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RADIO PRATIQUE

Pratique by Wireless in Lieu of Quarantine Inspection for Passenger Vessels

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On February 1, 1937, with the approval of the Secretary of the Treasury, there was inaugurated at New York one of the most significant modifications of United States quarantine procedure ever sponsored by the Public Health Service. On that date, for the first time since the institution of the Federal system of maritime quarantine a commercial vessel, after a foreign voyage, legally entered a United States port without being required to undergo quarantine inspection.

Under the new plan, developed by the New York Quarantine Station at the direction of the Surgeon General of the Public Health Service, permission to enter and dock is granted by wireless to certain especially qualified classes of passenger vessels.

Permission for vessels from foreign ports to hold intercourse with domestic ports is called "pratique." As the new system involves the use of a wireless message certifying to the state of health on board the incoming vessel, and pratique is granted by wireless, the term "radio pratique" was adopted to describe the procedure.

The principle of granting pratique on certification in lieu of inspection is not new. In recent years, other countries have adopted modifications of maritime quarantine restrictions which have had the effect of giving vessels the "benefit of the doubt" until a quarantinable condition actually has been demonstrated to exist on board. The Public Health Service has for many years accepted certification, by wireless, of commissioned medical officers of United States Navy vessels and Army transports in lieu of physical inspection at quarantine; but, heretofore, commercial vessels, regardless of their class or of the healthfulness of ports visited, have been required to undergo inspection at the first United States port touched after a foreign voyage.

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Owing to the potential infectibility of many of our domestic ports, the United States Government has wisely been slow to lower existing protective barriers until a mechanism which promised at least equal protection could be devised. It is believed that the Public Health Service plan for "radio pratique" fulfills this condition and offers the maximum of safety to our ports while imposing on steamship lines the minimum burden of expense and delay.

In developing the plan, the chief quarantine officer at New York, working in closest harmony with the chief of the Foreign Quarantine Division at Washington, made a comprehensive study of the major factors which would have a direct bearing on the success or failure of any plan suggested to modernize and simplify the quarantine inspection procedure. From the beginning, the study was directed at the development of a procedure which might safely replace the expensive and otherwise burdensome system of inspection which always had been in effect. The endeavor was made more complicated by the fact that the ship entry schedule at New York was predicated on a stop in the quarantine anchorage, during which time many details other than the quarantine inspection were attended to.

Among the items of inquiry were the following:

1. *World health conditions.*—Coupled with this item was the consideration of the eligibility of ports or geographical areas on the basis of the identification of sources of sanitary information. In the final analysis, not to have a constant dependable source of such information in a foreign port was considered to be of the same significance in rejecting a port as if the port were known or suspected to be infected with a quarantinable disease.

2. *The vessels and their medical staffs.*—Only passenger vessels were ever considered for "Radio Pratique."

In developing a list of vessels which might qualify to enter without quarantine inspection, the sanitary history of the vessels as shown in the records of the New York quarantine station was given the greatest weight. Items of chief interest were the general sanitary condition and the rat infestation status of the vessels. These items are rechecked at short intervals by personnel of the New York quarantine station.

The qualifications and abilities of all of the regularly employed ship's physicians were known to the officers at the New York quarantine station, but this knowledge was extended by inquiry during the study. Coincidentally, it was ascertained that a number of passenger vessels did not have whole-time physicians as regular members of their crews.

3. *Infectibility of the Port of New York to quarantinable diseases.*—It is sufficient to state that the Port of New York possesses a high degree of immunity against the successful implantation, in epidemic propor-

tions, of any of the quarantinable diseases. This condition is assured by—

(A) Highly developed sanitary safeguards, and

(B) Efficient operation of a well organized health department, supplemented by hospital facilities which could absorb and control any reasonable number of cases of pestilential disease before the infection could assume epidemic proportions.

PLAN FOR RADIO PRATIQUE

The "Plan for Radio Pratique" as finally worked out and introduced, covers the following basic considerations:

1. *Eligibility of vessels.*—To be eligible for "Radio Pratique", a vessel must conform to *all* of the following requirements:

(A) Engage principally in the carrying of passengers.

(B) Limit "rat-attractive" and "rat-harboring" items of cargo to 25 percent of its dead-weight cargo carrying capacity.

(C) Be in regular scheduled service, on a fixed itinerary, between New York and certain designated ports or geographical areas, and when on "cruise" must not contact ports other than those in designated areas.

(D) Carry as a regular member of the crew a physician, a whole-time employee of the vessel, whose professional qualifications are attested to by documentary evidence acceptable to the chief quarantine officer.

(E) Must visit no port in which a quarantinable disease is known or suspected to have occurred in epidemic proportions within 60 days preceding the visit.

(F) Carry no commercial shipments of birds of the parrot family.

(G) Be relatively free from rats and be maintained in a satisfactory sanitary condition.

(H) A certificate covering items A, B, C, and D, above, must be filed with the chief quarantine officer by the owners or agents who apply for eligibility for a vessel.

2. *Eligibility of ports and geographical areas.*—Only the following listed regular services are at this time approved for vessels eligible for "radio pratique":

(A) Between New York and European ports.

(B) Between New York and the Panama Canal.

(C) Between New York and the west coast of the United States, through the Panama Canal.

(D) Between New York and Bermuda or ports in the West Indies, or seasonal cruises of vessels, regularly in service A, B, or C, above, to ports in Bermuda, the West Indies, or Canadian ports on the Atlantic coast.

The selection of ports rests with the Surgeon General of the Public Health Service, who may, in his discretion, either add to or reduce the extent of the geographical areas which may be visited without loss of eligibility.

3. *Eligibility of ships' physicians.*—In the Public Health Service plan for "radio pratique" full responsibility for protecting United States ports is placed on the ship's physician. In effect, he becomes a supplementary quarantine officer, for upon him devolves the function formerly carried on by the port medical officer who inspected the vessel when it was required to stop at quarantine.

The ship's physician must be qualified to diagnose the eight quarantinable diseases in which the Public Health Service is interested and the several communicable nonquarantinable diseases for which the health department of the city of New York feels particular concern.

His professional qualifications must be evidenced by medical diploma and certificates of license and registration, and his employment status must be vouched for by the owners or agents of the vessel on which he is employed.

He must have a keen sense of his responsibility to the quarantine station which accepts his word as to health conditions on board the incoming vessel and he must loyally and faithfully fulfill his trust. He must not forget his obligation to the vessel on which he serves, as any error or failure on his part will result in the immediate loss of its eligibility for "radio pratique."

Supplementing the examination of the ship's physician.—A further safeguard is provided by the fact that the medical officer of the Public Health Service who boards the incoming vessel before it reaches the dock, for immigration inspections, personally inspects all persons reported ill by the ship's physician. Should any person manifest signs suggesting a quarantinable disease, the chief quarantine officer would be notified, and, if inspection confirmed the presence of a quarantinable disease, appropriate treatment would be applied before passengers or members of the crew would be permitted to go ashore.

PROCEDURE OF RADIO PRATIQUE AT NEW YORK

A list of vessels eligible for "radio pratique" is maintained by the chief quarantine officer. Vessels whose names appear on the list are certified as eligible to the New York agents and to all governmental agencies, such as the Customs and Immigration Services and the Post Office Department.

Eligible vessels may, not more than 24 hours nor less than 12 hours before their expected arrival at New York, apply by wireless through the New York agents to the chief quarantine officer, giving all required information regarding the sanitary status of the vessel and the health of its passengers and crew. When the application is

approved, a wireless message confirming the fact goes from the chief quarantine officer to the vessel through the agents.

The vessel may then proceed direct to its dock without quarantine inspection, provided that at the time it reaches quarantine, health conditions on board remain satisfactory.

As soon as the vessel docks, a written statement, signed by the master and ship's physician, confirming the statements made by them in the wireless application for "radio pratique", is forwarded to the chief quarantine officer.

Should cases of communicable nonquarantinable disease occur on board, the vessel is required to report by wireless direct to the city department of health and subsequently on docking to comply with all directions given by the city health commissioner.

The utilization of the privilege of "radio pratique" is entirely discretionary with the vessel. Having received pratique by wireless, the vessel may proceed direct to its dock or it may anchor in the quarantine anchorage until it suits its convenience to dock. If a known or suspected quarantinable disease appears on a vessel after it has received pratique by wireless, it is expected to notify the chief quarantine officer and to stop at quarantine for inspection. Failure to comply with this requirement will result immediately in loss of eligibility, both for the vessel and its medical personnel.

EXTENT OF UTILIZATION OF RADIO PRATIQUE

From February 1 to March 26, 1937, a period of 54 days, a total of 127 vessels availed themselves of the privilege of "radio pratique." As no eligible vessels entered on 8 days, 127 vessels entered on 46 days, giving a daily average of 2.76 vessels.

The following table shows clearly the extent to which the service is utilized:

Number of lines and vessels using radio pratique			Number of times radio pratique used	Number of lines and vessels using radio pratique			Number of times radio pratique used
Nationality	Number of lines	Eligible vessels		Nationality	Number of lines	Eligible vessels	
British	3	22	47	Dutch	1	4	6
American	6	25	36	Polish	1	2	2
German	3	11	18	Norwegian	1	2	1
French	1	5	9				
Italian	1	2	5	Total	18	76	127
Swedish	1	3	3				

SUMMARY

A total of 76 vessels, of 822,308 net tons, belonging to 18 steamship companies under 9 flags used "radio pratique" 127 times in 46 days. The 127 entries with "radio pratique" totaled 1,513,104 net tons and carried 42,438 passengers and 48,973 crew members.

STUDIES ON TRICHINOSIS

II. Some Correlations and Implications in Connection With the Incidence of Trichinae Found in 300 Diaphragms

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In the first paper of this series, Hall and Collins (1937) reported the finding of trichinae in 41 diaphragms out of 300 necropsy cases examined, or 13. 67 percent. The diaphragms came from 5 Federal hospitals to which patients come from all parts of the United States, and from 6 Washington hospitals drawing their patients from the population of the capital city, which population, in turn, comes from all parts of the United States and has a relatively small group born and reared in Washington. Such Federal hospitals as those of the Army, Navy, Veterans' Bureau, and the U. S. Public Health Service obviously deal with groups which travel widely over the United States and its possessions, and the general population of Washington travels extensively. Such groups would reflect conditions throughout the country rather than in Washington alone. In connection with the incidence reported by us, we note that Whelpley (1891) says: "The statement has been made that one out of every seven human beings is affected with trichinosis." We do not know the author of the statement, but evidence available at this time suggests that more extensive study may show it to be approximately correct for the population of the United States. By contrast, we note an editorial (1917) in the Medical Summary, in which the editor refers to the "mite" as unreported for years, and says: "If trichinosis is really a myth the profession should know and our literature should be amended accordingly."

Since the Federal hospitals deal with such special groups as military personnel, with the marine personnel of the Navy and merchant marine, and with cases of mental derangement, and since the other Washington hospitals deal with whites alone, Negroes alone, or both, and with children alone in one case and with children and adults in the other cases, representing groups of both high and low economic-social status, we have undertaken to obtain from the hospitals certain data which would enable us to make some tentative correlations between the incidence of trichinae and conditions in the various groups named. The data we have collected cover sex, race, age, military or civil status, association with land or sea, occupation (or parent's occupation in the case of a child) as a basis for economic-social status, and presence or absence of mental derangement associated with prolonged hospitalization. In one case, owing to a misunderstanding,

we obtained no data other than that the diaphragm was from a mentally deranged person. In some cases hospitals could not furnish data as to age, occupation, or other items, and so the total of groups contrasted on any one basis is usually slightly less than 300 cases.

The groups as defined intergrade in such a way that for any one individual they may be highly misleading, but the groups as a whole or on the average are probably sufficiently well defined to make some correlations and general statements possible. Thus, a soldier in the regular Army is given a military rating, although he may be a rather recent recruit whose life has been almost entirely that of a civilian, whereas a mechanic is given a civilian rating although he may have spent several years in the Army. As a basis for economic-social groups, we regard commissioned officers as in the higher group and enlisted men as in the lower group, disregarding the fact that an occasional enlisted man may have been reared in a well-to-do family and may have an excellent academic education; and we regard "white collar" employees as in the higher group and laborers and artisans as in the lower group, disregarding the fact that some mechanics have larger incomes than some clerks and may be better educated. The groups as a whole will correctly represent the pattern on which the group is based. The groups afford a basis for ascertaining the correlation between incidence of trichinae and the food habits as modified by occupation, education, standards of living, travel, and other factors. A break-down of some of the major groups affords a basis for examining the soundness of the correlation or lack of correlation shown in the major group. The incidence in the various groups is shown in table 1.

TABLE 1.—*Incidence of trichinae in various groups as found in 300 post-mortem examinations*

Group	Total number in group	Number infested	Percent infested
Males	205	27	13.2
White males	134	24	17.9
Colored males	71	3	4.2
Females	93	14	15.0
White females	37	3	8.1
Colored females	56	11	19.6
Whites	171	27	15.8
Negroes	127	14	11.0
Military (Army-Navy)	44	11	25.0
Officers	17	4	23.5
Enlisted men	27	7	25.9
Army	35	8	22.9
Navy	9	3	33.3
Civil	255	30	11.8
Sea (Navy and merchant marine)	22	6	27.3
Merchant marine	13	3	23.1
Land	277	35	12.6
Mentally deranged under long hospitalization	65	5	7.7
Mentally sound or not under long hospitalization	235	36	15.3
High economic-social status (whites)	52	5	9.6
Low economic-social status (all races)	246	36	14.6

With the correlations between the incidence of trichinae and the groups into which we have divided our 300 cases, we turn now to the basic explanations for the correlations. As a basis for all other explanations we take the obvious and commonly accepted idea of the correlation of trichinosis with food habits leading ordinarily to the eating of raw or undercooked pork and pork products, and disregarding such minor items as the eating of raw or undercooked bear meat or similar foods as rare sources of trichinae in man.

SEX AND RACE

As regards the somewhat higher incidence of trichinae in females than in males, a sorting of these groups on other bases indicates that the average incidence on the basis of sex alone is not definitely significant of the existing correlations with sex. Combining the factor of race, and disregarding our one Mongolian (negative), with the factor of sex, we have the following incidences: White males (24 positives in 134 cases), 17.9 percent; white females (3 positives in 37 cases), 8.1 percent; colored males (3 positives in 71 cases), 4.2 percent; colored females (11 positives in 56 cases), 19.6 percent. It is obvious, then, that the rather close incidences of 13.2 percent in males and 15.0 percent in females are actually due to combining a high incidence in white males with a low incidence in colored males, and a low incidence in white females with a high incidence in colored females. As an item bearing on the race incidence we note further that, of our total of 171 whites, we have 52 cases, or 30.4 percent, in a high economic-social status, with none of our colored cases in the high group. Moreover, all of the cases associated with a high incidence of trichinae in military life and association with the sea, are males.

Our explanation for these incidences rests in part on what was stated in the previous paper on trichinosis by Hall and Collins (1937). The high incidence in white males is probably correlated in part with the high incidence among military men and those associated with the sea, of whom only 1 of our 44 military cases, or 2.3 percent, was colored, and only 2 of our 22 cases associated with the sea, or 9.1 percent, were colored. We associate the high incidence in white males with the wandering habit of the white male and a consequent exposure to all kinds of food, including raw or improperly cooked pork and pork products, a habit manifested not only in military life and in association with the sea, but also in such occupations in civil life on land as in the cases of many groups of laborers, traveling men, engineers, construction workers, explorers, prospectors, and others. By contrast, the colored male does not travel as much, and his travel, so far as its broad lines are concerned, is at present following a rather definite movement from south to north. So far as the colored males of Washington, D. C., are concerned, they represent to a large extent

a group which has moved from the South to Washington. The explanation for the surprisingly low incidence of trichinae in this group, we believe, lies in the point brought out in the previous paper by Hall and Collins (1937) as to the incidence of trichinae in man at New Orleans, 3.5 percent, as found by Hinman (1936), namely, that it is correlated with an assumed low incidence in Southern swine allowed to roam at will, often not under fence, in the woods and fields, and not fed swill or garbage, the sources of raw pork scraps which we regard as the most important factors in producing trichinosis in swine. This assumed low incidence is supported by the finding of a very low incidence in swine in Georgia. It seems probable that many of the colored males in our necropsy series had begun life in the South where the danger from trichinosis appears to be definitely lower than elsewhere in the United States, so far as indicated by available reports, and the slightly higher incidence in colored males here, 4.2 percent, over the New Orleans incidence may represent either the results of exposure in later life to the greater danger of trichina infestation in Washington, or our use of two techniques in examinations of diaphragms. Certainly, the difference between the incidence in colored males and that in our total series, the latter being over three times the former, is significant. Hinman has not attempted to explain the lower incidence found by him, and we put forth our explanation as a basis for further consideration of the question.

As regards the low incidence of trichinae among white females, it may be correlated in part with a more settled status as compared with the white male. It may be correlated in part with the fact that 8 of 37 white females, or 21.6 percent, are in a high economic-social status, as indicated by their occupation, with the likelihood that some of these were not associated with the preparation of food and the consequent exposure to the danger of tasting raw ham and similar foods, or tasting foods in course of preparation for cooking to ascertain whether they were properly seasoned. By contrast, most of the colored females in our series, for whom the occupation is known, are listed as domestics, a term commonly applied to servants who act in all or part of the capacities of cook, housemaid, and laundress, and almost always of cook at least. The use of colored servants as domestics of this sort is quite general in Washington; and it seems likely that, even though these colored females follow the general drift from the South to Washington, their exposure to danger from tasting raw and undercooked pork and pork products while engaged in their capacity as cooks in Washington is very great. Williams (1901) attributes the higher incidence in Negroes, 7.14 percent as against an average of 5.34 percent, to carelessness in the preparation of food and in eating. Of the 11 positives in our group, 6, or 54.5 percent, had

live trichinae only, and one other had a mixed infestation. In view of the fact that only 31.7 percent of our total positive cases show live trichinae only, it is probable that this much higher incidence among colored females can be correlated with somewhat recent exposure to trichinae under Washington conditions.

Unfortunately, our series of cases is overwhelmingly urban, only three cases, or 1 percent, being reported as farmers, although an unascertained number undoubtedly lived on farms during part of their lives. A study of diaphragms from the rural population might show a large number of cases of infestation in rural white females as a result of the handling and preparation of sausage and other pork products at hog-killing time on the farm.

It appears from the discussion up to this point that there is no definite correlation between trichina infestation and sex per se, as the high incidence among white males and the extremely low incidence among colored males show, and that there is no definite correlation between trichina infestation and race per se, as the high incidence among white males and the low incidence among white females, and the low incidence among colored males and the high incidence among colored females, show. The literature on post-mortem examinations for trichinae contains little information in regard to sex incidence. Williams (1901) had no data on one of his positive cases; in the 26 positive cases for which sex was known, there were 21 males and 5 females; but the number of negative males and females is not given, and so there is no basis for a consideration of incidence. McNaught and Anderson (1936) report no variation in incidence according to sex.

NATIONALITY

As a subordinate section of the race groups, we have considered the matter of nationality, but it is impossible to make any detailed analysis of figures on this basis. The term "American" applies correctly to citizens of all racial stocks, and since the onetime foreigner adopts American habits sooner or later, or, if he does not, his children or grandchildren do, there is no point at which one may draw the line and say that differences implied by the term "foreigner" now cease to imply those differences. In this comparatively new country, with a large influx of immigrants over a long period of years, such terms as "native" and "foreigner" do not imply such valid distinctions as they imply in older countries with few immigrants. Citizenship may be acquired in the first generation and American habits in the second generation, or American habits in the first generation and citizenship in the second generation. Hospital statistics quite generally disregard the question of nationality, and one can consider the question only on the basis of names, as a rule. Names are highly misleading in the case of the Negro, and in our series of 300 cases such names as

Kelly, Chaney, Terry, Brunson, Levi, Meyers, and Madre turn out to be the names of Negroes. In our series of 41 positive cases, 34 are names of English-Scotch-Irish origin customarily found among American families for generations; 1 is Italian; 3 are German, with evidence that 1 individual, at least, was not first-generation German; and 3 are, respectively, Slavic, French, and Spanish, of whom 1 individual was a Negro and 1 was a soldier in the United States Army. Apparently, almost 83 percent of our cases are in persons who are admittedly Americans, so far as names are an indication; less than 2.5 percent are in Italians; probably less than 7 percent are in Germans; and the indications are that not more than 2.5 percent are in persons of other nationalities. However, in our total series in which names are given, there are 20 names which are German, Italian, French, Spanish, Slavic, or Mongolian; and since 7 of our positive cases, over one third of these 20 cases, bear such names, it suggests that the incidence is higher among these racial groups, regardless of citizenship, than among those with names customarily regarded as common American names.

From these data we infer that the incidence of trichinae is higher among groups of such racial stocks as the Teutonic, Latin, and Slavic groups than among so-called native Americans. However, since the latter are by far the larger group numerically, much the greater number, though not the greater proportion, of cases of trichina infestation will be in this group, with an incidence slightly below the average for all cases so far as we have data available at present. Apparently the idea, generally believed and stated, that Germans and Italians are more likely to have trichinosis, has some justification; but the fact should be brought out that the majority of cases will be in native Americans.

In the literature on post-mortem examinations for trichinae, Williams (1901) found his highest percentage of positives (16.66 percent) in Italians and in Canadians, the Germans following with 12.24 percent, the British and Irish with 8.06 percent, Negroes with 7.14 percent, and last of all, American whites with 2.89 percent. The findings in this connection would doubtless vary with location and the concomitant variation in population; and our findings indicate that his figures for Italians, Canadians, and Germans do not vary greatly from our average of 13.67 percent, any more than do our figures for American whites vary, as his do, from our average figure. There have doubtless been some changes in food habits of our population and in methods of raising swine in various localities in the 35 years since Williams made his study, and the time at which a study was made must be taken into consideration in making comparisons of incidences. It appears to be true that the correlation between incidence of trichinae and nationality, especially that indicated by the

common statement that trichinosis is especially common in Germans and Italians, is misleading to the extent that it may result in our overlooking the many more cases probably present in our much larger native population. It may still be true that many of the epidemics which are diagnosed correctly as trichinosis in the United States show a preponderance of Germans and Italians, but this may be so partly because the common belief in the likelihood of this incidence leads to this diagnosis more often than in the cases of native Americans. There are many epidemics among our native rural population, especially at hog-killing time in the fall. However, apparently the epidemic cases are but a small part of the total cases of trichinosis in this country, and a more accurate concept of incidence on the basis of nationality may help us to detect more cases than are being detected at present.

MILITARY AND CIVIL GROUPS

The explanation for the high incidence of trichinae among the military forces of the Army and Navy probably follows from several factors bearing on food habits, which factors more than double the hazards of civilian life so far as trichinae are concerned. The military personnel moves about extensively and is exposed to the food habits of many regions. Under war conditions and even on the march the general level of life drops in the direction of primitive conditions. Hasty cooking of rations during short stops on a forced march, foraging, acceptance of food from friends, and similar circumstances may play a part. Until a comparatively recent time the Army had no organized food inspection, and the positive cases in older men might represent infections that would be avoided today by an inspection that took cognizance of certain dangerous pork products. The Navy personnel is evidently exposed to the food habits of many lands; and, in spite of warnings and education in regard to dangers from food in many ports, the evidence indicates that such warnings are either more or less disregarded or may not entirely cover the possibilities as regards trichinosis. However, the danger is probably greatest in American ports. By contrast with the military groups, if we consider only the six civilian hospitals of Washington, eliminating the five Federal hospitals, we find 17 positives in 120 cases, or 14.2 percent. Eliminating all children below the age of 17, we find 16 positives in 104 cases, or 15.4 percent.

SEA AND LAND GROUPS

The high incidence of trichinae among men associated with the sea might be explained for both the Navy and the merchant marine, on the basis noted above, as due to extensive travel and exposure to the food habits of many regions. In addition, there is little or no super-

vision, warning, or education in regard to food so far as the personnel of the merchant marine is concerned, and doubtless one of the pleasures associated with life in the merchant marine is the opportunity it affords to sample the foods of all lands. The apparent result is to more than double the hazards of life by land so far as trichinae are concerned. One case of a man making a living as a fisherman is not included in this series, since his occupation would not result in travel to various land regions, and would be correlated with an increased fish diet rather than with any exposure to raw or undercooked pork. There is an objection to the idea that travel in foreign countries is an important factor in producing trichinosis, and that is that trichinae appear to be most plentiful in the United States. Perhaps the cause is to be sought in American pork and pork products on American ships. Finally, the high incidence of trichinae at Boston, 27.6 percent, and at San Francisco, 24 percent, requires that we consider these ports and our other Atlantic and Pacific ports and naval bases as places possibly responsible for an indicated high incidence of trichinae in the Navy and merchant marine.

MENTAL STATUS AND LENGTH OF HOSPITALIZATION

As regards the low incidence of trichinae among the mentally deranged under prolonged hospitalization, we believe that the idea that mental derangement is correlated with a low incidence of trichinae can be definitely rejected. The literature of parasitology is quite in agreement to the effect that, in the absence of other qualifying factors, mental derangement is associated with a higher incidence of parasitism in general, not a lower incidence, than among the mentally sound. The correlation here is with prolonged hospitalization under modern sanitary conditions; with the proper cooking of food and with the patient restrained from freedom of movement to an extent that prevents exposure to food of other sorts. In this connection we call attention to Williams' (1901) findings of "an undue proportion of positive cases [of trichinosis] among the insane." In his total series of 505 cases, the incidence of trichinae was 5.34 percent (27 cases); of the total cases, 82 patients were insane, and 10 of these, or about 12.2 percent, were infested with trichinae. This reversal of our findings presumably follows from the fact that 35 years ago insane persons were not committed to hospital as often or as promptly as they are now, and that the sanitary level of hospitals for the insane at that time was not as high as it is now, especially not as high as it is in St. Elizabeths, the hospital from which our cases came. Our 57 negative cases had been hospitalized for an average of 9.2 years, with a maximum of approximately 44 years and a minimum of 10 days. Our 5 positive cases had been hospitalized for an average of 6.6 years, but 1 of these cases was hospitalized for almost 29 years, leaving

an average of only 1 year of hospitalization for the other 4 cases. The trichinae were all dead in the case hospitalized for almost 29 years, and in one case hospitalized for 1 month; they were in mixed live and dead infestations in 2 patients hospitalized for 3 years and for 9 months, respectively; and they were all alive in the case of a patient hospitalized for 2 months.

In this connection we would point out that a study of diaphragms from mentally deranged patients hospitalized under modern sanitary conditions for relatively long periods of time, with wide variations in the time element, presents the best basis known to us, aside from prisoners confined in jails and penitentiaries under modern sanitary conditions, for ascertaining the length of time trichinae may live in man, as well as for testing our theory that rapidity of calcification and death of trichinae may be proportional to intensity of infestation. The literature on this subject, so far as we have examined it, is definitely unconvincing. Patients who have had clinical trichinosis and who have been examined post mortem for trichinae years later, after having lived under ordinary unconfined conditions of life outside a hospital, jail, or penitentiary, have been found to harbor live trichinae; but the possibility that these persons who have had trichinosis have not been subsequently reinfected with trichinae as a result of the same food habits that led to trichinosis in the first case can never be excluded. Any assumption that a person who had suffered from trichinosis would always avoid raw or undercooked pork and pork products subsequently is unsound, and Staeubli (1909) states that one finds in the literature strikingly frequent references to the fact that trichinosis patients cannot be persuaded, or can be persuaded only with great difficulty, to refrain from eating raw pork, in spite of knowing that this was the cause of their illness.

ECONOMIC-SOCIAL STATUS

As regards high and low economic-social status, the lower incidence of trichinae, 9.6 percent, in persons of high economic status, as compared with the higher incidence, 14.6 percent, in persons of low economic-social status, must be interpreted on the fundamental basis of correlation with food habits. In the higher status, persons eat better food and the food is better prepared; they are more discriminating and better informed than those in the lower group; and a smaller proportion of persons in this group is associated with the handling and preparation of food in the kitchen, in packing and processing plants, and elsewhere. In the lower status, many persons are compelled by economic necessity to eat inferior and dubiously suitable food and to eat it more or less regardless of the inferior preparation and cooking; they are less discriminating and less well informed on the subject of food and its preparation, and on the possibilities of

disease transmission through food; and they are more generally associated with the handling and preparation of food in all places. The incidence of trichinae for the higher group indicates that the protection afforded by the characteristics of the group is only partial and not complete, and that individual tastes, transient necessities, and other circumstances combine in some cases to break down the group barriers against trichinae. In the case of the military group it appears that the hazard from trichinae associated with the military life is a hazard shared by officers and enlisted personnel, with little, if any, protection to officers as a result of their higher status, since 4 of 17 officers, or 23.5 percent, and 7 of 27 enlisted men, or 25.9 percent had trichinae.

AGE

As regards age, we have no data on 5 cases, leaving 295 cases for which the age is known. These cases are tabulated in table 2 by decadal age groups together with the data as to whether the trichinae present were all alive, some alive and some dead, or all dead.

TABLE 2.—*Incidence and state of trichinae by age at death*

Age at death	Total number of cases	Positive				State of trichinae		
		Number	Percent	Percent		Live	Mixed	Dead
				0–50 years	51–100 years			
0–10	16	1	6.2			1	0	0
11–20	7	0	0			0	0	0
21–30	37	6	16.2	*13.69*		2	2	2
31–40	37	6	16.2			3	0	3
41–50	71	10	14.1			3	5	2
51–60	56	8	14.3			3	2	3
61–70	43	7	16.3			1	1	5
71–80	20	2	10.0	----------	*13.64*	0	0	2
81–90	7	0	0			0	0	0
91–100	1	1	100.0			0	0	1
Unknown	5	0	0			0	0	0

On the basis of our average incidence, 13.67 percent, the total number of cases in the decades 11–20, 81–90, and 91–100, viz, 1 to 7, is too small to give more than a 50–50 chance, at most, of detecting one positive in a sample of that size or to make a positive finding significant, and the results, either all negative or all positive, are not significant. Undoubtedly there is a correlation between a time factor and the incidence of trichinae, since incidence is definitely correlated with food. Thornbury (1897) notes that, in swine, "age predisposes to infection." Evidently a shorter time of exposure to trichinae in food in early life, together with the more restricted and specialized diet in at least the first few years of life, is probably responsible, in our series, for the lower incidence, 1 positive in 23 cases, or 4.3 percent, in the first two decades of life.

The true estimate, on the basis of food habits, is somewhat higher, since in our series of 0–10 years we have two premature births, and three babies aged 1 day, 3 months, and 10 months, respectively, all in the group below 1 year of age, which is generally rejected in diaphragm studies of trichinosis. Disregarding these, there would be 1 positive in 18 cases, or 5.6 percent. Our justification for considering these 5 cases of premature births and extremely young infants is that the matter of prenatal infection deserves consideration in a study of incidence. In spite of all the negative results from the studies of the older workers with only direct microscopic examination as their technique, and in spite of later work with the use of the digestion-Baermann technique, definite evidence of prenatal infection is found in the recent positive findings of Roth (1935). In a number of digestion-Baermann examinations of fetuses and newborn young of guinea pigs from mothers artificially infected with trichinae, he found 4 larvae in a composite sample of 4 fetuses, and 19 larvae in 1 guinea pig killed 3 days after birth. Accepting Roth's positive findings, even without the confirmation from other workers, which is ultimately essential in all scientific work, as more significant than the negative findings of others, the present status of the question of prenatal infection with trichinae appears to be this: Prenatal infection, usually with small numbers of larvae, does occur, apparently in a small minority of cases in which gravid mothers are infected with trichinae during the time they are gravid. Hence, a continuing study of diaphragms may be expected to give positive results in a large enough series of cases, in spite of the long odds against the coincidence of such cases with maternal infection and the infant coming to necropsy in a hospital from which cases are being examined for the incidence of trichinae. Quite obviously, the presence of these premature births and very young infants in our series lowers the general incidence and introduces a factor other than the food habits of the individual examined, thereby indicating that our incidence, if based entirely on trichinae present as a result of food habits, would be higher than it is.

Where our samples are relatively large, in the decades of life from 21 to 70, the percentages are somewhat higher than our average of 13.67, compensating for the lower incidence in the first two decades. Combining our too small samples for the last 3 decades, 71 to 100, we have an incidence of 10.7 percent, a figure which might be raised if we had larger samples, following the theory that increasing age affords increasing chances of infection from food, up to a certain point, at least, and especially if we could detect light infestations with dead trichinae, a matter discussed in the first paper in this series by Hall and Collins.

The importance of being able to detect dead trichinae in these older age groups is evident from an inspection of table 1. It will be noted

that only live trichinae are found in the first decade, and that infestations with only live trichinae occur in every decade from 21 through 70. Infestations with both live and dead trichinae, as mixed infestations, begin in the decade 21 to 30 and run through the decade 61 to 70. Infestations with only dead trichinae begin in the decade 21 to 30, continue through the decade 61 to 70 along with either only live trichinae or with mixed infestations, and are the only form of infestation found in the decades 71 to 100. Since the calcification and death of trichinae are definitely known to be associated with a time factor, these findings are to be expected. One may say that, with an increase in the time factor, as based on age, the incidence of trichinae in a large enough sample should show some rise and that the incidence of mixed infestations and infestations with dead trichinae should rise also, with a corresponding decrease in the incidence with only live trichinae. If we divide our age groups into the group from 0 to 50 years and from 51 to 100 years, there is an almost identical incidence of 13.69 and 13.64 percent. A larger series of cases might show, as our series does not, a slightly higher incidence in the older age group if our general theory of the effect of the time factor is correct and unqualified by other factors such as a mortality factor, which may exist, operating to increase the earlier mortality among recovered cases of trichinosis and tending to increase the number of deaths of recovered cases in the lower age groups, thereby preventing part of these cases from dying in older age groups. McNaught and Anderson (1936) likewise assume that incidence would increase with age, but their evidence is based on groups of dissimilar sorts that do not permit of direct comparison with our groups shown in table 2. They find no trichinae up to the age of 25, an incidence of 14.8 percent from 25 to 40 (15 years), of 26.6 percent from 40 to 75 (35 years), and of 29.1 percent after 75 years. For the same groups we find incidences of 9.5, 16.4, 14.2, and 13.3 percent.

A much larger series of cases may enable us to ascertain the average time in which trichinae in man calcify and die. Our series for the first two decades is too small to permit of any conclusions based on the fact that mixed infestations and infestations with dead trichinae only are first found in the decade 21 to 30. Moreover, we have suggested in the first paper on incidence by Hall and Collins (1937) that the rapidity of death of trichinae may be correlated with degree of infestation. Williams (1901) divides his cases, on a subjective estimate, into severe, moderate, and mild, and his report indicates that in severe cases only dead trichinae are present in about two-thirds of his cases, whereas only live trichinae are apparently present in about half of his moderate and mild cases, and mixed infestations in over one-fourth of these cases. These findings sustain the theory we have proposed.

It seems probable that the time of death of trichinae is not conditioned entirely by a time factor. Brand, Holtz, and Vogel (1933) and Wantland (1934) have reported that the administration of such calcifying factors as irradiated ergosterol materially hastens the process of calcification of trichinae. Calcification is a process definitely associated with the death of trichinae, as it is with the death of cysticerci and many other animal parasites. Probably the nature of the food, especially as regards calcium and certain vitamins, has some effect on the longevity of trichinae, and there are doubtless other factors, such as the nature of the inflammatory reaction and various other defense mechanisms of the host, which may have a bearing on this point.

There are very few data in regard to age in the literature dealing with post-mortem examinations for trichinae. All of the persons in Williams' (1901) cases were over 14 years old, and trichinae were found in every decade from 11 to 20 years through 71 to 80 years, but the age for negatives is not reported. So far as we can translate his findings as to the state of the trichinae present, his series shows only live trichinae from the decade 11 to 20 through 71 to 80, what are probably mixed infestations from the decade 31 to 40 through 71 to 80, and only dead trichinae from 41 to 50 through 71 to 80. This agrees with the general trend of our findings.

DISCUSSION

While our break-down of our 300 cases does not always result in groups as large as is desirable for a study of incidence in these groups, it seems desirable, nevertheless, to make tentative correlations. The subject of trichinosis has had entirely too little attention, and the evidence from the 1,778 post-mortem examinations for trichinae in the United States shows quite convincingly that there is an immense number of cases of infestation in our population, and that a large number of clinical cases are never diagnosed. If the situation is actually as serious as we believe, it is a public health problem of major importance, and we need epidemiological data as a background for research and for the development of control measures. It is important that we ascertain the incidence on a geographic basis and correlate this incidence in various sections with those geographic conditions which have a bearing on infection with trichinae. It is important also that we ascertain the groups in our population that are most subjected to danger from trichina infection, as our control measures can be more intelligently organized with this information than they can without it. We must know where to look for our cases and why we expect to find them in any given region or group.

The fact that we have fewer data than we should like to have for examining the implications they present seems less important than

that the preliminary work be done as a basis for an examination of these implications by a much larger amount of work here and elsewhere in the future. We expect to continue our study to the point at which no objection is possible on the mathematical basis of inadequate sampling, but we hope that others will take up this line of research to the end that we may have a set of studies which are mutually supplementary and comprehensive enough to give a fairly correct picture of conditions over the entire United States. We urge that the microscopic examination for trichinae, using a press preparation of 1 gram of diaphragm muscle from near the tendinous portion, be made a routine part of post-mortem examinations. Sections are entirely unsatisfactory, as McNaught and Anderson have previously noted. Our own data are available only through the great courtesy and unfailing cooperation of physicians, technicians, and clerks who have gone to great trouble to supply us with diaphragms and data, and their share in our work is acknowledged with the greatest appreciation.

SUMMARY

On the basis of a study of 300 diaphragms reported in a previous paper by the present authors, which shows an incidence of 13.67 percent of trichina infestation, the writers have undertaken a study of correlation of incidence with population groups with the following results:

The incidence by groups, in descending order of incidence, is as follows: Navy, 33.3 percent; groups associated with extensive travel by sea (Navy and merchant marine), 27.3 percent; military (Army-Navy) enlisted personnel, 25.9 percent; military (Army-Navy) group (as a whole), 25 percent; military (Army-Navy) officers, 23.5 percent; merchant marine, 23.1 percent; Army, 22.9 percent; colored females (all in low economic-social status), 19.6 percent; white males, 17.9 percent; whites (male and female), 15.8 percent; mentally sound group or, at least, cases of minor derangement and not under prolonged hospitalization, 15.3 percent; females (white and colored), 15 percent; persons of low economic-social status (all races), 14.6 percent; (*average of all groups, 13.67 percent*); males (white, colored, and one Mongolian), 13.2 percent; groups associated with land (excluding extensive travel by sea), 12.6 percent; civilian group (as a whole), 11.8 percent; Negroes (male and female), 11 percent; persons of high economic-social status (all white), 9,6 percent; white females, 8.1 percent; mentally deranged group under prolonged hospitalization, 7.7 percent; colored males (all in low economic-social status), 4.2 percent.

The civilian population of Washington, on the basis of cases from 6 civilian hospitals only, has an indicated incidence of 14.2 percent, and if children under 17 are disregarded the incidence is 15.4 percent.

In all cases the indicated correlations between incidence of trichinae

and the groups examined are basically with reference to food habits as modified by such factors as occupation; education, standards of living, travel, methods of swine raising, exposure to raw or undercooked pork or protection from exposure by prolonged hospitalization.

A consideration of the age incidence by decades indicates that, at least up to some unascertained point, there is an increased incidence with increasing age, due apparently to the fact that an increase in the time factor increases the opportunities for infection. At some unascertained point there may be a mortality factor in the form of deaths occurring at an age earlier than would have been the case had it not been for pathologic conditions persisting after recovery from trichinosis, thereby removing from the older age groups some of the positives that might otherwise have appeared there. Positive findings in recent literature indicate the advisability of examining suitable muscle tissue from very young infants and those prematurely born, for the possibility of detecting prenatal infection with trichinae. The post-mortem study of suitable muscles from persons dying after prolonged confinement in hospitals, jails, and penitentiaries, under modern sanitary conditions precluding the eating of raw or undercooked pork, is suggested as a basis for obtaining more precise information as to the time larval trichinae survive alive in human beings, and the time required for calcification of the cysts and for the death of the trichinae. It is recommended that the microscopic examination of 1 gram of diaphragm muscle, as a press preparation and not by sectioning, be made a routine procedure in the post-mortem examinations by pathologists.

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DEATHS DURING WEEK ENDED APRIL 3, 1937

(From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Apr. 3, 1937	Corresponding week, 1936
Data from 86 large cities in the United States:		
Total deaths	9,381	9,302
Average for 3 prior years	9,227	
Total deaths, first 13 weeks of year	132,771	127,693
Deaths under 1 year of age	591	623
Average for 3 prior years	633	
Deaths under 1 year of age, first 13 weeks of year	8,174	7,675
Data from industrial insurance companies:		
Policies in force	69,614,527	68,304,318
Number of death claims	15,923	14,248
Death claims per 1,000 policies in force, annual rate	11.9	10.9
Death claims per 1,000 policies, first 13 weeks of year, annual rate	11.5	11.1

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 10, 1937, and Apr. 11, 1936

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936
New England States:								
Maine	1		3	19	4	152	1	1
New Hampshire					113	29	0	0
Vermont						852	0	0
Massachusetts	3	7			736	1,170	8	8
Rhode Island		2		3	232	75	1	3
Connecticut	4	3	12	3	799	91	2	4
Middle Atlantic States:								
New York	31	44	[1] 26	[1] 14	1,020	2,842	10	18
New Jersey	7	12	13	9	3,300	258	5	8
Pennsylvania	37	21			661	863	13	7
East North Central States:								
Ohio	13	17	21	26	270	237	2	18
Indiana	4	16	110	39	137	13	5	2
Illinois	46	30	105	68	85	33	1	12
Michigan	18	14		11	97	58	2	4
Wisconsin	4	3	49	45	19	90	2	1
West North Central States:								
Minnesota	14	2	1		22	239	1	2
Iowa	1	2		11	8	4	0	2
Missouri	41	11	111	680	55		1	9
North Dakota	1	1	24	10	1	1	0	0
South Dakota		2			2		0	0
Nebraska	1	5		1	12	27	1	1
Kansas	5	12	4	133	26	19	4	1
South Atlantic States:								
Delaware	3		5		39	13	2	0
Maryland [2]	15	2	12	8	872	247	5	20
District of Columbia	4	7	1	1	116	68	2	3
Virginia	13	8		414	248	148	9	16
West Virginia	5	9	110	165	19	61	7	12
North Carolina	17	19	61	50	204	44	4	4
South Carolina [2]	2	4	528	331	39	40	0	5
Georgia	9	8	344	201			2	7
Florida	7	1	24	38	17	14	1	5
East South Central States:								
Kentucky	11	11	21	312	448	39	12	18
Tennessee	7	7	141	745	53	69	7	7
Alabama [2]	10	7	648	1,440	9	18	10	6
Mississippi [2]	4	4					1	3

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 10, 1937, and Apr. 11, 1936—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936
West South Central States:								
Arkansas	1	5	82	568	1	5	0	2
Louisiana	7	4	54	291	6	62	1	2
Oklahoma [4]	16	11	115	236	55	12	2	5
Texas [3]	43	52	792	646	668	483	2	16
Mountain States:								
Montana	------	1	11	121	39	15	1	5
Idaho [5]	1	1	10	4	15	39	1	1
Wyoming	1	1	------	------	3	2	0	0
Colorado	5	5	------	------	11	13	1	4
New Mexico	------	3	4	15	81	35	0	4
Arizona	------	3	38	110	238	65	3	3
Utah [2]	2	------	------	------	33	18	0	0
Pacific States:								
Washington	2	------	------	3	46	378	1	2
Oregon [5]	------	------	34	98	4	276	1	0
California	28	20	417	673	138	2,342	5	8
Total	444	397	3,931	7,542	11,001	11,559	139	259
First 14 weeks of year	7,218	8,172	259,592	114,002	92,723	125,487	2,347	3,379

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936
New England States:								
Maine	0	0	15	11	0	0	2	1
New Hampshire	0	0	13	10	0	0	0	0
Vermont	0	0	2	7	0	0	0	0
Massachusetts	0	0	274	312	0	0	1	0
Rhode Island	0	0	76	35	0	0	2	0
Connecticut	0	0	162	47	0	0	0	0
Middle Atlantic States:								
New York	2	2	898	986	0	0	5	5
New Jersey	0	0	174	341	0	0	1	0
Pennsylvania	0	0	598	348	0	0	7	4
East North Central States:								
Ohio	0	0	245	261	3	1	4	16
Indiana	0	1	234	257	9	3	0	2
Illinois	0	0	763	789	23	4	2	6
Michigan	2	0	712	318	17	0	0	4
Wisconsin	0	0	351	586	4	3	0	6
West North Central States:								
Minnesota	0	0	166	402	5	4	0	0
Iowa	0	0	295	204	53	47	0	0
Missouri	0	0	519	167	73	19	0	2
North Dakota	0	0	30	42	15	4	0	2
South Dakota	0	0	97	79	6	44	0	0
Nebraska	0	0	88	170	5	24	0	0
Kansas	0	0	355	351	20	45	1	0
South Atlantic States:								
Delaware	0	0	3	10	0	0	2	1
Maryland [2]	0	0	43	58	0	0	0	0
District of Columbia	0	0	11	18	0	0	1	1
Virginia	0	1	14	56	2	0	10	4
West Virginia	1	0	56	39	0	0	3	3
North Carolina	1	1	45	14	0	0	2	1
South Carolina [3]	2	0	6	3	0	0	1	2
Georgia [3]	0	0	12	20	0	0	0	2
Florida	0	0	18	3	0	0	2	1

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 10, 1937, and Apr. 11, 1936—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936	Week ended Apr. 10, 1937	Week ended Apr. 11, 1936
East South Central States:								
Kentucky	0	0	58	47	2	0	11	7
Tennessee	0	0	35	28	0	0	6	5
Alabama [2]	1	0	15	6	0	0	3	0
Mississippi [2]	1	1	7	6	0	0	0	0
West South Central States:								
Arkansas	0	0	12	5	2	0	3	0
Louisiana	0	0	14	15	1	0	11	5
Oklahoma [4]	0	0	33	39	3	3	1	1
Texas [3]	0	0	110	165	1	1	16	13
Mountain States:								
Montana	0	1	17	93	36	15	3	0
Idaho [5]	0	0	20	35	1	1	0	0
Wyoming	0	0	17	51	8	2	0	0
Colorado	0	0	34	107	5	0	0	0
New Mexico	1	0	19	56	0	0	4	0
Arizona	0	0	23	28	0	0	1	0
Utah [2]	1	0	18	55	0	1	0	0
Pacific States:								
Washington	1	0	36	85	21	22	0	0
Oregon [5]	0	1	53	54	17	3	1	2
California	4	4	196	289	19	0	2	2
Total	17	12	6,992	7,138	351	246	108	98
First 14 weeks of year	306	238	95,374	110,670	4,333	3,119	1,514	1,474

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Apr. 10, 1937, 24 cases, as follows: South Carolina, 5; Georgia, 12; Alabama, 3; Texas, 4.
[4] Exclusive of Oklahoma City and Tulsa.
[5] Rocky Mountain spotted fever, week ended Apr. 10, 1937, 2 cases, as follows: Idaho, 1; Oregon, 1.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January 1937										
Colorado	4	21	522	-------	22	-------	0	163	10	1
February 1937										
Colorado	6	18	8	-------	20	-------	0	208	9	1
March 1937										
Arkansas	23	10	1,252	19	6	28	1	73	12	8
Connecticut	4	16	160	-------	2,791	-------	0	618	0	4
Delaware	3	9	28	-------	334	-------	0	35	0	0
New Mexico	7	14	207	4	442	3	1	124	4	6
South Carolina	-------	116	5,629	538	150	76	1	29	1	6
West Virginia	33	25	814	-------	54	-------	1	191	1	21

January 1937

	Cases
Colorado:	
Chicken pox	122
Dysentery	1
Impetigo contagiosa	2
Jaundice	1
Mumps	32
Septic sore throat	10
Whooping cough	184

February 1937

Colorado:	
Chicken pox	119
Encephalitis, epidemic or lethargic	2
Impetigo contagiosa	10
Mumps	51
Septic sore throat	1
Whooping cough	243

March 1937

Anthrax:	
Delaware	1
Chicken pox:	
Arkansas	97
Connecticut	763
Delaware	73
New Mexico	68
South Carolina	152
West Virginia	140
Conjunctivitis:	
Connecticut	18
Dengue:	
South Carolina	2
Dysentery:	
Connecticut (bacillary)	1
New Mexico (bacillary)	1
Diarrhea:	
South Carolina	169
Encephalitis, epidemic or lethargic:	
Arkansas	1
Connecticut	1
German measles:	
Connecticut	128
Delaware	45
New Mexico	6
South Carolina	14
Hookworm disease:	
Arkansas	2
South Carolina	136
Lead poisoning:	
Connecticut	5
Mumps:	
Arkansas	53
Connecticut	631
Delaware	42
New Mexico	99
South Carolina	49
West Virginia	132
Ophthalmia neonatorum:	
Arkansas	2
Connecticut	3
South Carolina	6
Paratyphoid fever:	
Arkansas	1
South Carolina	4
Rabies in animals:	
Connecticut	5
South Carolina	48
West Virginia	3
Septic sore throat:	
Connecticut	30
New Mexico	3
Tetanus:	
Delaware	1
South Carolina	1
Trachoma:	
Arkansas	1
Trichinosis:	
Connecticut	2
Typhus fever:	
Connecticut	1
South Carolina	4
Undulant fever:	
Connecticut	3
West Virginia	2
Whooping cough:	
Arkansas	52
Connecticut	331
Delaware	60
New Mexico	105
South Carolina	201
West Virginia	318

WEEKLY REPORTS FROM CITIES

City reports for week ended Apr. 3, 1937

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

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	228	453	118	7,617	902	2,710	22	419	23	1,521	------
Current week [1]	141	386	111	3,252	980	2,508	54	419	22	1,368	------
Maine:											
Portland	0	------	0	1	2	5	0	0	0	1	23
New Hampshire:											
Concord	0	------	0	0	3	1	0	0	0	0	11
Manchester	0	------	0	2	0	5	0	0	0	0	8
Nashua	0	------	0	3	0	2	0	0	0	0	5
Vermont:											
Barre	0	------	0	0	2	0	0	1	0	4	6
Burlington	0	------	0	0	0	0	0	0	0	0	12
Rutland	0	------	0	0	2	2	0	1	0	0	13
Massachusetts:											
Boston	0	------	0	16	20	73	0	9	0	82	231
Fall River	0	------	0	31	4	2	0	0	0	14	42
Springfield	0	------	0	2	2	1	0	2	0	26	48
Worcester	0	------	0	84	1	7	0	1	0	25	42
Rhode Island:											
Pawtucket	0	------	0	15	0	3	0	0	0	1	11
Providence	0	------	0	228	6	35	0	4	0	30	61
Connecticut:											
Bridgeport	1	------	1	14	3	57	0	0	0	0	39
Hartford	0	------	0	3	7	5	0	0	1	6	54
New Haven	0	------	1	0	0	8	0	1	0	4	41
New York:											
Buffalo	0	------	2	119	11	20	0	11	0	30	176
New York	23	22	14	345	197	454	0	85	2	68	1,680
Rochester	0	------	0	0	7	10	0	2	0	9	64
Syracuse	0	------	0	2	9	42	0	0	0	22	66
New Jersey:											
Camden	2	------	0	1	5	9	0	0	0	5	34
Newark	------	------	------	------	------	------	------	------	------	------	------
Trenton	2	------	0	2	6	13	0	3	1	1	43

[1] Figures for Newark and Brunswick estimated; reports not received.

City reports for week ended Apr. 3, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Pennsylvania:											
Philadelphia	2	13	5	26	58	247	0	36	3	78	615
Pittsburgh	3	8	6	52	35	69	0	6	0	26	206
Reading	0	------	1	55	6	21	0	0	0	7	26
Scranton	0	------	--------	0	-------	14	0	-------	0	2	--------
Ohio:											
Cincinnati	1	------	0	196	17	10	0	11	0	13	147
Cleveland	0	28	7	70	20	66	0	8	0	49	194
Columbus	4	3	3	5	8	11	0	3	0	17	81
Toledo	0	3	3	83	9	9	0	3	0	24	98
Indiana:											
Anderson	0	------	0	1	1	10	0	0	0	0	14
Fort Wayne	1	------	2	0	1	1	0	0	0	0	30
Indianapolis	0	------	2	81	24	42	0	6	0	24	122
Muncie	0	------	0	0	1	8	0	0	0	3	18
South Bend	0	------	0	1	4	5	0	0	0	11	13
Terre Haute	2	------	0	0	0	2	0	0	0	0	17
Illinois:											
Alton	0	------	0	0	1	5	0	0	0	4	6
Chicago	15	16	6	43	60	279	0	41	1	71	758
Elgin	0	------	0	0	0	1	0	0	0	3	11
Moline	0	------	0	0	2	0	0	0	0	6	9
Springfield	2	------	0	1	1	10	1	0	0	5	22
Michigan:											
Detroit	7	------	0	15	37	330	0	20	0	47	283
Flint	0	------	0	0	9	24	0	0	0	3	31
Grand Rapids	2	------	0	35	5	12	0	1	0	19	42
Wisconsin:											
Kenosha	0	------	0	0	1	6	0	0	0	0	11
Madison	0	------	0	0	0	6	0	0	0	18	13
Milwaukee	1	1	1	4	10	69	0	1	0	21	114
Racine	0	------	0	0	2	6	0	0	0	2	15
Superior	0	------	0	0	0	9	0	0	0	5	9
Minnesota:											
Duluth	0	------	0	0	5	20	0	0	1	6	24
Minneapolis	0	------	1	2	9	20	0	1	0	49	96
St. Paul	0	1	1	0	15	26	0	3	0	139	80
Iowa:											
Cedar Rapids	0	------	--------	2	--------	1	0	-------	0	0	--------
Davenport	0	------	--------	0	--------	1	0	-------	0	0	--------
Des Moines	2	------	--------	0	--------	32	0	-------	0	0	41
Sioux City	0	------	--------	1	--------	17	0	-------	0	0	--------
Waterloo	0	------	--------	1	--------	10	0	-------	0	9	--------
Missouri:											
Kansas City	1	------	2	3	15	84	0	7	0	26	122
St. Joseph	1	------	0	1	6	30	38	0	0	0	29
St. Louis	15	------	1	2	15	91	2	9	0	84	233
North Dakota:											
Fargo	0	------	0	0	0	4	0	0	0	0	7
Grand Forks	0	------	--------	0	--------	0	0	-------	0	1	--------
Minot	0	------	0	0	0	0	0	0	0	0	5
South Dakota:											
Aberdeen	0	------	--------	0	--------	4	0	-------	0	0	--------
Nebraska:											
Omaha	0	------	0	2	8	10	5	2	0	5	56
Kansas:											
Lawrence	0	------	0	0	1	4	0	0	0	2	8
Topeka	0	------	0	0	0	10	1	0	0	5	2
Wichita	0	------	0	5	3	9	5	1	0	14	22
Delaware:											
Wilmington	5	------	0	15	8	3	0	0	0	1	42
Maryland:											
Baltimore	9	10	5	716	35	24	0	7	1	56	250
Cumberland	0	------	0	0	0	5	0	0	0	2	14
Frederick	0	------	0	3	0	0	0	0	0	0	5
District of Columbia:											
Washington	11	2	2	69	27	8	0	9	0	8	200
Virginia:											
Lynchburg	0	------	0	1	2	0	0	0	0	5	24
Norfolk	0	1	1	1	2	2	0	0	0	2	33
Richmond	2	------	2	1	8	1	0	1	0	0	67
Roanoke	0	------	0	96	1	0	0	0	0	5	15
West Virginia:											
Charleston	0	3	0	0	4	1	0	0	0	1	23
Huntington	0	------	--------	1	--------	0	0	-------	0	0	--------
Wheeling	0	------	0	1	1	6	0	0	0	5	24

City reports for week ended Apr. 3, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
North Carolina:											
Gastonia	0	----	----	0	----	0	0	----	0	1	----
Raleigh	0	----	0	0	2	1	0	1	0	0	6
Wilmington	0	----	1	0	4	0	0	0	0	1	14
Winston-Salem	1	8	0	0	4	5	0	1	0	1	15
South Carolina:											
Charleston	0	101	1	0	9	0	0	0	1	0	28
Columbia	----	----	----	----	----	----	----	----	----	----	----
Florence	0	----	0	0	3	0	0	0	0	0	15
Greenville	0	----	0	0	4	1	0	2	0	2	20
Georgia:											
Atlanta	0	17	4	0	11	6	0	8	1	0	77
Brunswick	----	----	----	----	----	----	----	----	----	----	----
Savannah	0	56	2	0	1	1	0	1	1	6	38
Florida:											
Miami	2	9	0	0	1	0	0	3	0	0	41
Tampa	1	1	1	1	1	2	0	3	0	0	21
Kentucky:											
Covington	0	----	0	7	0	1	0	1	0	0	16
Lexington	1	15	0	5	2	1	0	1	0	12	27
Louisville	0	3	2	7	10	8	0	6	0	27	91
Tennessee:											
Knoxville	0	4	2	2	2	0	0	0	0	0	35
Memphis	0	----	5	0	13	4	0	6	0	22	95
Nashville	0	----	2	0	16	6	0	2	0	3	62
Alabama:											
Birmingham	0	18	5	0	18	2	0	6	0	1	103
Mobile	0	----	3	2	2	2	0	1	0	0	21
Montgomery	0	2	----	0	----	1	0	----	0	0	----
Arkansas:											
Fort Smith	0	----	----	0	----	1	0	----	0	1	----
Little Rock	0	----	0	1	4	5	0	3	0	0	9
Louisiana:											
Lake Charles	1	----	0	0	1	0	0	0	0	0	6
New Orleans	10	13	2	0	20	4	0	10	3	0	161
Shreveport	0	----	1	0	8	0	0	6	1	2	50
Oklahoma:											
Oklahoma City	2	----	0	10	5	10	0	0	0	0	35
Tulsa	0	----	----	0	----	11	0	----	0	0	----
Texas:											
Dallas	2	6	6	41	11	17	0	1	0	12	71
Fort Worth	0	----	1	43	4	5	0	2	0	4	34
Galveston	0	----	0	0	2	0	0	0	0	0	12
Houston	7	----	2	2	15	1	0	11	2	9	90
San Antonio	2	----	2	13	7	1	0	7	0	1	62
Montana:											
Billings	0	----	0	0	2	0	1	0	0	0	14
Great Falls	0	----	0	0	1	1	1	1	0	0	7
Helena	0	----	0	5	0	8	0	0	0	0	3
Missoula	0	----	0	0	2	0	0	0	0	0	8
Idaho:											
Boise	0	----	0	0	1	0	0	0	0	0	5
Colorado:											
Colorado Springs	0	----	0	0	3	13	0	1	0	0	16
Denver	3	----	2	1	11	11	0	9	1	47	90
Pueblo	0	----	0	0	4	3	0	0	0	0	13
New Mexico:											
Albuquerque	0	----	1	1	2	5	0	1	0	3	12
Utah:											
Salt Lake City	0	----	0	23	0	11	0	0	0	15	24
Washington:											
Seattle	0	----	1	5	3	8	0	5	0	10	91
Spokane	0	1	1	4	2	3	0	2	0	13	34
Tacoma	0	----	0	0	4	3	0	0	0	0	27
Oregon:											
Portland	1	4	1	1	3	10	2	5	1	2	84
Salem	0	----	----	0	----	1	0	----	0	5	----
California:											
Los Angeles	4	25	2	10	21	36	0	23	0	67	310
Sacramento	0	22	0	10	3	10	0	4	2	0	31
San Francisco	0	5	1	0	15	20	0	12	0	4	170

City reports for week ended Apr. 3, 1937—Continued

State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths	
Massachusetts:			
Boston	5	5	0
Fall River	1	1	0
Springfield	2	1	0
Worcester	0	1	0
Rhode Island:			
Providence	1	0	0
New York:			
New York	4	2	1
Rochester	1	0	0
Pennsylvania:			
Philadelphia	1	1	0
Pittsburgh	0	1	0
Ohio:			
Cincinnati	3	2	0
Cleveland	4	0	0
Columbus	1	1	0
Toledo	0	1	0
Indiana:			
Indianapolis	0	1	0
Illinois:			
Chicago	1	0	1
Moline	1	0	0
Minnesota:			
Minneapolis	1	0	0
Missouri:			
St. Joseph	0	1	0
Maryland:			
Baltimore	9	0	0
District of Columbia:			
Washington	2	0	0
Virginia:			
Lynchburg	0	0	1
Richmond	2	0	0
North Carolina:			
Wilmington	0	1	0
Winston-Salem	1	1	0
Georgia:			
Atlanta	1	0	0
Florida:			
Miami	3	2	0
Kentucky:			
Louisville	1	0	0
Knoxville	0	2	0
Memphis	0	1	0
Tennessee:			
Nashville	1	0	0
Alabama:			
Birmingham	8	1	0
Oklahoma:			
Tulsa	0	0	1
Texas:			
Houston	1	0	0
Colorado:			
Colorado Springs	0	1	0
New Mexico:			
Albuquerque	0	1	0
Washington:			
Seattle	2	0	0
Oregon:			
Portland	0	0	1
California:			
Los Angeles	1	0	0

Dengue.—Cases: Charleston, S. C., 2.
Encephalitis, epidemic or lethargic.—Cases: New York, 1; Cleveland, 1; Birmingham, 1; Oklahoma City, 1.
Pellagra.—Cases: Atlanta, 3; Savannah, 5; Knoxville, 1.
Typhus fever.—Cases: New York, 1: Savannah, 2.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended March 27, 1937.—During the 2 weeks ended March 27, 1937, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis	1			3	2		2			8
Chicken pox		9		282	529	64	76	13	57	1,020
Diphtheria		2	2	30	7	4				45
Dysentery				1						1
Erysipelas				9	8	3	3	3	9	35
Influenza	3	232	312	548	740	22	73		329	2,259
Lethargic encephalitis					1					1
Measles		23	57	951	713	152	638	128	893	3,555
Mumps		1	8		563	25	35	16	70	718
Paratyphoid fever		1			4					5
Pneumonia	6	1			57		13		15	92
Poliomyelitis					1			1		2
Scarlet fever		11	8	193	269	60	89	37	16	683
Smallpox						1				1
Trachoma							24		1	25
Tuberculosis	5	1	24	92	100	40	4	5	41	312
Typhoid fever		3	1	22	3		1		1	31
Undulant fever				1	3		2			6
Whooping cough		31	1	190	125	53	38	20	12	470

NOTE.—No report was received from Alberta for the week ended Mar. 27, 1937.

DOMINICA

Vital statistics—Year 1936.—Following are vital statistics for the Presidency of Dominica for the year 1936:

Estimated population Dec. 31, 1936	48,280
Number of births	1,506
Births per 1,000 population	31.58
Number of stillbirths	63
Total deaths	654
Deaths per 1,000 population	13.71
Deaths under 1 year of age	150
Deaths from:	
Appendicitis	2
Bronchitis	16
Cancer and other tumors	19
Cerebral hemorrhage	16
Cirrhosis of the liver	1
Congenital malformations	55
Diabetes	5
Diarrhea and enteritis (under 2 years of age)	32
Dysentery (amoebic)	2
Deaths from—continued:	
Dysentery (unclassified)	8
Gonorrhea	2
Heart diseases	19
Hookworm disease	9
Influenza	1
Leprosy	2
Malaria	31
Nephritis (acute)	5
Nephritis (chronic)	21
Pellagra	2
Pneumonia	29
Syphilis	48
Tetanus	3
Tuberculosis (all forms)	52
Typhoid fever	4
Violence	12

SWEDEN

Notifiable diseases—February 1937.—During the month of February 1937, cases of certain notifiable diseases were reported in Sweden as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	5	Poliomyelitis	30
Diphtheria	20	Scarlet fever	1,155
Dysentery	4	Typhoid fever	4
Epidemic encephalitis	1	Undulant fever	10
Paratyphoid fever	3	Weil's disease	1

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

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for March 26, 1937, pages 372-385. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued April 30, 1937, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Plague

Argentina—Cordoba Province—Pilar.—During the period March 16–31, 1937, 1 case of plague with 1 death was reported in Pilar, Cordoba Province, Argentina.

Peru.—During the month of February 1937, plague was reported in Peru as follows: Lambayeque Department, 4 cases, 3 deaths; Libertad Department, 12 cases, 7 deaths; Lima Department, 5 cases, 3 deaths; including Lima City, 1 case; Piura Department, 2 cases.

Senegal—Dakar.—On April 6, 1937, 1 case of plague was reported in Dakar, Senegal.

Typhus Fever

On vessel (Polish).—On March 16, 1937 a Polish vessel arrived at Santos, Brazil, with typhus fever on board.

Yellow Fever

Brazil.—Yellow fever has been reported in Brazil as follows: Matto Grosso State—Vista Alegre, 1 death February 20; Maracaju, rural districts—Brilhante, 1 case February 19; Matta Terra Amarella, February 10 to 14, 2 cases; Recordacao, February 11 to 13, 2 cases; Santa Gertrudis, February 8, 1 case; Sao Thomaz, February 16, 2 cases; Sete Voltas, February 4, 1 case. Minas Geraes State—Alfenas, February 26 to 27, 2 deaths; Areado, March 2, 1 death; Campos Geraes, March 5, 1 death; Lavras, February 28 to March 17, 3 deaths; Posto do Machado (first appearance), March 2, 1 death; San Sebastiao do Paraizo (first appearance) February 28, 1 death; Theophilo Ottoni, February 14, 1 death. Sao Paulo State—Jundiai, March 3 to 7, 2 deaths; Ribeirao Preto, March 8, 1 death. Localities showing the first appearance of yellow fever are as follows: Campinas, February 26, 1 death; Indaiatuba, February 23 to 25, 3 deaths; Itu, February 26 to March 1, 2 deaths; Junueri, February 27, 1 death; Parnaiba, February 15 to March 3, 8 deaths; Presidente Venceslao, February 14 to March 6, 5 deaths; Rancharia, March 6, 1 death. Acre Territory (first appearance); Xapury, January 31, 1 death.

Senegal.—Yellow fever has been reported in Senegal as follows: Khombole, Thies Circle, April 5, 1 case; Tivaouane, Tilmaka Subdivision, April 8, 1 case.

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