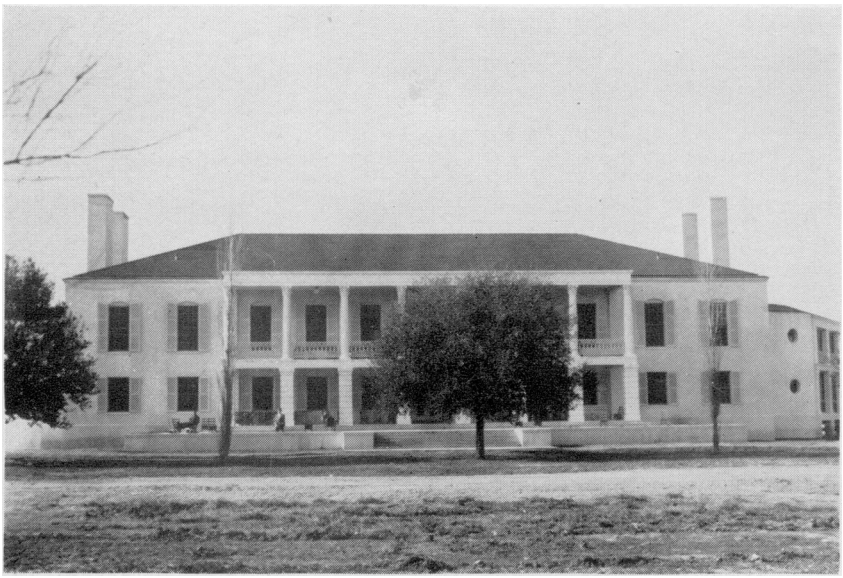

FIGURE 4.—Patients' recreation building.

moogra oil with benzocaine or the ethyl esters of hydnocarpus with iodine. Although there was no further evidence of definite specific action, the impression persists that the chaulmoogra oil products are of some benefit in leprosy.

Several new experimental treatments have recently been undertaken on a number of patients. A few selected patients were given rather extensive treatment with the various sulfonamide drugs. This study is being continued with encouraging results especially in clearing up secondary infections and in healing chronic disabling ulcers. Whether some of the newer sulfonamide derivatives have therapeutic action in leprosy remains to be proved.

Vitamin therapy has been given an extensive trial. All of the vitamins have been used when necessary for their general tonic effect. Vitamin A in the form of "Alfon" was given to a small group of patients but did not seem to be as effective as had been hoped. Vitamin B_1 (thiamine chloride) in large doses was found efficacious in relieving painful leprous neuritis. Riboflavin (B_2) was used in certain leprotic eye manifestations but without definite benefit.

Diphtheria toxoid, for which such enthusiastic claims were made elsewhere, was subjected to an experimental study under carefully controlled conditions in a large group of patients. The results were disappointing.

During institutional treatment attempts are made to discover and remove any intercurrent disease which might react unfavorably upon leprosy. The eye, ear, nose, and throat complications of leprosy are frequent and require energetic treatment. A full-time specialist devotes all of his time to this work. He is able to give relief to the patients and prevent some disabling conditions from developing.

The physiotherapy department is a busy service; approximately 15,000 treatments are given yearly in electrotherapy, thermotherapy, hydrotherapy, and massage. These various forms of physiotherapy are found useful is relieving nerve pains, restoring muscular functions, and healing ulcerations.

In the dental clinic, a dentist and his assistant keep the patients' mouths and teeth in hygienic condition. This helps them in regaining their health.

The laboratory is equipped for scientific research into the various phases of leprosy. In connection with it there is a well-kept animal house for guinea pigs, rabbits, mice, rats, opposums, and Syrian hamsters, which are used for experimental purposes. Attempts at the reproduction of leprosy in these various laboratory animals are being continued. A full-time bacteriologist conducts these research experiments.

The dermatologic, orthopedic, and neuropsychiatric clinics are well attended. They supplement the other medical activities of the hospital and afford the patient expert professional advice in these specialties.

The Carville Marine Hospital, being the only leprosarium in the United States, serves as a center for the dissemination of knowledge on the subject of leprosy. Numerous letters of inquiry are received and answered annually.

The institution is also used as a postgraduate instructional center on leprosy. During the past year, 124 doctors, 6 dentists, and 90 nurses visited the station, seeking clinical information on the disease. Some of the visiting physicians came from distant States and several foreign countries. The American Dermatological Association, which held its annual convention in New Orleans last year, devoted part of one day of its program to a conference on leprosy at the Marine Hospital in Carville. The postgraduate class in tropical medicine of Tulane University attended a clinical demonstration on leprosy at Carville. Members of the medical staff of the Carville leprosarium went to New Orleans to lecture to these doctors on different aspects of the disease. Every year leprosy clinics are given to the senior medical students of Louisiana State University and of Tulane University, and to the senior dental students of Loyola University, all of New Orleans. It is felt that this practical experience will aid these doctors in the earlier diagnosis of leprosy in their future medical careers.

STATISTICAL DATA

During the period of State control, 338 patients were admitted, all but 16 of them from Louisiana. Ninety of these patients were in the State hospital on February 1, 1921, when the Federal Government took charge, and were transferred to the National Leprosarium. From February 1, 1921, to January 1, 1942, 1,034 patients were admitted, making a total of 1,371 admissions since December 1, 1894. Of this number, 593 have died at the hospital, 53 have been deported to foreign countries, and 309 have been discharged as arrested and no longer a menace to public health. Fifty-eight of these have relapsed and returned to the hospital for further treatment.

Of the total admissions, 404 were foreign born, the largest number (148) coming from Mexico. All patients, of course, were in the United States when their disease was discovered. Among the States from which patients were admitted Louisiana leads with 576, California follows with 194, Texas is third with 192, New York fourth with 118, and Florida fifth with 76. All other States have sent a total of 215. Patients have been received from 40 States, the District of Columbia, Philippine Islands, Hawaii, and the Canal Zone.

Table 1 shows the nativity of patients admitted during the past 10 years.

TABLE 1.—*Nativity of patients*

Nativity	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
United States	30	25	38	31	17	23	26	26	41	29
Insular possessions	11	8	2	3	2	3	1	3	6	1
Other countries	16	13	15	20	7	14	11	14	15	12
Total	57	46	55	54	26	40	38	43	62	42

In table 2 is given the number of men and women in the hospital at the end of each year during the past 10 years.

TABLE 2.—*Number of patients in hospital*

Cases	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Male	262	259	258	269	247	258	239	248	246	249
Female	101	96	96	102	113	113	113	116	131	123
Total	363	355	354	371	360	371	352	364	377	372

Admissions for the year 1941, with State of origin and place of nativity of each patient, are shown in table 3.

TABLE 3

State of origin		*Place of nativity*	
Louisiana	12	Louisiana	10
California	11	Texas	9
Texas	11	California	4
New York	2	Pennsylvania	1
Florida	2	New York	1
Illinois	1	Florida	1
Wyoming	1	North Carolina	1
Washington	1	Oregon	1
Rhode Island	1	Ohio	1
	—	Philippine Islands	1
Total	42	Mexico	9
		China	2
		British West Indies	1
		Total	42

Table 4 gives, for the past 10 years, the number of patients discharged as "arrested" and no longer a menace to public health.

TABLE 4.—*Patients discharged from leprosarium*

Discharged as "arrested"	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Male	17	12	9	5	12	13	14	12	6	7
Female	12	8	8	3	2	9	6	5	1	8
Total	29	20	17	8	14	22	20	17	7	15

CONCLUSIONS

At present the Carville leprosarium is fully equipped for properly dealing with the disease. There is an increasing local interest in the welfare of the patients. Achievements in treatment are growing more important each year and discharges of "arrested" cases show a corresponding increase. It is felt that there is need for a more general education of the public in order that the unwarranted popular fear of leprosy may be replaced by a more enlightened attitude. In addition, a better education of persons afflicted with leprosy and their families is also necessary in order that more patients may seek voluntary admission during the early stages of the disease. They should realize that earlier institutional care and treatment will give them a better chance of arresting the disease. This is the goal toward which we strive.

REFERENCES

(1) Care and Treatment of Persons Afflicted with Leprosy. Report of the Committee on Public Health and National Quarantine, Washington, D. C. Government Printing Office, 1916; Senate Calendar, 282.
(2) Denney, O. E.: The leprosy problem in the United States. Pub. Health Rep., 41:823 (May 14, 1926).
(4) Dyer, I.: The history of the Louisiana Leper Home. N. O. Med. & Surg. J., 54: 714 (May 1902).
(5) Hopkins, R.: Heredity in leprosy. Internat. J. Leprosy, 8: 71 (January–March 1940).
(6) Hyde, J. N.: The distribution of leprosy in North America. Am. J. Med. Sci., 108: 251 (September 1894).
(7) Marshall, E. R.: What the United States Public Health Service is doing to prevent the spread of leprosy in the continental United States. Mil. Surg., 53: 313 (October 1923).
(8) Romans, B.: Concise Natural History of East and West Florida. New York, 1776.
(9) Thirteenth Biennial Report of the Board of Control of the Leper Home of the State of Louisiana, 1920.

ANAPHYLAXIS IN GUINEA PIGS FOLLOWING SENSITIZATION WITH CHICK-EMBRYO YELLOW FEVER VACCINE AND NORMAL CHICK EMBRYOS [1]

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The increasing use of virus and rickettsial vaccines prepared from infected chick embryo or chick embryonic tissues, and the probability of repeated injections of these products into human beings, make it desirable to obtain experimental evidence concerning the possibility of unfavorable reactions following vaccinations with these materials.

Chick-embryo vaccines have been used successfully on a large scale for the immunization of man against the virus of yellow fever, and of

[1] Contribution from the Rocky Mountain Laboratory of the Division of Infectious Diseases, National Institute of Health.

horses and mules for protection against both the eastern and western strains of equine encephalomyelitis virus. To a lesser degree, human beings have been vaccinated against equine encephalomyelitis and influenza with chick-embryo propagated virus. Rickettsial cultures in yolk membrane have been employed in the preparation of vaccines against Rocky Mountain spotted fever, typhus fever, and American "Q" fever. Other vaccines of a similar nature are being gradually added to the list.

The widest application of a chick-embryo vaccine has been made in the field of yellow fever prophylaxis. Over 2,000,000 individuals have been vaccinated by the Rockefeller Foundation at least once, and many thousands twice. No unfavorable reactions attributable to sensitization have been reported.

Vaccination of human beings with chick-embryo preparations against equine encephalomyelitis has been reported on a more limited scale (*1*, *2*, *3*, *4*). Two injections are given at a 7-day interval, each dose being considerably larger (2.0 ml. of undiluted vaccine) than the single dose (0.5 ml. of 1:10 dilution) given for yellow fever immunization. The immunity produced with formolized equine encephalomyelitis virus appears to be of much shorter duration than that acquired following vaccination with the living yellow fever vaccine virus, so that revaccination may be required from time to time. Beard, Finkelstein, and Beard (*3*) note that little reaction was observed in persons vaccinated for the first time, yet each of a small series of individuals given a dose of 2.0 ml. in a second course of injections showed a definite general reaction.

Accumulating data concerning results of vaccination of animals against equine encephalomyelitis demonstrate clearly the danger of anaphylactic phenomena following a second series of injections. Graham (*5*), Schoening (*6*), and Wolfe and Trum (*7*) report severe or fatal cases of anaphylaxis under these conditions. Wolfe and Trum also observed apparently typical desensitization in animals following recovery from anaphylactic shock.

Van der Scheer, Wyckoff, and Bohnel (*4*) have demonstrated that guinea pigs can be sensitized readily and subsequently brought into a condition of fatal anaphylactic shock with relatively small doses of chick-embryo equine encephalomyelitis vaccine. On the other hand, Rocky Mountain spotted fever vaccine prepared from diseased yolk sac tissue according to Cox's method (*8*, *9*) failed to induce sensitization when doses of comparable nitrogen content were employed. These results have been confirmed by Cox (*10*), using yolk-membrane typhus vaccine in even larger doses than those given by the foregoing workers.

Incident to the manufacture of entire-embryo yellow fever vaccine, the question arose as to possible changes which might occur in antigenic specificity of chick-embryo protein at different stages of development. For the experimental work here reported, there was available a range of vaccines varying with the age of embryos employed in their manufacture. Age of embryos as measured by period of incubation, ranged from 10 to 14 days. The finished vaccines were diluted with normal inactivated human serum, with distilled water, or prepared without diluent.

In general, the method of preparation of these vaccines was similar in all essentials. Eggs were incubated for 7 to 11 days and the living embryos inoculated with the 17–D strain of attenuated yellow fever virus developed by Theiler and Smith (*11*, *12*). After an additional incubation for 3 days, the still living embryos were removed aseptically from the shells and ground to a fine pulp in blenders cooled with dry ice. If a diluent was to be used, either normal human serum or distilled water [2] was added, or, in the case of 100 percent embryo vaccines, no diluting fluid was employed. These preparations were then centrifuged in an angle centrifuge at from 3,500 to 3,700 r. p. m. for 30 to 60 minutes to remove tissue debris. The supernatant extract, constituting the finished vaccine, was dispensed in ampules, frozen in a dry ice-alcohol mixture, and stored at minus 23° C.

TABLE 1.—*Antigens employed*

1. Yellow fever vaccine YF 4: 10-day embryo, 29 percent in human serum.
2. Yellow fever vaccine YF 25: 10-day embryo, 30 percent in human serum.
3. Yellow fever vaccine YF 41: 10-day embryo, 21 percent in human serum.
4. Yellow fever vaccine YF 15: 10-day embryo, 100 percent.
5. Yellow fever vaccine YF 16: 10-day embryo, 100 percent.
6. Yellow fever vaccine YF 47: 10-day embryo, 100 percent.
7. Yellow fever vaccine YF 22: 10-day embryo, 75 percent in distilled water.
8. Yellow fever vaccine YF 9: 10-day embryo, 57 percent in distilled water.
9. Normal 10-day embryo extract, 75 percent in distilled water.

10. Yellow fever vaccine YF 13: 11-day embryo, 72 percent in distilled water.
11. Normal 11-day embryo extract, 75 percent in distilled water.

12. Yellow fever vaccine YF 20: 12-day embryo, 75 percent in distilled water.
13. Yellow fever vaccine YF 28: 12-day embryo, 75 percent in distilled water.
14. Yellow fever vaccine YF 10: 12-day embryo, 56 percent in distilled water.
15. Normal 12-day embryo extract, 75 percent in distilled water.

16. Yellow fever vaccine YF 38: 13-day embryo, 100 percent.
17. Yellow fever vaccine YF 27: 13-day embryo, 75 percent in distilled water.
18. Yellow fever vaccine YF 34: 13-day embryo, 75 percent in distilled water.
19. Normal 13-day embryo extract, 75 percent in distilled water.

20. Yellow fever vaccine YF 18: 14-day embryo, 100 percent.
21. Yellow fever vaccine YF 19: 14-day embryo, 75 percent in distilled water.
22. Yellow fever vaccine YF 26: 14-day embryo, 75 percent in distilled water.
23. Normal 14-day embryo extract, 75 percent in distilled water.

As antigenic materials, 18 yellow fever vaccines and 5 normal whole chick-embryo extracts were employed. The composition is shown in table 1. The normal whole embryo extract was prepared in a manner similar to that for the aqueous base yellow fever vaccines except that the embryos were not inoculated with virus.

[2] The term "aqueous base vaccine" is employed hereafter to designate all vaccine prepared without addition of human serum.

In order to eliminate the possibility of toxic reactions to the various antigenic preparations employed, 3 nonsensitized guinea pigs were given intracardial injections, in 0.2 ml. doses, of one vaccine from each of the groups employed and of each normal embryo extract. A single animal showed an immediate collapse following the injection but recovered quickly and completely. None of the ther animals showed any indication of an unfavorable reaction although they were observed closely for toxic symptoms. The results are given in table 2.

Guinea pigs weighing from 250 to 300 grams were given a single sensitizing dose of 0.05, 0.1, or 0.2 ml. of the various antigenic preparations by the subcutaneous route. The smallest dose employed has been shown to be sufficient for sensitization of guinea pigs with entire chick-embryo vaccine of the equine encephalomyelitis type *(4)*. After an interval of 21 to 23 days, a challenging dose of 0.1 or 0.2 ml. of the same preparation as that used for sensitization was injected intracardially and the animals observed closely for anaphylactic reactions. A minimum of four guinea pigs were given sensitizing doses for each antigen employed, but several died from intercurrent infections before they could be tested. Only animals which were given both the sensitizing and challenging doses are listed.

TABLE 2.—*Results of toxicity experiments with chick-embryo yellow fever vaccine and normal chick-embryo extract*

Guinea Pig No.	Test material	Test dose, ml. (intracardial)	Reaction
	Y. F. Vaccine Lot No.		
1	YF 25	0.2	None.
2	YF 25	0.2	Do.
3	YF 25	0.2	Do.
4	YF 9	0.2	Do.
5	YF 9	0.2	Do.
6	YF 9	0.2	Do.
7	YF 13	0.2	Do.
8	YF 13	0.2	Do.
9	YF 13	0.2	Immediate collapse; recovery.
10	YF 20	0.2	None.
11	YF 20	0.2	Do.
12	YF 20	0.2	Do.
13	YF 38	0.2	Do.
14	YF 38	0.2	Do.
15	YF 38	0.2	Do.
16	YF 19	0.2	Do.
17	YF 19	0.2	Do.
18	YF 19	0.2	Do.
	Normal embryo		
19	10-day	0.2	Do.
20	do	0.2	Do.
21	do	0.2	Do.
22	11-day	0.2	Do.
23	do	0.2	Do.
24	do	0.2	Do.
25	12-day	0.2	Do.
26	do	0.2	Do.
27	do	0.2	Do.
28	13-day	0.2	Do.
29	do	0.2	Do.
30	do	0.2	Do.
31	14-day	0.2	Do.
32	do	0.2	Do.
33	do	0.2	Do.

Three experiments were carried out employing chick-embryo yellow fever vaccines, and two with normal (noninfected) chick-embryo extracts. Since the trend of the results obtained in the several series was essentially the same, the data for all experiments are combined in tables 3 and 4. Embryo preparations or vaccines manufactured from chick-embryo tissue of the same age are grouped together for convenience.

TABLE 3.—*Results of sensitization experiments with yellow fever chick-embryo vaccines*

Guinea pig No.	Yellow fever vaccine	Period of sensitization (days)	Sensitizing dose, ml. (subcutaneous)	Challenging dose, ml. (intracardial)	Reaction
HUMAN SERUM BASE (CONTROL) VACCINES					
34	YF 4	23	0.05	0.10	None.
35	YF 4	23	.05	.20	Death 3 minutes.
36	YF 4	23	.20	.10	Death 4 minutes.
37	YF 4	23	.20	.20	Severe.
38	YF 25	21	.05	.10	Death 4 minutes.
39	YF 25	21	.05	.20	Do.
40	YF 25	21	.20	.10	Death 5 minutes.
41	YF 25	21	.20	.20	Moderate.
42	YF 41	22	.10	.10	Mild.
43	YF 41	22	.20	.10	Death 8 minutes.
44	YF 41	22	.10	.20	Death 3 minutes.
45	YF 41	22	.20	.20	Severe.
10-DAY EMBRYO AQUEOUS BASE VACCINES					
46	YF 15	21	0.05	0.10	None.
47	YF 15	21	.05	.20	Do.
48	YF 15	21	.20	.10	Do.
49	YF 15	21	.20	.20	Do.
50	YF 16	23	.05	.10	Do.
51	YF 16	23	.05	.20	Do.
52	YF 16	23	.20	.10	Do.
53	YF 16	23	.20	.20	Do.
54	YF 22	21	.05	.10	Do.
55	YF 22	21	.05	.20	Do.
56	YF 22	21	.20	.10	Moderate.
57	YF 22	21	.20	.20	Severe.
58	YF 9	22	.10	.10	None.
59	YF 9	22	.20	.10	Mild.
60	YF 9	22	.20	.20	None.
61	YF 9	22	.10	.20	Do.
62	YF 47	22	.10	.10	Do.
63	YF 47	22	.20	.10	Do.
64	YF 47	22	.10	.20	Do.
65	YF 47	22	.20	.20	Mild.
11-DAY EMBRYO AQUEOUS BASE VACCINES					
66	YF 13	21	0.05	0.10	None.
67	YF 13	21	.05	.20	Do.
68	YF 13	21	.20	.10	Do.
69	YF 13	21	.20	.20	Do.
70	YF 13	22	.10	.10	Death 12 minutes.
71	YF 13	22	.20	.10	Severe.
72	YF 13	22	.10	.20	None.
73	YF 13	22	.20	.20	Do.

TABLE 3.—*Results of sensitization experiments with yellow fever chick-embryo vaccines*—Continued

Guinea pig No.	Yellow fever vaccine	Period of sensitization (days)	Sensitizing dose, ml. (subcutaneous)	Challenging dose, ml. (intracardial)	Reaction
12-DAY EMBRYO AQUEOUS BASE VACCINES					
74	YF 10	23	0.05	0.10	None.
75	YF 10	23	.05	.20	Do.
76	YF 10	23	.20	.10	Do.
77	YF 10	23	.20	.20	Do.
78	YF 20	21	.05	.10	Do.
79	YF 20	21	.05	.20	Do.
80	YF 20	21	.20	.10	Death 5 minutes.
81	YF 20	21	.20	.20	Mild.
82	YF 20	22	.10	.10	Do.
83	YF 20	22	.20	.10	Death 4 minutes.
84	YF 20	22	.10	.20	Mild.
85	YF 20	22	.20	.20	Severe.
86	YF 28	21	.05	.10	None.
87	YF 28	21	.05	.20	Do.
88	YF 28	21	.20	.10	Do.
89	YF 28	21	.20	.20	Do.
13-DAY EMBRYO AQUEOUS BASE VACCINES					
90	YF 27	21	0.05	0.10	None.
91	YF 27	21	.05	.20	Do.
92	YF 27	21	.20	.10	Do.
93	YF 27	21	.20	.20	Do.
94	YF 34	22	.10	.10	Severe.
95	YF 34	22	.20	.10	Do.
96	YF 34	22	.10	.20	Do.
97	YF 34	22	.20	.20	Do.
98	YF 38	21	.05	.10	None.
99	YF 38	21	.05	.20	Death 5 minutes.
100	YF 38	21	.20	.20	Do.
14-DAY EMBRYO AQUEOUS BASE VACCINES					
101	YF 18	21	0.05	0.10	None.
102	YF 18	21	.05	.20	Severe.
103	YF 18	21	.20	.10	None.
104	YF 18	21	.20	.20	Death 3 minutes.
105	YF 18	23	.05	.10	Do.
106	YF 18	23	.05	.20	Do.
107	YF 18	23	.20	.10	Do.
108	YF 18	23	.20	.20	Death 5 minutes.
109	YF 19	21	.05	.10	Death 4 minutes.
110	YF 19	21	.05	.20	None.
111	YF 19	21	.20	.10	Do.
112	YF 19	21	.20	.20	Mild.
113	YF 19	22	.19	.10	Severe.
114	YF 19	22	.20	.10	Mild.
115	YF 19	22	.10	.20	Death 4 minutes.
116	YF 19	22	.20	.20	Do.
117	YF 26	21	.05	.10	None.
118	YF 26	21	.05	.20	Mild.
119	YF 26	21	.20	.10	Severe.
120	YF 26	21	.20	.20	Death 4 minutes.

TABLE 4.—*Results of sensitization experiments with normal chick-embryo extracts*

Guinea pig No.	Period of sensitization (days)	Sensitizing dose, ml. (subcutaneous)	Challenging dose, ml. (intracardial)	Reaction
10-DAY EXTRACT, 75 PERCENT EMBRYO IN DISTILLED WATER				
121	21	0.05	0.10	None.
122	21	.05	.20	Do.
123	21	.20	.20	Do.
124	22	.10	.10	Do.
125	22	.20	.10	Do.
126	22	.10	.20	Do.
127	22	.20	.20	Do.
11-DAY EXTRACT, 75 PERCENT EMBRYO IN DISTILLED WATER				
128	22	0.10	0.10	None.
129	22	.20	.10	Do.
130	22	.10	.20	Do.
131	22	.20	.20	Do.
132	21	.05	.10	Do.
133	21	.05	.20	Do.
134	21	.20	.10	Mild.
135	21	.20	.20	None.
12-DAY EXTRACT, 75 PERCENT EMBRYO IN DISTILLED WATER				
136	21	0.05	0.10	None.
137	21	.05	.20	Do.
138	21	.20	.10	Do.
139	21	.20	.20	Do.
140	22	.10	.10	Death 7 minutes.
141	22	.20	.10	Mild.
142	22	.10	.20	Do.
143	22	.20	.20	None.
13-DAY EXTRACT, 75 PERCENT EMBRYO IN DISTILLED WATER				
144	21	0.05	0.10	None.
145	21	.05	.20	Do.
146	21	.20	.10	Do.
147	21	.20	.20	Do.
148	22	.10	.10	Do.
149	22	.20	.10	Do.
150	22	.10	.20	Death 6 minutes.
151	22	.20	.20	Severe.
14-DAY EXTRACT, 75 PERCENT EMBRYO IN DISTILLED WATER				
152	21	0.05	0.10	Mild.
153	21	.05	.20	Death 4 minutes.
154	21	.20	.10	Moderate.
155	22	.10	.10	Mild.
156	22	.20	.10	Death 4 minutes.
157	22	.10	.20	Moderate.
158	22	.20	.20	Death 4 minutes.

Since the results obtained with the aqueous base yellow fever vaccines and with normal chick-embryo extracts are so similar, there is little possibility that the yellow fever virus was influential in producing the reactions noted. Theiler (*19*) has shown that guinea pigs are not susceptible to intraperitoneal inoculations of yellow fever virus. Therefore, we feel justified in summarizing in table 5 the data for all preceding experiments.

TABLE 5.—*Summary: Results of sensitization experiments with yellow fever chick-embryo vaccines and normal chick-embryo extracts*

Test antigen	Number of animals sensitized	Number of animals reacting	Mild reactions (percent)	Moderate reactions (percent)	Severe reactions (percent)	Deaths (percent)	Total reactions (percent)
Vaccine in human serum	12	11	8.3	8.3	16.7	58.3	91.6
10-day embryo	27	4	7.4	3.7	3.7	0	14.8
11-day embryo	16	3	6.2	0	6.2	6.2	18.7
12-day embryo	24	9	20.8	0	4.1	12.5	37.5
13-day embryo	19	8	0	0	26.3	15.8	42.1
14-day embryo	27	22	18.5	7.4	11.1	44.4	81.5

As can be seen from the data presented in table 5, 11 of 12 (91.6 percent) of the guinea pigs tested with the "positive control" 10-day embryo vaccines containing human serum showed anaphylactic manifestations upon administration of the challenging doses. Approximately 64 percent of these reactions were fatal.

Of the animals sensitized with normal chick-embryo extracts and yellow fever vaccines prepared from 10-day embryos without human serum, only 14.8 percent showed anaphylactic reactions, none of which were fatal, when the shocking dose was given.

As the age of the embryos employed in preparing the normal embryo extracts and aqueous base vaccines increased from 10 to 14 days, anaphylactic reactions also increased: 10-day embryos, 14.8 percent; 11-day embryos, 18.7 percent; 12-day embryos, 37.5 percent; 13-day embryos, 42.1 percent; and 14-day embryos, 81.5 percent. The severity of the reactions as measured by typical anaphylactic deaths also increased regularly.

Because of the striking differences obtained in reactions of animals sensitized and challenged with older embryo preparations as compared with those receiving younger embryo extracts, it was deemed advisable to repeat the experiments outlined above, making all doses comparable on a basis of nitrogen content.

A large lot of eggs from a single source was incubated in the usual manner. Living embryos were removed aseptically at the end of 8, 9, 10, 11, 12, 13, and 14 days of incubation. To the embryos was

added an equal weight of sterile distilled water and a fine emulsion produced by grinding in blenders. This material was then centrifuged as in the preparation of antigenic emulsions previously employed. No attempt was made to wash the embryos free from egg albumen or other protein constituents, since it was felt that the material should be prepared in a manner essentially identical to that employed for the manufacture of chick-embryo vaccine.

The embryo extracts were analyzed for total nitrogen content by the Kjeldahl method. Average results of duplicate determinations are listed in table 6.

TABLE 6.—*Milligrams nitrogen per milliliter 50 percent embryo extract*

Embryo extract	Mg. N per Ml.	Embryo extract	Mg. N per Ml.
8-day	1.65	12-day	3.20
9-day	2.57	13-day	3.62
10-day	2.91	14-day	3.64
11-day	3.22		

Guinea pigs weighing between 250 and 285 grams were given single, subcutaneous sensitizing injections of embryo extracts in amounts equivalent in nitrogen content to that contained in 0.1 ml. human serum (1.08 mg. N). Bacteriological sterility of the extracts had been established previously. Each antigen was inoculated into 6 animals. With the particular preparations employed, it was found that intracardial injections into nonsensitized guinea pigs in volume greater than about 0.5 ml. caused immediate cardiovascular collapse. Smaller doses were without ill effect. Therefore, after a 22-day sensitization period (*13*), 4 animals in each group were given challenging injections, by the intracardial route, of doses comparable to only 0.05 ml. human serum. Volumes ranged from 0.33 ml. of the 8-day embryo extract to 0.15 ml. of the 13- and 14-day preparations. While it was recognized that such doses were smaller than those usually employed (*13*), it was our opinion that any qualitative differences between the antigenic preparations used would be emphasized by these doses. Table 7 shows the reactions obtained.

As was the case in earlier experiments, a significantly greater number of typical, violent anaphylactic manifestations were encountered in guinea pigs sensitized and shocked with embryo extracts of 12-, 13-, and 14-day chick embryos than in animals tested with younger embryo preparations.

The percentage of anaphylactic reactions following intracardial injection of challenging doses of chick-embryo antigens employed in the reported experiments are shown graphically in figure 1. Results are not included for 8- and 9-day embryo extracts since too few animals were tested with this age embryo to permit generalization on a percentage basis.

TABLE 7.—*Results of sensitization experiment with normal chick-embryo extracts*

Guinea pig No.	Test antigen, embryo extract	Sensitizing dose		Challenging dose		Reaction
		ml.	*mg. N.*	*ml.*	*mg. N.*	
159	8-day		0	0.33	(0.55)	None.
160	8-day		0	.33	(.55)	Do.
161	8-day	0.65	(1.07)	.33	(.55)	Do.
162	8-day	.65	(1.07)	.33	(.55)	Immediate collapse. Embolism(?).
163	8-day	.65	(1.07)	.33	(.55)	None.
164	8-day	.65	(1.07)	.33	(.55)	Do.
165	9-day		0	.21	(.54)	Do.
166	9-day		0	.21	(.54)	Do.
167	9-day	.42	(1.08)	.21	(.54)	Mild.
168	9-day	.42	(1.08)	.21	(.54)	None.
169	9-day	.42	(1.08)	.21	(.54)	Do.
170	9-day	.42	(1.08)	.21	(.54)	Do.
171	10-day		0	.19	(.55)	Do.
172	10-day		0	.19	(.55)	Do.
173	10-day	.37	(1.08)	.19	(.55)	Do.
174	10-day	.37	(1.08)	.19	(.55)	Do.
175	10-day	.37	(1.08)	.19	(.55)	Do.
176	10-day	.37	(1.08)	.19	(.55)	Mild.
177	11-day		0	.17	(.55)	None.
178	11-day		0	.17	(.55)	Do.
179	11-day	.34	(1.10)	.17	(.55)	Do.
180	11-day	.34	(1.10)	.17	(.55)	Do.
181	11-day	.34	(1.10)	.17	(.55)	Do.
182	12-day		0	.17	(.56)	Do.
183	12-day		0	.17	(.56)	Do.
184	12-day	.33	(1.09)	.17	(.56)	Do.
185	12-day	.33	(1.09)	.17	(.56)	Mild.
186	12-day	.33	(1.09)	.17	(.56)	Death 4 minutes.
187	12-day	.33	(1.09)	.17	(.56)	Death 5 minutes.
188	13-day		0	.15	(.54)	None.
189	13-day		0	.15	(.54)	Do.
190	13-day	.30	(1.09)	.15	(.54)	Death 5 minutes.
191	13-day	.30	(1.09)	.15	(.54)	Mild.
192	13-day	.30	(1.09)	.15	(.54)	Death 3 minutes.
193	13-day	.30	(1.09)	.15	(.54)	Moderate.
194	14-day		0	.15	(.55)	None.
195	14-day		0	.15	(.55)	Do.
196	14-day	.30	(1.09)	.15	(.55)	Death 4 minutes.
197	14-day	.30	(1.09)	.15	(.55)	Death 3 minutes.
198	14-day	.30	(1.09)	.15	(.55)	Death 4 minutes.
199	14-day	.30	(1.09)	.15	(.55)	Death 3 minutes.

Confirmatory evidence of qualitative differences in antigenicity between the older and younger embryo extracts employed was also demonstrated in another manner. The two guinea pigs remaining in each group sensitized with the various antigenic emulsions (only one survived in the 11-day group) received intraperitoneal doses of the same embryo extracts as those used in sensitization, comparable in nitrogen to 1 ml. human serum. As controls one nonsensitized guinea pig was inoculated in each group with the same volume of embryo extract as that received by the sensitized animals. In order to measure degree of reaction to the challenging doses, rectal temperatures were taken immediately before injections were given, and again at 20-minute intervals over a total period of 80 minutes. The general appearance of the animals was noted throughout the period of observation.

The results obtained again demonstrate sharp differences in response of animals to challenging doses of older and younger chick-embryo extracts (table 8, figure 2). Little or no reaction was observed in guinea pigs sensitized and challenged with 8- and 9-day embryo extract, while severe reactions were indicated both by marked fall in temperature and by extreme weakness or death in animals sensitized

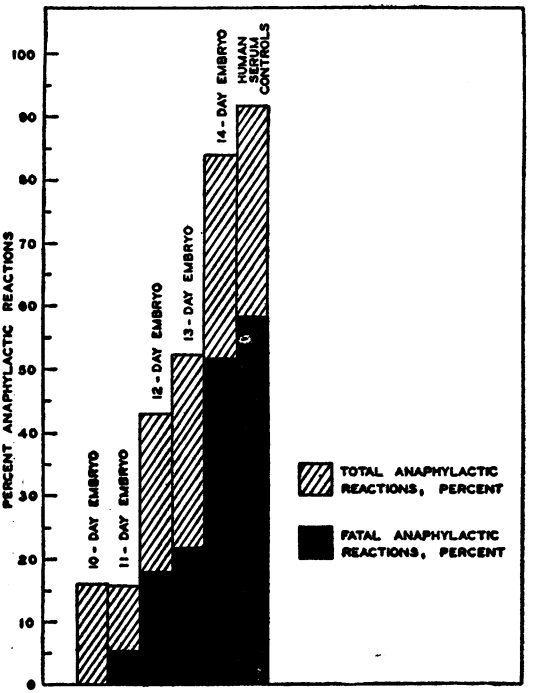


FIGURE 1.—Percentage anaphylactic reactions in guinea pigs sensitized with chick-embryo yellow fever vaccines and normal chick-embryo aqueous extracts.

and shocked with 13- and 14-day embryo material. Reactions in the other groups tested were intermediate between these extremes.

TABLE 8.—*Rectal temperature changes in sensitized and nonsensitized guinea pigs following intraperitoneal injection with normal chick-embryo extract*

Guinea pig No.	Antigen, embryo extract	Sensitizing dose, mg. N.	Challenging dose, mg. N.	Rectal temperature, C.					Appearance
				0 min.	20 min.	40 min.	60 min.	80 min.	
200	8-day	0	10.7	39.5	39.1	39.5	39.3	39.4	Normal.
201	8-day	1.07	10.7	40.1	40.2	40.1	40.0	40.0	Do.
202	8-day	1.07	10.7	39.0	38.7	39.1	38.6	38.8	Do.
203	9-day	0	10.8	39.6	39.4	39.6	39.3	39.5	Do.
204	9-day	1.08	10.8	39.1	38.2	38.3	37.8	38.0	Do.
205	9-day	1.08	10.8	39.6	39.0	39.5	39.4	40.0	Do.
206	10-day	0	10.8	39.3	39.3	39.5	39.5	39.5	Do.
207	10-day	1.08	10.8	39.7	39.2	39.3	39.2	38.3	Slightly weak.
208	10-day	1.08	10.8	39.4	38.4	38.1	37.3	37.4	Normal.
209	11-day	0	11.0	39.8	39.3	39.9	39.8	40.1	Normal.
210	11-day	1.10	11.0	39.6	38.4	38.4	38.3	38.5	Slightly weak.
211	12-day	0	10.9	39.9	39.4	39.8	39.9	40.0	Normal.
212	12-day	1.09	10.9	39.0	37.7	37.0	36.5	36.7	Extremely weak.
213	12-day	1.09	10.9	39.7	38.6	38.5	38.4	38.4	Huddled; slightly weak.
214	13-day	0	10.9	39.5	38.6	37.8	38.7	39.2	Normal.
215	13-day	1.09	10.9	40.0	38.8	37.8	36.8	35.9	Extremely weak.
216	13-day	1.09	10.9	39.1	38.0	(1)			
217	14-day	0	10.9	39.5	38.4	39.5	39.5	39.6	Normal.
218	14-day	1.09	10.9	39.6	38.1	37.3	36.5	35.4	Extremely weak.
219	14-day	1.09	10.9	40.0	38.7	37.6	(2)		

[1] Death 25 minutes; final temperature 37.7°C.
[2] Death 60 minutes; final temperature 36.2°C.

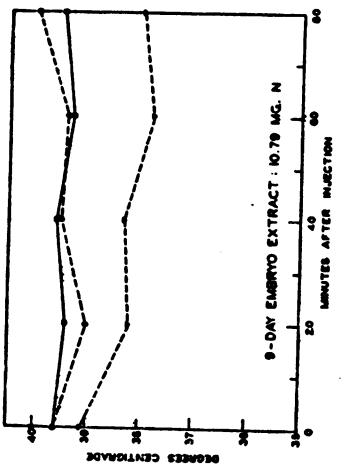
In most instances an initial fall in temperature was noted in control animals as well as in sensitized animals following inoculation. However, in all cases these temperatures approached or rose above their previous levels. Guinea pigs which survived the 80-minute period of observation were still living at the end of 2 hours, at which time they were discarded.

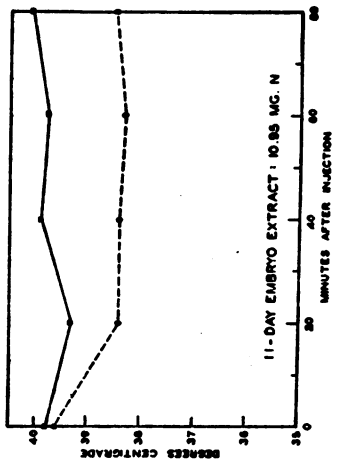
DISCUSSION

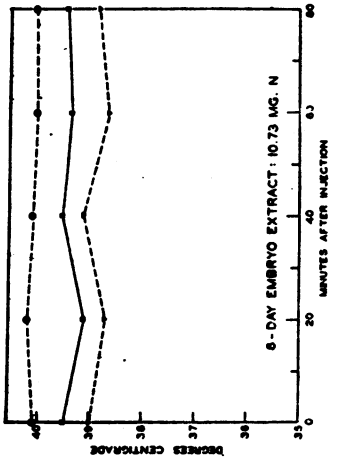
Analysis of the results obtained indicate an increased probability of reactions of an anaphylactic nature in individuals who receive multiple doses of unrefined chick-embryo vaccines prepared from embryos of 13 or more days of age. As anaphylactogenic agents, aqueous base yellow fever vaccines and normal embryo extracts prepared from 10-day or younger chick embryos have been found to be distinctly inferior to those prepared from 13- or 14-day embryos. *Differences in anaphylactogenicity appear to depend upon qualitative rather than quantitative factors.* Protein content per unit volume of embryo extract (as measured by total nitrogen determinations) increases with increasing age. However, when volumes are so adjusted that sensitizing and challenging doses of the various embryo preparations contain equivalent amounts of nitrogen, it is found that doses which sensitize guinea pigs readily against 14-day material fail in large measure to produce sensitization against 10-day embryo extracts. The results have been the same in every experiment carried out: older embryos are more potent as anaphylactogens than younger embryos.

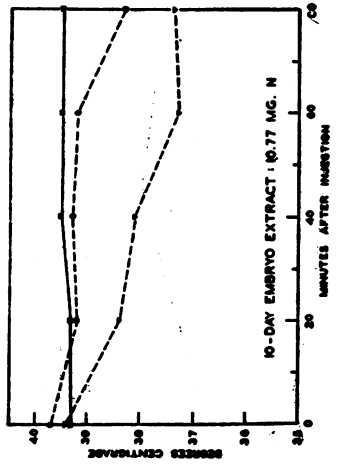
The authors make no assumption that all or a majority of the experimental animals tested cannot be sensitized against chick embryo material of less than 10 days' age. Most of the guinea pigs could undoubtedly be sensitized by the use of repeated injections or employment of larger doses. It should be understood, however, that it was not our purpose to determine the limits of sensitizing and challenging doses, but rather to measure possible differences in antigenicity of the several embryo preparations under consideration. Further investigations concerning the specificity of the reactions obtained in these studies are now under way.

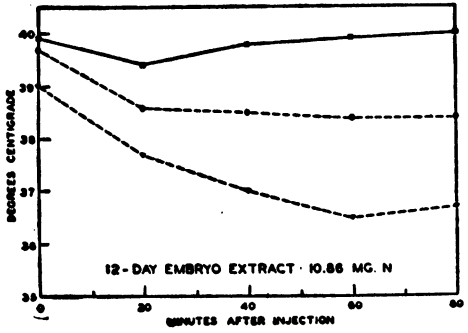
In the light of the work reported here, it is interesting to note that in the extensive experience with 17–D yellow fever vaccine prepared from chick embryos of 10 and 11 days, incubation at the time of harvest (*14*, *15*, *16*), no anaphylactic reactions have been reported. The same is true with yolk membrane vaccines for typhus fever, spotted fever, and American "Q" fever, where the age of the tissues is even less than 10 days. On the other hand, chick embryo equine encephalomyelitis vaccine is generally prepared from embryos which have been incubated for a period of 13 to 14 days: and it is with this type of vaccine that most of the unfavorable reactions have been noted.

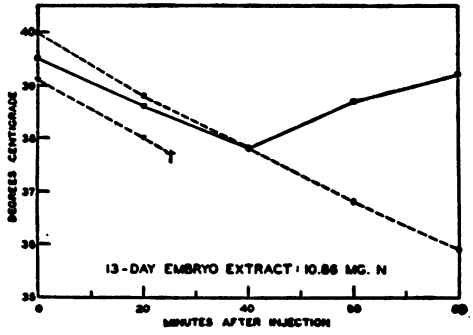

9-DAY EMBRYO EXTRACT : 10.79 MG. N
DEGREES CENTIGRADE
MINUTES AFTER INJECTION


11-DAY EMBRYO EXTRACT : 10.85 MG. N
DEGREES CENTIGRADE
MINUTES AFTER INJECTION


8-DAY EMBRYO EXTRACT : 10.73 MG. N
DEGREES CENTIGRADE
MINUTES AFTER INJECTION


10-DAY EMBRYO EXTRACT : 10.77 MG. N
DEGREES CENTIGRADE
MINUTES AFTER INJECTION





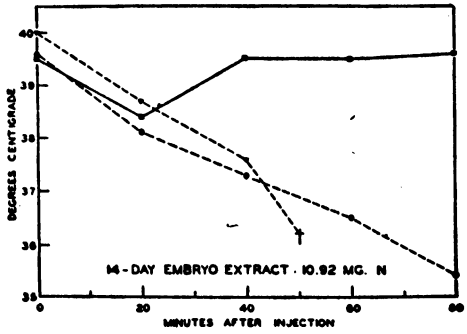


FIGURE 2.—Rectal temperature changes in sensitized and nonsensitized guinea pigs following intraperitoneal injections with normal chick-embryo aqueous extracts.
NOTE.—Solid lines indicate nonsensitized guinea pigs; broken lines indicate sensitized animals; † indicates death.

Utilizing equine encephalomyelitis vaccine prepared at the laboratories of the Army Veterinary School from 11-day chick embryos, as described by Randall (*17*), the Army Veterinary Corps (*18*) reports the successful immunization of all horses and mules of the military service without encountering unfavorable reactions. Approximately 3,500 were inoculated with chick-embryo vaccine during 1938, and about 35,000 each year during 1939 and 1940. Two 10 ml. doses of vaccine were administered at 7-day intervals in each course of injections. In 1941 nearly 50,000 animals were vaccinated intradermally with smaller doses. Among these animals, thousands of which had thus received at least two series of large subcutaneous doses of the 11-day embryo equine encephalomyelitis vaccine, only one or two reactions of a true anaphylactic type were encountered. Several others of a minor nature were noted.

These findings offer indirect evidence in support of the results reported in this paper.

CONCLUSIONS

Chick-embryo protein derived from embryos of different ages possesses the power to produce anaphylactic sensitization in young guinea pigs in direct ratio to the age of the embryos employed. When doses of comparable nitrogen content are employed, chick-embryo extract from 10-day or younger embryos is found to be weakly anaphylactogenic, while that from 14-day embryos is highly so.

If the results obtained with guinea pigs can be applied to human beings, the probability of sensitization with biologics prepared from chick embryos would be greater when 13- or 14 day embryos are used than when younger embryos are employed.

REFERENCES

(*1*) Beard, J. W., Beard, D., and Finkelstein, H.: Human vaccination against equine encephalomyelitis virus with formolized chick embryo vaccine. Sci., **90**: 215–216 (1939).

(*2*) Beard, J. W., Beard, D., and Finkelstein, H.: Vaccination of man against the virus of equine encephalomyelitis (eastern and western strains). J. Immunol., **38**: 117–136 (1940).

(*3*) Beard, D., Finkelstein, H., and Beard, J. W.: Repeated vaccination of man against the virus of equine encephalomyelitis. J. Immunol., **40**: 497–507 (1941).

(*4*) van der Scheer, J., Wyckoff, R. W. G., and Bohnel, E.: The antigenicity of chick embryo. J. Immunol., **41**: 391–395 (1941).

(*5*) Graham, R.: Reactions in horses following inoculation of chick embryo vaccine. J. Am. Vet. Med. Assoc., **97**: 38–39 (1941).

(*6*) Schoening, H. W.: Reactions following administration of equine encephalomyelitis vaccine. J. Am. Vet. Med. Assoc., **97**: 39–40 (1940).

(*7*) Wolfe, W. R., and Trum, B. F.: Anaphylactic reactions following the use of chick embryo equine encephalomyelitis vaccine. Vet. Bull. U. S. Army, **34**: 226–228 (1940).

(*8*) Cox, H. R.: Use of yolk sac of developing chick embryo as medium for growing rickettsiae of Rocky Mountain spotted fever and typhus groups. Pub. Health Rep., **53**: 2241–2247 (1938).

(9) Cox, H. R.: Rocky Mountain spotted fever. Protective value for guinea pigs of vaccine prepared from rickettsiae cultivated in embryonic chick tissues. Pub. Health Rep., 54: 1070–1077 (1939).
(10) Cox, H. R.: Cultivation of rickettsiae of the Rocky Mountain spotted fever, typhus, and Q fever groups in the embryonic tissues of developing chicks. Theobald Smith Award Lecture. Sci., 94: 399–403 (1941).
(11) Theiler, Max, and Smith, Hugh H.: The effect of prolonged cultivation in vitro upon the pathogenicity of yellow fever virus. J. Exp. Med., 65: 767–786 (1937).
(12) Theiler, Max, and Smith, Hugh H.: The use of yellow fever virus modified by in vitro cultivation for human immunization. J. Exp. Med., 65: 787–800 (1937).
(13) Seegal, Beatrice C.: Anaphylaxis. Gay and Associates: Agents of Disease and Host Resistance. Charles C. Thomas, Baltimore, 1935. Pp. 36–78.
(14) Smith, H. H., Penna, H. A., and Paoliello, A.: Yellow fever vaccination with cultured virus (17–D) without immune serum. Am. J. Trop. Med., 18: 437–468 (1938).
(15) Soper, F. L., and Smith, H. H.: Vaccination with virus 17–D in the control of jungle yellow fever in Brazil. Trans. 3rd Internat. Cong. Trop. Med. & Malaria, 1: 295–313 (1938).
(16) Smith, H. H., Garcia, M. R., Galvis, A. G., and Calderon, H. C.: Vacunacion contra la fiebre amarilla en Colombia. Rev. de la Fac. de Med., Bogota, 9: 1–22 (1940).
(17) Randall, R.: The preparation of equine encephalomyelitis vaccine (chick) by the Army Veterinary School. Vet. Bull. U. S. Army, 34: 7–12 (1940).
(18) Kelser, R. A.: Equine encephalomyelitis and its control. U. S. Live Stock Sanitary Assn., Proc. In press.
(19) Theiler, Max: The susceptibility of guinea pigs to the virus of yellow fever. Am. J. Trop. Med., 13: 399–414 (1933).

PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period July–December 1941

The following is a list of publications of the United States Public Health Service issued during the period July–December 1941.

The purpose of the publication of this list is to provide a complete and continuing record of Public Health Service publications, for reference use by librarians, scientific workers, and others interested in particular fields of public health work, and not to offer the publications for indiscriminate free public distribution.

Those publications marked with an asterisk (*) may be obtained only by purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices noted.

Periodicals

*Public Health Reports (weekly), July–December, vol. 56, Nos. 27 to 52, pages 1350 to 2484. 5 cents a number.

*Venereal Disease Information (monthly), July–December, vol. 22, Nos. 7 to 12, pages 232 to 456. 5 cents a number.

*Journal of the National Cancer Institute (bimonthly), August–December, vol. 2, Nos. 1 to 3, pages 1 to 308. 40 cents a number.

Reprints From the Public Health Reports

2290. Lead and arsenic ingestion and excretion in man. By Stewart H. Webster. July 4, 1941. 10 pages.
2291. The dental status and dental needs of young adult males, rejectable or acceptable for military service, according to Selective Service dental requirements. By Henry Klein. July 4, 1941. 19 pages.
2292. Protective antibodies against St. Louis encephalitis virus in the serum of horses and man. By Cornelius B. Philip, Herald R. Cox, and John H. Fountain. July 4, 1941. 4 pages.
2293. Suceptibility of horses to St. Louis encephalitis virus. By Herald R. Cox, Cornelius B. Philip, and J. W. Kilpatrick. July 4, 1941. 2 pages.
2294. Public accidents among the urban population as recorded in the National Health Survey. By Joan Klebba and Rollo H. Britten. July 11, 1941. 21 pages.
2295. Studies in childbirth mortality. III. Puerperal fatality in relation to mother's previous infant losses. By Jacob Yerushalmy, Elizabeth M. Gardiner, and Carroll E. Palmer. July 18, 1941. 19 pages.
2296. A study of the relationship of oral *Lactobacillus acidophilus* and saliva chemistry to dental caries. By Francis A. Arnold, Jr., and F. J. McClure. July 25, 1941. 20 pages.
2297. Pertussis prophylaxis with two doses of alum-precipitated vaccine. By Joseph A. Bell. August 1, 1941. 12 pages.
2298. Susceptibility of young mice (*Mus musculus*) to *Leptospira icterohaemorrhagiae*. By Carl L. Larson, August 1, 1941. 11 pages.
2299. Report on market-milk supplies of Standard Milk Ordinance communities, July 1, 1939–June 30, 1941. August 1, 1941. 6 pages.
2300. Skin hazards in airplane manufacture. By Louis Schwartz and John P. Russell. August 8, 1941. 13 pages; 3 plates.
2301. A protection test in mice for identification of Leptospirosis icterohaemorrhagica (Weil's disease). By Carl L. Larson. August 8, 1941. 17 pages.
2302. A study of the relative toxicity of the molecular components of lead arsenate. By Lawrence T. Fairhall and John W. Miller. August 8, 1941. 16 pages; 2 halftones.
2303. Observations on the use of "phenol" larvicides for mosquito control. By Frederick L. Knowles, Wiley V. Parker, and H. A. Johnson. August 15, 1941. 5 pages.
2304. The deposition and removal of lead in the soft tissues (liver, kidneys, and spleen). By Lawrence T. Fairhall and John W. Miller. August 15, 1941. 10 pages.
2305. Weil's disease. A report of 51 cases occurring in Puerto Rico and the United States. By Carl L. Larson. August 15, 1941. 7 pages.
2306. Distribution of health services in the structure of State government. Chapter I. The composite pattern of State health services. By Joseph W. Mountin and Evelyn Flook. August 22, 1941. 26 pages.
2307. Rocky Mountain spotted fever. A note on some aspects of its epidemiology. By Norman H. Topping. August 22, 1941. 5 pages.
2308. The specificity of the complement fixation test in endemic typhus fever using a rickettsial antigen. By Ida A. Bengtson and Norman H. Topping. August 29, 1941. 5 pages.
2309. Studies of sewage purification. XIV. The role of *Sphaerotilus natans* in activated sludge bulking. By C. C. Ruchhoft and John F. Kachmar. August 29, 1941. 30 pages.

2310. Leprosy: Complement fixation with Gaehtgens' spirochete antigen compared with standard Wassermann and Kahn tests. By D. W. Patrick and D. M. Wolfe. August 29, 1941. 4 pages.
2311. A new industrial skin cleanser. By Louis Schwartz. September 5, 1941. 4 pages.
2312. Disabling sickness among 2,000 white male glass workers. By William M. Gafafer. September 5, 1941. 9 pages.
2313. *Ornithodoros turicata:* The male; feeding and copulation habits, fertility, span of life, and the transmission of relapsing fever spirochetes. By Gordon E. Davis. September 5, 1941. 4 pages.
2314. Diurnal variation of urinary lead excretion. By Stewart H. Webster. September 12, 1941. 16 pages.
2315. Frequency of disabling morbidity by cause, and duration, among male and female industrial workers during 1940, and by cause among males during the first quarter of 1941. By William M. Gafafer. September 12, 1941. 5 pages.
2316. Present-day methods for controlling *Aëdes aegypti* mosquitoes. By James H. LeVan. September 19, 1941. 6 pages; 2 plates.
2317. Eosinates of the azures and methylene blue in preparation of a satisfactory Giemsa stain from dyes of American manufacture. By M. A. Roe, A. Wilcox, and R. D. Lillie. September 26, 1941. 4 pages.
2318. Twenty-four-hour output of certain urinary constituents in persons exposed to lead arsenate spray residue. By Stewart H. Webster. September 26, 1941. 10 pages.
2319. Development of a leprous process in rats at the site of inoculation with material from human leprosy. By G. L. Fite. September 29, 1941. 4 pages.
2320. Our inadequate treatment of the mentally ill as compared with treatment of other sick people. By Victor H. Vogel. October 3, 1941. 6 pages.
2321. Dermatitis from cutting oils. By Louis Schwartz. October 3, 1941. 7 pages.
2322. The lead and arsenic content of urines from 46 persons with no known exposure to lead or arsenic. By Stewart H. Webster. October 3, 1941. 8 pages.
2323. Rat-bite fever in Washington, D. C. due to *Spirillum minus* and *Streptobacillus moniliformis*. By Carl L. Larson. October 3, 1941. 8 pages.
2324. Doctors' calls in connection with illness from specific diseases among 9,000 families, based on Nation-wide periodic canvasses, 1928–31. By Selwyn D. Collins. October 10, 1941. 29 pages.
2325. The public health administrator's responsibility in the field of occupational disease legislation. By J. J. Bloomfield and W. M. Gafafer. October 17, 1941. 9 pages.
2326. A strain of Rocky Mountain spotted fever virus of low virulence isolated in the western United States. By Norman H. Topping. October 17, 1941. 4 pages.
2327. Health status of adults in the productive ages. By David E. Hailman. October 24, 1941. 17 pages.
2328. A new method for viewing sheet Kodachrome. By Albert A. Stone, R. Donald Reed, and Louis Schwartz. October 24, 1941. 2 pages.
2329. An epidemiological study of calcified pulmonary lesions in an Ohio county. By B. J. Olson, W. H. Wright, and M. O. Nolan. October 31, 1941. 22 pages.
2330. Positive agglutination tests in suspected cases of Weil's disease. By Ardsroony Packchanian. November 7, 1941. 12 pages.

2331. Directory of State and insular health authorities, 1941. November 7, 1941. 18 pages.
2332. Blindness, as recorded in the National Health Survey—amount, causes, and relation to certain social factors. By Rollo H. Britten. November 14, 1941. 25 pages.
2333. Treatment of dietary liver cirrhosis in rats with choline and casein. By J. V. Lowry, Floyd S. Daft, W. H. Sebrell, L. L. Ashburn, and R. D. Lillie. November 14, 1941. 4 pages.
2334. Distribution of health services in the structure of State government. Chapter II. Communicable disease control by State agencies. By Joseph W. Mountin and Evelyn Flook. November 21, 1941. 26 pages.
2335. *Ornithodoros turicata* and relapsing fever spirochetes in New Mexico. By Gordon E. Davis. November 21, 1941. 4 pages.
2336. Facilities in the United States for the special care of children with rheumatic heart disease. By O. F. Hedley. December 5, 1941. 21 pages.
2337. Siphonaptera: The genera *Amphalius* and *Ctenophyllus* in North America. By William L. Jellison. December 5, 1941. 8 pages.
2338. Child health and the Selective Service physical standards. By Antonio Ciocco, Henry Klein, and Carroll E. Palmer. December 12, 1941. 11 pages.
2339. Industrial injuries among the urban population as recorded in the National Health Survey. By Joan Klebba. December 12, 1941. 18 pages.
2340. Quantitative studies of the tuberculin reaction. II. The efficiency of a quantitative patch test in detecting reactors to low doses of tuberculin. By Michael L. Furcolow and Edward L. Robinson. December 19, 1941. 11 pages.
2341. Studies of the acute diarrheal diseases. V. An outbreak due to *Salmonella typhi murium*. By W. E. Mosher, Jr., S. M. Wheeler, H. L. Chant, and A. V. Hardy. December 19, 1941. 12 pages.
2342. Relapsing fever: *Ornithodoros parkeri* a vector in California. By Gordon E. Davis, Harlin L. Wynns, and M. Dorthy Beck. December 19, 1941. 2 pages.
2343. Studies of sewage purification. XV. Effective bacteria in purification by trickling filters. By C. T. Butterfield and Elsie Wattie. December 26, 1941. 20 pages: 1 plate.
2344. *Ornithodoros parkeri* and relapsing fever spirochetes in Utah. By Gordon E. Davis. December 26, 1941. 5 pages.

Supplements to the Public Health Reports

164. A study of the public mental hospitals of the United States 1937–39. By Samuel W. Hamilton, Grover A. Kempf, Grace C. Scholz, and Eve G. Caswell. 1941. 126 pages.
166. The notifiable diseases. Prevalence in States, 1940. 1941. 14 pages.

Public Health Bulletins

268. Heart disease in Philadelphia cardiac clinics. A composite picture of the etiological types in the clinics of 15 hospitals, with special reference to rheumatic heart disease and syphilis of the aorta and heart. By O. F. Hedley. 1941. 38 pages.
269. The health of workers in dusty trades. VII. Restudy of a group of granite workers. By Albert E. Russell. 1941. 71 pages; 43 plates.

270. Soft coal miners—health and working environment. By Robert H. Flinn, Harry E. Seifert, Hugh P. Brinton, J. L. Jones, and R. W. Franks. 1941. 118 pages; 31 halftones.
271. The aromatic amino and nitro compounds, their toxicity and potential dangers. A review of the literature. By W. F. von Oettingen. 1941. 221 pages.
272. The toxicity and potential dangers of nitrous fumes. By W. F. von Oettingen 1941. 34 pages.
273. The socio-economic and employment status of urban youth in the United States, 1935–36. By Bernard D. Karpinos. 1941. 58 pages.
274. Studies on the mechanism of carbon monoxide poisoning as observed in dogs anesthetized with sodium amytal. By W. F. von Oettingen, D. D. Donahue, P. J. Valaer, and J. W. Miller. 1941. 50 pages; 1 halftone.
275. Cancer mortality in the United States. IV. Age variation in mortality from cancer of specific sites, 1930–32. By Mary Gover. 1941. 57 pages.
276. A study of the pollution and natural purification of the Scioto River. By Robert W. Kehr, W. C. Purdy, James B. Lackey, Oliver R. Placak, and William E. Burns. 1941. 153 pages; 9 halftones.

Miscellaneous Publication

21. Until the doctor comes. By James A. Dolce. 1941. 60 pages. (Supersedes "What to Do in Case of Accident.")

Reprints From the Journal of the National Cancer Institute

39. Early diagnosis of cancer of the stomach; gastroscopy and gastric biopsies, gastrophotography and X-rays. By Rudolph Schindler. February 1941. 20 pages; 1 plate; 29 halftones.
46. Possibilities of improved therapy for cancer patients. By Carl Voegtlin. April 1941. 14 pages; 1 halftone.
47. Effect of foster nursing on the response of mice to estrogens. By Michael B. Shimkin and Howard B. Andervont. April 1941. 7 pages.
48. Studies on the purification and properties of the rabbit-papilloma-virus protein. By W. Ray Bryan and J. W. Beard. April 1941. 67 pages.
49. The peptidase activities of the cathepsins of normal rat tissue and of Jensen rat sarcoma. By Mary E. Maver, J. M. Johnson, and J. W. Thompson. April 1941. 12 pages.
50. Chemical studies on the components of normal and neoplastic tissues. V. The relative arginase activity of certain tumors and normal control tissues. By Jesse P. Greenstein, Wendell V. Jenrette, G. Burroughs Mider, and Julius White. April 1941. 20 pages.
51. Induction of tumors in guinea pigs with subcutaneously injected methylcholanthrene. By Michael B. Shimkin and G. Burroughs Mider. April 1941. 19 pages; 7 plates.

Workers Health Series

3. KO by CO gas.
4. Clara gives benzol the run around.
5. Trouble in the midriff.

Unnumbered Publications

Index to Public Health Reports, volume 56, part 1, January–June 1941. 24 pages.

Index to Journal of the National Cancer Institute, volume 1, August 1940–June 1941. 9 pages.

Reprints From Venereal Disease Information

154. Toxic dose of mapharsen given by the continuous drip method. By Harold J. Magnuson and B. O. Raulston. Vol. 22, May 1941. 10 pages.
155. Evaluating a serologic test for syphilis in a metropolitan community. By Nathan Nagle and J. C. Willett. Vol. 22, May 1941. 6 pages.
156. Preservation of the gonococcus in frozen urines and broth. By Morris S. Wortman, Axel Gronau, Rogers Deakin, and Frances Love. Vol. 22, June 1941. 3 pages.
157. Case-finding with gonorrhea patients in a clinic for venereal diseases. By Edgar C. Baldock. Vol. 22, June 1941. 4 pages.
158. Syphilis-malaria survey, Onslow County, North Carolina. By Frank S. Fellows and William B. Perry. Vol. 22, July 1941. 11 pages.
159. Spontaneous healing and progression in untreated venereal lymphogranuloma. By Robert Brandt. Vol. 22, July 1941. 6 pages.
160. The technic of induced malaria as used in the South Carolina State Hospital. By Bruce Mayne and Martin D. Young. Vol. 22, August 1941. 6 pages.
161. The indications for therapeutic malaria in the various forms of neurosyphilis. By Josef Gerstmann. Vol. 22, August 1941. 4 pages.
162. Interstitial keratitis; standardization of treatment. By Joseph V. Klauder and Eleanor Vandoren. Vol. 22, September 1941. 16 pages.
163. Gonococcal infection in the female. By Robert M. Lewis. Vol. 22, October 1941. 8 pages.
164. Significance of syphilis in pregnancy. By Ernest B. Howard. Vol. 22, November 1941. 8 pages.

Venereal Disease Posters

14. Make our men as fit as our machines.
15. No home remedy ever cured gonorrhea.
16. Prostitution spreads syphilis and gonorrhea.
17. Know for sure—get blood test before marriage.

TOXICITY OF AROMATIC AMINO AND NITRO COMPOUNDS [1]

A Review

Public Health Bulletin No. 271, which was recently issued, gives a discussion of the toxicity and potential dangers of the aromatic amino and nitro compounds, including the phenylhydrazine and phenylhydroxylamine derivatives and the amino and nitro naphthalene derivatives. Some of these chemicals, such as aniline and toluidine, including some of their derivatives, are of great importance in the manufacturing of dyestuffs; others such as dinitrobenzene, di- and trinitrotoluene, dinitrophenol, and tetryl play an important role in the explosives industry, and a knowledge of the health hazards connected

[1] The aromatic amino and nitro compounds, their toxicity and potential dangers. A review of the literature. By W. F. von Oettingen. Public Health Bulletin No. 271. Government Printing Office, 1941. Available from the Superintendent of Documents, Washington, D. C., at 25 cents per copy.

with their handling is, therefore, of great importance in connection with our war efforts.

Whereas many of these compounds have been studied very thoroughly, both from the experimental and from the industrial hygiene point of view, very little information may be found on others. For this reason, the material is not restricted to those aromatic nitro and amino compounds which are of immediate practical importance, but other compounds are also discussed, especially those which allow conclusions regarding the relation between their chemical constitution and their pharmacological and toxicological action. This information will allow the appraisal of the toxicity and potential dangers of those chemicals which may give rise to untoward effects and which have not been studied hitherto in this respect.

DEATHS DURING WEEK ENDED APRIL 18, 1942

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

	Week ended Apr. 18, 1942	Corresponding week, 1941
Data from 88 large cities of the United States:		
Total deaths	8,750	8,840
Average for 3 prior years	8,864	
Total deaths, first 15 weeks of year	136,774	140,401
Deaths per 1,000 population, first 15 weeks of year, annual rate	12.7	13.1
Deaths under 1 year of age	607	565
Average for 3 prior years	509	
Deaths under 1 year of age, first 15 weeks of year	8,533	8,019
Data from industrial insurance companies:		
Policies in force	64,975,551	64,570,519
Number of death claims	13,039	12,263
Death claims per 1,000 policies in force, annual rate	10.5	9.9
Death claims per 1,000 policies, first 15 weeks of year, annual rate	10.2	10.8

PREVALENCE OF DISEASE

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

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED APRIL 25, 1942

Summary

The incidence of most of the common communicable diseases reported in the following weekly table remained below the 5-year (1937–41) median expectancy during the current week.

Although the total number of reported cases of measles is about 51 percent of the number reported for the corresponding week last year, it is 58 percent above the 5-year median expectancy. The largest numbers of cases are being reported from California and Texas, where some areas are stated to be having the severest epidemic on record. Of a total of 279,623 cases in the entire country to date this year (first 16 weeks), California has reported 61,939 and Texas 30,101—a total of 92,040 cases, or 33 percent, in these two States which have about 10 percent of the total population. For the current week these States reported about one-third of the total cases and for the preceding week about 35 percent.

The number of cases of meningococcus meningitis declined from 88 for the preceding week to 79, while the number of cases of poliomyelitis increased slightly—from 14 to 16 (5-year median, 17). Of 19 cases of smallpox (the lowest recorded figure for the week), 9 were reported in Missouri. The diphtheria incidence (201 cases) is also the lowest on record for this week.

Other current reports include 1 case of anthrax (in Pennsylvania), 3 cases of leprosy (2 in California, 1 in Texas), 11 cases of tularemia, 20 cases of endemic typhus fever, and 7 cases of Rocky Mountain spotted fever (all in the northwestern States).

The death rate for the current week for 88 large cities of the United States is 11.6 per 1,000 population, as compared with 12.2 for the preceding week and 11.9 for the 3-year (1939–41) average for the corresponding week. The accumulated rate to date this year is 12.7, as compared with 13.0 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended April 25, 1942, and comparison with corresponding week of 1941 and 5-year median

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

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended		Median 1937–41	Week ended		Median 1937–41	Week ended		Median 1937–41	Week ended		Median 1937–41
	Apr. 25, 1942	Apr. 26, 1941		Apr. 25, 1942	Apr. 26, 1941		Apr. 25. 1942	Apr. 26, 1941		Apr. 25, 1942	Apr. 26, 1941	
NEW ENG.												
Maine	1	1	2	-----	-----	1	185	84	84	3	0	0
New Hampshire	0	0	0	2	-----	-----	8	49	26	0	0	0
Vermont	0	0	0	-----	-----	-----	125	84	58	0	0	0
Massachusetts	2	3	3	-----	-----	-----	1, 187	1, 190	621	7	2	2
Rhode Island	1	3	0	-----	-----	-----	298	3	49	0	0	0
Connecticut	2	3	3	-----	5	5	590	380	380	2	0	0
MID. ATL.												
New York	20	13	24	[1]	[1] 12	[1] 12	645	6, 513	1, 782	13	4	5
New Jersey	5	3	11	5	34	8	663	3, 586	1, 834	5	3	2
Pennsylvania	6	11	28	-----	-----	-----	1, 419	5, 789	1, 112	7	7	8
E. NO. CEN.												
Ohio	6	8	8	10	12	12	342	7, 182	1, 041	0	1	1
Indiana	5	8	8	7	16	13	171	1, 121	400	0	0	0
Illinois	11	17	27	6	12	12	601	2, 812	188	1	3	3
Michigan [2]	6	0	4	1	14	14	426	3, 581	674	6	0	2
Wisconsin	1	2	1	60	73	52	1, 020	1. 832	751	1	0	1
W. NO. CEN.												
Minnesota	2	3	3	1	4	2	980	47	120	0	0	0
Iowa	2	0	3	5	18	18	315	213	213	0	0	0
Missouri	4	1	7	-----	7	7	560	529	56	2	1	1
North Dakota	2	7	1	74	9	9	71	45	24	0	0	0
South Dakota	5	0	0	-----	1	1	13	14	1	0	1	0
Nebraska	3	3	1	14	-----	-----	400	15	18	0	0	0
Kansas	2	6	3	3	7	7	720	1, 064	630	0	1	0
SO. ATL.												
Delaware	0	0	1	-----	-----	-----	4	228	40	0	0	0
Maryland [2]	6	3	2	6	25	10	790	409	409	4	2	2
Dist. of Col	1	0	2	2	-----	-----	112	370	107	2	0	0
Virginia	4	8	9	217	430	175	247	2, 235	617	3	10	2
West Virginia	4	2	4	42	15	33	246	753	108	2	0	3
North Carolina	8	19	15	34	12	14	864	1, 590	761	0	2	2
South Carolina	2	2	4	265	328	328	143	639	64	0	1	1
Georgia	6	3	4	47	358	131	201	734	91	2	1	0
Florida	2	5	2	1	77	7	171	606	232	0	1	0
E. SO. CEN.												
Kentucky	2	5	5	6	5	15	67	1, 482	375	2	2	2
Tennessee	3	3	3	16	60	60	121	650	127	1	2	2
Alabama	4	10	5	172	39	93	143	993	176	8	3	3
Mississippi [2]	8	5	5	-----	-----	-----	-----	-----	-----	1	2	1
W. SO. CEN.												
Arkansas	4	3	4	76	96	96	132	479	58	0	1	1
Louisiana	0	6	9	2	2	12	184	67	15	1	0	0
Oklahoma	3	2	4	45	76	85	306	184	123	0	2	1
Texas	30	28	28	554	729	564	1, 974	1, 541	811	6	0	1
MOUNTAIN												
Montana	1	3	0	4	19	6	158	30	30	0	1	0
Idaho	0	0	0	-----	1	3	134	23	37	0	0	0
Wyoming	1	0	0	141	-----	-----	54	52	15	0	0	0
Colorado	7	11	11	39	14	9	310	445	352	1	0	0
New Mexico	7	1	1	1	1	1	99	214	70	0	0	0
Arizona	2	0	1	80	73	73	145	110	89	0	0	0
Utah [2]	0	1	0	11	7	7	441	36	146	0	0	0
Nevada	0	0	-----	-----	-----	-----	273	1	-----	0	0	-----
PACIFIC												
Washington	1	3	0	4	-----	-----	377	103	103	3	0	0
Oregon	0	4	2	17	11	18	165	364	96	0	0	0
California	9	18	18	164	272	69	6, 074	383	397	2	3	2
Total	201	237	288	2, 140	2, 874	2, 117	24, 674	50, 854	15. 568	79	56	56
16 weeks	4, 687	4, 525	7, 530	69, 366	472, 451	149, 614	279, 623	533, 799	211, 902	1, 232	822	822

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended April 25, 1942, and comparison with corresponding week of 1941 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended		Median 1937–41	Week ended		Median 1937–41	Week ended		Median 1937–41	Week ended		Median 1937–41
	Apr. 25, 1942	Apr. 26, 1941		Apr. 25, 1942	Apr. 26, 1941		Apr. 25, 1942	Apr. 26, 1941		Apr. 25, 1942	Apr. 26, 1941	
NEW ENG.												
Maine	0	0	0	29	3	23	0	0	0	1	0	0
New Hampshire	0	0	0	10	1	6	0	0	0	0	0	0
Vermont	0	0	0	6	20	13	0	0	0	0	0	0
Massachusetts	0	0	0	391	222	222	0	0	0	0	1	1
Rhode Island	0	0	0	10	6	17	0	0	0	0	0	0
Connecticut	0	0	0	29	74	119	0	0	0	0	2	1
MID. ATL.												
New York	3	0	0	464	433	822	0	0	0	7	7	7
New Jersey	0	0	0	137	267	205	0	0	0	0	0	4
Pennsylvania	0	1	1	540	393	476	0	0	0	8	7	7
E. NO. CEN.												
Ohio	0	1	1	281	261	261	0	0	0	6	1	3
Indiana	2	0	0	102	118	160	1	0	19	2	0	1
Illinois	0	0	0	204	313	487	0	1	17	6	1	3
Michigan [2]	0	0	0	288	250	454	0	0	4	3	1	2
Wisconsin	0	1	0	162	114	167	0	14	5	0	0	1
W. NO. CEN.												
Minnesota	0	0	0	50	38	90	0	3	9	1	1	1
Iowa	0	0	0	35	50	107	0	6	34	0	2	1
Missouri	0	0	0	91	98	86	9	3	27	6	0	2
North Dakota	0	0	0	18	2	13	0	0	5	0	0	0
South Dakota	0	0	0	26	18	18	0	0	7	0	0	0
Nebraska	0	0	0	28	15	19	0	0	1	0	0	0
Kansas	0	0	0	96	33	97	0	0	5	0	0	1
SO. ATL.												
Delaware	0	0	0	45	38	11	0	0	0	0	0	0
Maryland [2]	0	3	0	80	40	40	0	0	0	1	0	2
Dist. of Col	0	0	0	13	8	18	0	0	0	0	1	0
Virginia	0	1	0	12	31	31	0	0	0	1	3	1
West Virginia	0	0	0	31	44	44	0	0	0	2	2	1
North Carolina	0	0	0	2	26	27	0	0	1	1	3	2
South Carolina	2	0	0	3	1	2	0	0	0	0	2	2
Georgia	1	0	0	10	18	6	1	0	0	10	1	3
Florida	1	2	0	4	6	6	0	0	0	9	1	2
E. SO. CEN.												
Kentucky	1	0	0	71	87	60	0	0	1	0	4	4
Tennessee	0	0	0	50	65	51	1	0	0	4	2	1
Alabama	0	2	0	9	17	10	0	0	0	2	1	1
Mississippi [2]	1	0	1	12	7	3	1	2	1	2	5	0
W. SO. CEN.												
Arkansas	0	0	0	4	7	7	1	1	3	0	1	3
Louisiana	0	0	0	8	5	9	0	1	0	6	8	8
Oklahoma	0	0	0	7	8	12	0	0	3	1	0	0
Texas	4	2	2	36	43	43	3	3	7	6	6	7
MOUNTAIN												
Montana	0	2	0	17	42	25	0	1	2	0	0	0
Idaho	0	0	0	1	11	7	0	0	3	0	0	0
Wyoming	0	0	0	9	12	7	0	0	0	0	0	0
Colorado	0	0	0	22	20	44	0	0	4	0	1	1
New Mexico	0	0	0	5	5	16	0	0	0	1	0	1
Arizona	0	0	0	2	12	7	0	0	0	0	1	1
Utah [2]	0	0	0	16	10	18	0	0	1	0	0	0
Nevada	0	0	------	6	0	------	0	0	------	0	0	------
PACIFIC												
Washington	0	1	0	23	15	35	0	2	2	1	0	0
Oregon	0	0	0	9	13	18	2	9	10	0	0	0
California	1	1	1	102	145	154	0	0	11	3	9	7
Total	16	17	17	3,606	3,465	5,042	19	46	366	90	74	98
16 weeks	342	364	339	63,030	60,560	81,915	361	715	5,097	1,215	1,268	1,751

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended April 25, 1942, and comparison with corresponding week of 1941—Continued

Division and State	Whooping cough		Week ended Apr. 25, 1942								
	Week ended		Anthrax	Dysentery			Encephalitis	Leprosy	Rocky Mountain spotted fever	Tularemia	Typhus fever
	Apr. 25, 1942	Apr. 26, 1941		Amebic	Bacillary	Unspecified					
NEW ENG.											
Maine	18	19	0	0	0	0	0	0	0	0	0
New Hampshire	6	0	0	0	0	0	0	0	0	0	0
Vermont	40	14	0	0	0	0	0	0	0	0	0
Massachusetts	206	215	0	0	0	0	0	0	0	0	0
Rhode Island	16	20	0	0	0	0	0	0	0	0	0
Connecticut	74	73	0	0	1	0	0	0	0	0	0
MID ATL.											
New York	441	348	0	2	6	0	2	0	0	0	1
New Jersey	299	103	0	1	0	0	0	0	0	0	0
Pennsylvania	282	375	1	1	0	0	0	0	0	0	0
E. NO. CEN.											
Ohio	148	365	0	0	0	0	0	0	0	0	0
Indiana	55	39	0	0	0	0	0	0	0	0	0
Illinois	229	72	0	1	0	0	1	0	0	1	0
Michigan [1]	215	318	0	0	0	0	1	0	0	0	0
Wisconsin	227	119	0	0	0	0	0	0	0	0	0
W. NO. CEN.											
Minnesota	40	121	0	2	0	0	0	0	0	0	0
Iowa	37	39	0	0	0	0	0	0	0	0	0
Missouri	11	59	0	0	0	1	0	0	0	0	0
North Dakota	17	23	0	0	0	0	0	0	0	0	0
South Dakota	6	17	0	0	0	0	0	0	0	0	0
Nebraska	2	24	0	0	0	0	0	0	0	0	0
Kansas	33	116	0	0	0	0	1	0	0	0	0
SO. ATL.											
Delaware	1	8	0	0	0	0	0	0	0	0	0
Maryland [1]	63	112	0	0	0	2	0	0	0	1	0
District of Columbia	13	22	0	0	0	0	0	0	0	0	0
Virginia	84	131	0	1	0	11	0	0	0	0	0
West Virginia	12	67	0	0	0	0	0	0	0	0	0
North Carlina	117	349	0	0	0	0	0	0	0	0	2
South Carolina	63	171	0	0	0	0	0	0	0	0	0
Georgia	13	28	0	1	4	0	0	0	0	3	7
Florida	14	23	0	0	0	0	0	0	0	0	2
E. SO. CEN.											
Kentucky	89	95	0	0	0	0	0	0	0	0	0
Tennessee	29	55	0	0	0	0	1	0	0	2	0
Alabama	35	107	0	0	0	0	2	0	0	0	2
Mississippi [2]	----	----	0	0	0	0	0	0	0	0	0
W. SO. CEN.											
Arkansas	7	38	0	3	0	0	0	0	0	1	0
Louisiana	4	8	0	0	1	0	0	0	0	1	1
Oklahoma	12	37	0	0	0	0	1	0	0	0	0
Texas	126	339	0	4	33	0	0	1	0	0	5
MOUNTAIN											
Montana	20	16	0	0	0	0	0	0	3	0	0
Idaho	3	9	0	0	0	0	0	0	0	0	0
Wyoming	27	3	0	0	0	0	0	0	2	0	0
Colorado	18	191	0	0	0	0	0	0	0	0	0
New Mexico	39	26	0	1	0	0	0	0	0	0	0
Arizona	21	34	0	0	0	10	0	0	0	0	0
Utah [2]	30	55	0	0	0	0	0	0	0	1	0
Nevada	4	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	105	145	0	0	0	0	0	0	0	0	0
Oregon	44	28	0	0	0	0	0	0	2	0	0
California	354	683	0	0	3	0	1	2	0	1	0
Total	3,749	5,259	1	17	48	24	10	3	7	11	20
16 weeks	61,495	71,639									

[1] New York City only.
[2] Period ended earlier than Saturday.

WEEKLY REPORTS FROM CITIES

City reports for week ended April 11, 1942

This table lists the reports from 88 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.

	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								
Atlanta, Ga	0	0	10	0	0	0	3	0	5	0	0	0
Baltimore, Md	0	1	3	1	459	6	16	0	27	0	0	22
Barre, Vt	0	0	------	0	0	0	0	0	0	0	0	2
Billings, Mont	0	0	------	0	3	0	2	0	0	0	0	0
Birmingham, Ala	0	0	8	2	8	1	2	0	4	0	0	3
Boise, Idaho	0	0	------	0	2	0	0	0	4	0	0	0
Boston, Mass	0	0	------	0	195	2	12	0	83	0	0	42
Bridgeport, Conn	0	0	1	1	28	1	3	0	3	0	0	1
Brunswick, Ga	0	0	------	0	7	0	0	0	0	0	0	0
Buffalo, N. Y	0	0	------	0	12	0	8	0	13	0	0	2
Camden, N. J	1	0	------	0	1	0	3	0	13	0	0	1
Charleston, S. C	0	0	29	0	3	0	1	0	1	0	0	0
Charleston, W. Va	0	0	------	0	0	0	0	0	0	0	0	0
Chicago, Ill	11	0	4	2	133	1	26	0	92	1	0	87
Cincinnati, Ohio	0	0	1	1	6	0	4	0	22	0	0	10
Cleveland, Ohio	0	0	3	0	9	1	6	0	83	0	0	24
Columbus, Ohio	0	0	------	0	42	0	5	0	11	0	0	3
Concord, N. H	0	0	------	0	0	0	2	0	2	0	0	0
Cumberland, Md	0	0	------	0	2	0	0	0	2	0	0	1
Dallas, Tex	5	0	------	0	199	0	1	0	3	0	0	6
Denver, Colo	3	0	17	0	156	0	6	0	8	0	0	12
Detroit, Mich	5	0	3	0	50	0	16	0	83	0	1	45
Duluth, Minn	0	0	------	1	6	0	0	0	8	0	0	0
Fall River, Mass	1	0	------	0	57	0	0	0	74	0	0	0
Fargo, N. Dak	0	0	------	1	0	0	0	0	0	0	0	5
Flint, Mich	0	0	------	0	2	0	4	0	1	0	0	3
Fort Wayne, Ind	0	0	------	0	1	0	6	0	0	0	0	0
Frederick, Md	0	0	------	0	6	0	1	0	1	0	0	0
Galveston, Tex	0	0	------	0	2	0	0	1	0	0	0	0
Grand Rapids, Mich	0	0	------	0	5	0	1	0	2	0	0	3
Great Falls, Mont	0	0	------	0	28	0	0	0	0	0	0	2
Hartford, Conn	0	0	------	0	62	0	3	0	2	0	0	10
Helena, Mont	0	0	------	0	0	0	1	0	0	0	0	1
Houston, Tex	1	0	------	0	96	0	6	0	1	0	0	2
Indianapolis, Ind	2	0	------	0	51	1	10	0	26	0	0	16
Kansas City, Mo	2	0	------	1	92	1	8	0	35	0	0	3
Kenosha, Wis	0	0	------	0	8	0	0	0	2	0	0	12
Los Angeles, Calif	4	0	17	0	761	2	13	0	12	0	0	29
Lynchburg, Va	0	0	------	0	1	0	2	0	0	0	0	19
Memphis, Tenn	0	0	------	1	20	0	3	0	6	0	0	3
Milwaukee, Wis	0	0	1	1	166	0	5	0	24	0	0	40
Minneapolis, Minn	0	0	------	0	355	0	5	0	16	0	0	9
Missoula, Mont	0	0	------	0	1	0	0	0	0	0	0	1
Mobile, Ala	0	0	3	1	2	1	3	0	2	0	0	0
Nashville, Tenn	0	0	------	0	2	0	3	0	4	0	0	0
Newark, N. J	0	0	1	1	243	0	4	0	23	0	0	39
New Haven, Conn	0	0	------	0	214	0	1	0	1	0	0	4
New Orleans, La	1	0	3	1	89	2	3	0	3	0	1	2
New York, N. Y	10	0	10	0	89	12	74	2	281	0	6	252
Omaha, Nebr	1	0	------	0	155	0	6	0	7	0	0	3
Philadelphia, Pa	2	1	1	2	48	6	28	0	197	0	1	91
Pittsburgh, Pa	2	0	------	0	14	1	11	0	13	0	1	24
Portland, Maine	0	0	------	0	5	0	7	0	1	0	0	3
Providence, R. I	0	0	------	0	253	0	7	0	3	0	9	23
Pueblo, Colo	0	0	------	0	0	0	2	0	2	0	0	0
Racine, Wis	0	0	------	0	41	0	0	0	4	0	0	9
Raleigh, N. C	0	0	------	0	1	0	0	0	0	0	0	0
Reading, Pa	0	0	------	0	1	0	1	0	1	0	0	2
Richmond, Va	0	0	9	0	2	0	6	0	4	0	1	0

City reports for week ended April 11, 1942—Continued

	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								
Roanoke, Va.	0	0	------	0	1	0	0	0	0	0	0	2
Rochester, N. Y.	0	0	------	0	8	0	0	0	11	0	0	1
Sacramento, Calif.	0	0	1	1	137	0	1	0	0	0	0	25
Saint Louis, Mo.	2	0	5	0	231	0	8	0	23	0	0	3
Saint Paul, Minn.	0	0	------	1	336	0	6	0	3	0	0	24
Salt Lake City, Utah	0	0	------	0	32	0	2	0	5	0	0	11
San Antonio, Tex.	1	0	1	0	35	0	5	0	1	0	0	2
San Francisco, Calif.	0	0	------	1	190	0	7	0	7	0	0	6
Savannah, Ga.	0	0	5	0	4	0	1	0	1	0	0	1
Seattle, Wash.	0	0	------	0	35	2	2	0	0	0	1	18
Shreveport, La.	0	0	------	0	7	0	5	0	0	0	0	0
South Bend, Ind.	0	0	------	0	3	0	1	0	10	0	0	0
Spokane, Wash.	0	0	------	0	17	1	2	0	2	0	1	5
Springfield, Ill.	0	0	------	0	232	1	2	0	1	0	0	0
Springfield, Mass	0	0	------	0	54	0	6	0	18	0	0	6
Superior, Wisc.	0	0	------	0	3	0	0	0	0	0	0	4
Syracuse, N. Y.	0	0	------	0	84	0	3	0	2	0	0	21
Tacoma, Wash.	0	0	------	0	2	0	4	0	5	0	0	2
Tampa, Fla.	0	0	2	2	11	0	2	0	0	0	2	1
Terre Haute, Ind.	0	0	------	1	7	0	4	0	0	0	0	0
Topeka, Kans.	0	0	------	0	15	1	0	0	3	0	0	4
Trenton, N. J.	0	0	4	0	3	0	2	0	6	0	0	10
Washington, D. C.	1	0	3	0	134	0	8	0	12	0	0	14
Wheeling, W. Va.	0	0	------	0	12	0	1	0	1	0	0	0
Wichita, Kans.	0	0	------	0	75	0	0	0	4	0	0	2
Wilmington, Del.	0	0	------	0	6	0	1	0	6	0	0	0
Wilmington, N. C.	0	0	------	0	32	0	2	0	0	0	0	0
Winston-Salem, N. C.	0	0	------	0	59	0	2	0	0	0	0	0
Worcester, Mass.	0	0	------	0	8	0	12	0	17	0	0	33

Dysentery, amebic.—Cases: Chicago, 1; New York, 1; Philadelphia, 1.
Dysentery, bacillary.—Cases: Cleveland, 1; Salt Lake City, 1.
Leprosy.—Cases: Chicago, 1; New York, 1.
Pellagra.—Cases: Philadelphia, 1.
Typhus fever.—Cases: New York, 1.

Rates (annual basis) per 100,000 population for a group of 88 selected cities (population 1942, 33,926,637)

Period	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Typhoid fever cases	Whooping cough cases
		Cases	Deaths						
Week ended April 11, 1942	8.45	22.29	3.53	917.09	65.93	207.95	0.15	3.69	163.68
Average for week 1937–41	14.74	42.66	9.77	1,277.54	95.41	291.81	2.17	2.95	185.23

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (rodent).—Rats proved positive for plague have been found in Paauhau, Hamakua District, Island of Hawaii, T. H., as follows: One rat on February 26, one rat on March 2, and one rat on March 10, 1942.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended March 28, 1942—During the week ended March 28, 1942, 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
Cerebrospinal meningitis		3		1	7	2				13
Chickenpox		5		167	273	27	37	12	97	618
Diphtheria	1	15	1	10	5	5		4	3	44
Dysentery				11					1	12
German measles	1			21	85	3	20	24	39	193
Influenza		4			19	2			16	41
Measles		3	1	508	168	205	26	21	22	954
Mumps	1	26	3	603	438	104	165	103	564	2,007
Pneumonia		9			6	3	1		17	36
Poliomyelitis				1						1
Scarlet fever	8	24	7	67	326	55	27	59	26	599
Trachoma									3	3
Tuberculosis	3	27	3	100	39		8	1	41	222
Typhoid and paratyphoid fever				17	1			1		19
Undulant fever				2	1				1	4
Whooping cough		6		177	89	1	8	4	24	309
Other communicable diseases		20	1	5	270	3	1		6	306

CUBA

Habana—Communicable diseases—4 weeks ended April 4, 1942.—During the 4 weeks ended April 4, 1942, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	6	1	Poliomyelitis	1	
Leprosy	2		Tuberculosis	8	3
Malaria	2		Typhoid fever	31	4
Measles	17				

Provinces—Notifiable diseases—4 weeks ended March 28, 1942.—During the 4 weeks ended March 28, 1942, cases of certain notifiable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana [1]	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer	2	1	3	15		8	29
Chickenpox				26	1	9	36
Diphtheria		21	3	2		3	29
Hookworm disease		35					35
Leprosy		1			1	1	3
Malaria	239	9		6		279	533
Measles		23	16	86	7	3	135
Poliomyelitis		2				1	3
Tuberculosis	12	22	17	70	9	29	159
Typhoid fever	12	85	8	32	6	39	182
Whooping cough	1			1			2

[1] Includes the city of Habana.

JAMAICA

Communicable diseases—4 weeks ended March 14, 1942.—During the 4 weeks ended March 14, 1942,[1] cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chickenpox	11	14	Scarlet fever		1
Diphtheria	2	2	Tuberculosis	21	42
Erysipelas	1		Typhoid fever	6	35
Leprosy		1	Typhus fever	5	
Puerperal fever	1	3			

[1] No report was received for the week ended March 7.

MALTA

Notifiable diseases—January 1942.—During the month of January 1942, certain notifiable diseases were reported in Malta, including the island of Gozo, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cancer		18	Measles	4	
Cerebrospinal meningitis	2	1	Nephritis		4
Chickenpox	6		Pneumonia	62	16
Diabetes mellitus		21	Scarlet fever	1	
Diarrhea and enteritis (under 2 years of age)		29	Trachoma	5	
Diphtheria	18	3	Tuberculosis (respiratory system)	22	15
Erysipelas	11		Typhoid fever	21	2
Gastroenteritis		41	Undulant fever	17	2
Influenza	2		Whooping cough	48	1

NEW ZEALAND

Notifiable diseases—4 weeks ended January 26, 1942.—During the 4 weeks ended January 26, 1942, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	28	4	Puerperal fever	10	1
Diphtheria	34	2	Scarlet fever	24	----
Dysentery (bacillary)	5	----	Tetanus	2	2
Erysipelas	19	----	Trachoma	6	----
Food poisoning	1	----	Tuberculosis	132	54
Lethargic encephalitis	1	----	Typhoid fever	5	----
Ophthalmia neonatorum	1	----	Undulant fever	1	----

SWITZERLAND

Notifiable diseases—November-December 1941.—During the months of November and December 1941, cases of certain notifiable diseases were reported in Switzerland as follows:

Disease	November	December	Disease	November	December
Cerebrospinal meningitis	10	10	Poliomyelitis	261	89
Chickenpox	214	219	Scarlet fever	278	374
Diphtheria	143	138	Trachoma	----	1
German measles	11	20	Tuberculosis	290	279
Influenza	2	25	Typhoid fever	6	6
Measles	141	404	Undulant fever	9	14
Mumps	78	122	Whooping cough	81	111
Paratyphoid fever	18	9			

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

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

A cumulative table showing the reported prevalence of these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Plague

Basutoland.—Information dated March 20, 1942, states that an outbreak of suspected plague has been reported near Thaba Bosiu in Maseru District, Basutoland. In two villages there have been 7 cases with 3 deaths. Three other villages in the same area are also affected.

Smallpox

British Guiana.—During the week ended February 28, 1942, 1 case of smallpox with 1 death was reported in British Guiana.

Typhus Fever

Algeria.—For the period March 11–20, 1942, 2,426 cases of typhus fever were reported in Algeria (136 cases in Algiers and 58 cases in Oran).

France—Marseille.—During the period April 7–15, 1942, 50 cases of typhus fever were reported in Marseille, France.

Morocco.—During the week ended April 4, 1942, 1,509 cases of typhus fever were reported in Morocco. In the preceding week 1,544 cases of typhus fever were reported.

Sierra Leone—Freetown.—During the 2 weeks ended January 10, 1942, 1 case of typhus fever was reported in Freetown, Sierra Leone.

Spain.—Typhus fever has been reported in Spain as follows: week ended March 21, 1942, 412 cases (89 in Madrid and 69 in Barcelona); week ended March 14, 326 cases (52 in Madrid and 21 in Barcelona).

Yellow Fever

Gold Coast—Suami.—On March 18, 1942, 1 case of yellow fever with 1 death was reported in Suami, Gold Coast.

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