Public Health Reports

Vol. 56 • DECEMBER 12, 1941 • *No. 50*

CHILD HEALTH AND THE SELECTIVE SERVICE PHYSICAL STANDARDS[1]

By ANTONIO CIOCCO, *Biometrician*, HENRY KLEIN, *Dental Officer*, and CARROLL E. PALMER, *Passed Assistant Surgeon, United States Public Health Service*

INTRODUCTION

Complacency about the Nation's health engendered in late years by emphasis on the declining mortality and the so-called increase in longevity received something of a shock recently when the results of physical examinations of selectees were made public. The current finding that approximately half of the men examined are rejected because of various defects may perhaps indicate no real deterioration of health, but as Perrott[2] has pointed out, "Neither can it be said that the health of young men has improved" since World War I. The immediate reaction based on the exigencies of the moment has been to consider the "rehabilitation" of men found defective. However, in keeping with the objectives of modern medical science it is appropriate to inquire into the possibility of preventing the conditions which lead to disqualification of men as soldiers. The military health requirements spring from the need for men who can function efficiently under arduous circumstances, and, while for civilian life such requirements may seem very stringent and even unnecessary, it would appear beneficial to adjust our standards of civilian good health so that such requirements will be met more frequently in the future.

To develop means of preventing disqualifying conditions it is first necessary to learn how early and in what manner such conditions can be detected and it is with that aspect of the problem that the present report is concerned. Specifically, this paper describes the physical status of a sample of selectees as observed 15 years ago, when the men were school children, and compares these findings for selectees who

[1] From the Division of Public Health Methods, National Institute of Health.

[2] Perrott, George St. J.: Physical status of young men, 1918 and 1941. Milbank Memorial Fund Quarterly, 19: 343 (October 1941).

have now been accepted for military duty with similar observations on selectees who have now been disqualified (temporarily or permanently) because of physical or mental disability.

MATERIAL

Sources of data for the present report include:

1. The records of physical examinations of Hagerstown, Md., white school children made by the United States Public Health Service during the period 1922–1928.

2. Information regarding the acceptance or rejection of white selectees who appeared before the physicians of the local Draft Boards Nos. 1 and 2 of Washington County, Md.[3]

For each selectee about whom the results of physical examination were obtained a search was made in the Hagerstown files of the Child Hygiene Office to determine whether or not he had ever been examined during the school surveys made by the medical officers of the United States Public Health Service. Of the 697 selectees examined by local Draft Board No. 1 and on whom information as to the results are available, 363 (52 percent) were found to have received some type of physical examination when in school. Of the 759 selectees examined by local Draft Board No. 2 the records of only 48 (6 percent) were identified in the files. The difference between the two local boards with respect to the proportion of selectees who at one time had been examined by the United States Public Health Service is due to the fact that Board No. 1 deals with residents of the city of Hagerstown, while No. 2 covers the rest of Washington County. The school surveys were conducted only in some of the Hagerstown schools.

The records of the past and present physical status of 411 selectees thus constitute the material for this study. However, owing to circumstances related to the schools selected for survey in 1922–1928, the age and grade of the selectees at the time, and the kind of physical examination made, not all past records of the 411 selectees are complete.

Of the 411 selectees, 225 (54.7 percent) were rejected (i. e., placed in Class I–B or IV–F, because of some defect), a rejection percentage only slightly higher than that observed for the country at large. The higher rejection rate probably reflects local conditions since, of the sample of 1,446 Washington County selectees (the total on whom information as to acceptance or rejection is at hand), 20 have been rejected because of illiteracy and 742 for physical or mental conditions. For this sample of the county the rejection rate because of physical and mental defects is, therefore, 52 percent.

The frequency of the several causes of rejection of the 225 selectees placed in Class I–B or IV–F is summarized in table 1 and compared

[3] The writers wish to express their appreciation of the cooperation and assistance kindly given by Mr. W. A. Tobias of Selective Service of Washington County, Md.

with the percentages for the sample from the entire county and with those reported by the Director of the Selective Service System (October 10, 1941) for the country as a whole.

TABLE 1.—*Causes of rejection among a sample of Washington County, Md., selectees*

Causes of rejection	This sample of selectees		Washington County sample	United States selectees (Oct. 10, 1941)
	Number	Percent	Percent	Percent
Dental defects	62	27.6	31.3	20.9
Defective eyes	23	10.2	10.4	13.7
Cardiovascular diseases	28	12.4	11.5	10.6
Venereal diseases	10	4.4	3.8	6.3
Mental and nervous diseases	16	7.1	11.7	6.3
Hernia	33	14.7	6.2	7.1
Defects of ears	15	6.7	6.6	4.6
Defects of feet	7	3.1	1.5	4.0
Defective lungs, including tuberculosis	7	3.1	3.8	2.9
Other and miscellaneous	24	10.7	12.3	24.5
Total	225	100.0	100.0	100.0

From table 1 it appears that, relative to the frequency of the majority of conditions listed, the findings for the sample of this study and for the entire county differ but little from those of the United States as a whole. However, of this sample, only 10.7 percent were rejected because of conditions included under the heading, "Other and miscellaneous," while for the country as a whole the corresponding percentage is 24.5. While this difference may reflect local peculiarities with respect to health, it may also result from a lack of uniformity in classifying causes of rejection when this is the result of more than one condition. As will be seen, in the official published statistics as well as in the data of the above tabulation, the percentages of men rejected for specific conditions do not reflect the actual prevalence of those conditions because only one cause is assigned for each rejection.

CAUSE OF REJECTION VS. PHYSICAL STATUS IN CHILDHOOD

The main purpose of this inquiry was to determine whether in childhood there were appreciable indications of the defects that have brought about the present disqualification of selectees. For this purpose an attempt has been made to compare, for each disqualifying cause, the childhood status of men who were rejected because of this cause with that of men who successfully passed the physical examination.

Dental defects.—Defective dentition is by far the most frequent cause of rejection; 62 out of 225 (27.6 percent) were rejected because of this defect. But, in addition, the records of Selective Service physical examinations show that 26 men rejected for other causes

also had defective dentition as defined by Selective Service standards. Of these 88 men, records of one or more dental examinations made by the United States Public Health Service during 1922–1928 were found for 57. Records of a similar dental examination are available for 146 of the 186 selectees placed in Class I–A. The results of the school examination relative to the permanent teeth of both groups of men are summarized in table 2.

TABLE 2.—*Dental status observed in school children who 15 years later were selectees placed in Class I–A, and in Class I–B or IV–F because of dental defects, alone or associated with other conditions*

Age at school examination	Number of children		Percentage of children with 1 or more decayed, missing, or filled (DMF) permanent teeth		Decayed, missing, or filled (DMF) permanent teeth per 100 children	
	Selective Service classification		Selective Service classification		Selective Service classification	
	I-A	I-B or IV-F	I-A	I-B or IV-F	I-A	I-B or IV-F
6–7	26	6	50.0	100.0	92	233
8–9	61	22	70.5	90.9	211	319
10–11	32	16	87.5	100.0	300	450
12–13	24	8	79.2	100.0	354	688
14 and over	3	5	100.0	100.0	400	1,000
All children	146	57	72.6	96.5	238	456

In table 2 the following points are pertinent:

1. The mean age at school examination was slightly under 10 years. Hence, on the average, the findings apply to conditions existing 15 years before the examination for Selective Service.

2. At that time almost all (95.5 percent) of the children who later were to be rejected already had one or more decayed, missing, or filled permanent teeth; but in fewer (73 percent) of the children later to be accepted was such a condition present.

3. At the school examination, the number of decayed, missing, or filled permanent teeth per 100 children was twice as high among those children later rejected by the draft board physicians as among those placed in Class I–A. The difference is apparent at all examination ages.

Thus, it appears that men found to have defective dentition according to Selective Service standards had in childhood demonstrated a caries experience rate double that of men who passed the Selective Service physical examination. At the school examination each child who, as an adult, was rejected had on the average 4.6 permanent teeth either decayed, missing, or filled, while each accepted man had in childhood only 2.4 such teeth. To complete further the picture of the differences in childhood dental status of the two groups of selectees it may be noted that at that time among the rejected selectees there were recorded 26.3 missing permanent teeth per 100 children while among the accepted only 4.8 such teeth were found. Not only was the caries experience rate in childhood higher among rejected selectees

but apparently the frequency with which decayed teeth had been filled was lower than among children later to be accepted by the Selective Service physicians. Of the decayed, missing, and filled teeth of the rejected group the percentage of filled teeth was 6.9; the corresponding percentage for the accepted group was 16.0.

These findings lead to the conclusion that the selectees rejected or rejectable because of dental defects were in childhood markedly differentiated as a group from children who 15 years later were accepted according to the Selective Service standards. Differentiating characteristics were the higher caries experience, the larger number of teeth lost, and the smaller number of teeth filled among the rejected men. All these were appreciable in early childhood.

Eye defects.—In the sample of 225 rejected selectees there are 23 for whom the primary cause of disqualification was defective vision. In addition to these 23, the Selective Service physical examinations reveal that 26 other selectees disqualified for causes other than eye defects also had defective vision as defined by Selective Service standards. The school physical examinations made from 1922 to 1928 included a Snellen test, records of which are available for 33 of the 49 selectees rejected or rejectable because of defective vision. Records of a Snellen test given in school are also available for 150 of the 186 selectees placed in Class I–A. A comparison of the results observed in the two groups approximately 15 years before examination for Selective Service is summarized in table 3.

TABLE 3.—*Visual acuity without glasses (Snellen test) of school children who 15 years later were selectees placed in Class I–A, or Classes I–B and IV–F because of defective eyes, alone or associated with other defects*

	Classes assigned following Selective Service physical examination	Vision (Snellen test)			
		10/10	9/10 to 6/10	5/10 or less	All
Right eye:					
Number	I–A	105	39	6	150
	I–B or IV–F	9	10	14	33
Percent	I–A	70.0	26.0	4.0	100.0
	I–B or IV–F	27.3	30.3	42.4	100.0
Left eye:					
Number	I–A	103	44	3	150
	I–B or IV–F	11	13	9	33
Percent	I–A	68.7	29.3	2.0	100.0
	I–B or IV–F	33.3	39.4	27.3	100.0
Eye with poorer vision:					
Number	I–A	97	45	8	150
	I–B or IV–F	6	11	16	33
Percent	I–A	64.7	30.0	5.3	100.0
	I–B or IV–F	18.3	33.3	48.5	100.0

The data of table 3 reveal that:

1. At school examination, 70 percent of the selectees of Class I–A demonstrated a visual acuity of 10/10, by the Snellen test, for the right eye; 69 percent for the left eye; and 65 percent for both eyes. Among selectees who later had defective vision, the corresponding percentages are 27, 33, and 18.

2. At school examination 15 years ago, 42 percent of the selectees now disqualified because of vision were found to have visual acuity of 5/10 or less in the right eye; 27 percent in the left eye; and a total of 49 percent were so affected in at least one eye. Among the men placed in Class I–A such low visual acuity was observed in the right eye among 4 percent, in the left among 2 percent, and in only 5 percent did either of the eyes show such poor visual acuity.

As in the case of dental defects, the records of the visual acuity examination made 15 years before that for Selective Service apparently demonstrate that already in childhood boys who later were rejected or rejectable because of defective eyes had, as a group, markedly inferior vision as compared with that of boys who now are in Class I–A.

Cardiovascular diseases.—Of the 27 selectees disqualified because of some impairment of the cardiovascular system, records of school physical examinations and medical histories were available for 20. At the time of the school examination some form of cardiac abnormality was recorded for 7, or about one-third of the 20 men. Loud murmurs were noted for 3, including 1 whose heart was said to be enlarged. A fourth was alleged to have "heart disease"—without further elucidation—and tachycardia was reported for a fifth. There was a history of rheumatic fever for 2 other selectees. Among the 149 selectees in Class I–A for whom childhood physical examination records are available, none was stated to have any involvement of the cardiovascular system at the time of the school examination.

Since we are dealing with a relatively small sample, perhaps too much weight should not be attached to the fact that 7 of 20 young adults rejected for heart disease had, as children, some manifestation of rheumatic fever or cardiac symptom at the examination made in school, while no such sign was observed at the corresponding examination of the present-day selectees of Class I–A. However, it must be recalled that, as is usually the case in school examinations, none of the records is sufficiently descriptive to give detailed information regarding the actual status of the heart muscle and function at the time.

Defects of ears.—Among the 15 men disqualified for "defects of ears," the Selective Service examination uncovered 2 with a hearing impairment only, 1 with an atresia of the external auditory canal, and 12 with a perforated tympanic membrane. For these 12, the school examination records 15 years earlier revealed a discharging ear in 4 cases and a scarring of the tympanic membrane in 1. Obviously, in the school record of the selectee with atresia of the external auditory canal this defect was noted. However, hearing impairment was not indicated in the school records of the two men rejected because of this defect. Among 150 selectees placed in Class I–A the school examination records revealed no abnormality of the tympanic membrane in 147. One child was found to have a discharging ear; 2 a scarred tympanic membrane.

Defective lungs, including tuberculosis.—Of the 7 selectees rejected for this group of causes, a record of the usual chest examination made on school children was available for 5. All were reported as being "negative" at the time. Similarly, all of the 149 selectees in Class I–A were negative for these conditions at the time of school examination. It should be noted, however, that neither a tuberculin test nor an X-ray was included in the school examination.

Venereal diseases, hernia, mental and nervous diseases, defects of feet, other and miscellaneous.—Comparable information regarding the prevalence of these conditions is not included in the school examination record. Of course, because of the age incidence of venereal diseases, data on that point could not be expected. However, the lack of information about the other conditions reflects the *modus operandi* of physicians when examining school children.

Summarizing the above findings it appears that, relative to dental and visual defects as defined by Selective Service standards, the selectees exhibiting these defects were, as a group, already stigmatized by them 15 years earlier. Apparently the same is true with respect to cardiovascular diseases and ear defects but the small sample and the absence of precise information from the school examination does not permit any definitive conclusion. The lack of comparable school examination data prevents any attempt to determine whether the selectees rejected or rejectable for other defects were characterized by the same defects in childhood.

CHILDHOOD WEIGHT AND CHILDHOOD STATUS OF TONSILS, NUTRITION, AND POSTURE AMONG ACCEPTED AND REJECTED SELECTEES

There are certain physical traits that have traditionally been regarded as indicative of the state of health of children and on which great emphasis is often placed in the medical examination of school children. Among such signs, body weight and the condition of the pharyngeal tonsils are considered of particular importance. It, therefore, seems appropriate to examine whether any relationship exists between the results of the Selective Service physical examination and these aspects of physical condition as observed 15 years earlier at the school examination.

Weight.—Weight records are available for 364 selectees who were examined as school children between 1922 and 1928. For each age a "middle range of weight" (i. e., the range within which the middle 50 percent of the observations fall) has been computed. This range is 43–54.9 pounds for children 6–7 years old, 52–64 pounds for 8–9-year-old children, 65–74 pounds for the children 10–11 years old, 75–95 pounds for the children 12–13 years old, and 90–120 pounds

for children 14 years and over at the time of school examination. Combining all ages, the numbers of selectees whose weight, in school, fell below the middle range for the age group, within it, and above it, are shown in table 4.

TABLE 4.—*Weight in school years 1922–28 and results of Selective Service physical examination approximately 15 years later*

Weight as school children	Selectees			Percent I–B or IV–F among all selectees
	Total number	Class I–A	Class I–B or IV–F	
Below middle range for age	88	35	53	60.3
Middle range for age	189	85	104	55.1
Above middle range for age	87	48	39	44.8

The data of table 4 indicate that 60 percent of selectees who as children were below the middle range in weight were rejected, whereas among selectees who had been above this range at the time of school examination only 45 percent were rejected. Considering the differences in the percentage of rejections in the three groups, it would appear that with increase in childhood weight relative to age, chances of rejection as a selectee diminish.

Nutritional state.—The physician's judgment on the state of nutrition was found on the school examination records of 323 selectees. Of 232 whose nutritional state was considered good or excellent, 47.5 percent were rejected for military service 15 years later. However, among 91 children whose nutrition was regarded as fair to poor, 70.3 percent were later found unacceptable for Selective Service. Such a large difference between the two percentages would seem to indicate that the childhood state of nutrition was definitely associated with the development of defects that 15 years later disqualified the adult for Selective Service.

Posture.—At the time of school examination 132 of the selectees were judged by the physician as having good posture. Of these, 60.5 percent were 15 years later placed in Class I–A and 39.5 percent in Class I–B or IV–F. On the other hand, among the 168 selectees who in childhood were regarded as exhibiting fair or poor posture only 38.3 percent were placed in Class I–A and 61.4 percent in Class I–B or IV–F. Posture in childhood would also seem to be associated with the adult development of defects as defined by Selective Service standards.

Tonsils.—Records are available on the childhood condition of the tonsils of 147 selectees in Class I–A and of 159 in Classes I–B and IV–F. The results are summarized in table 5.

TABLE 5.—*Condition of tonsils in childhood and results of Selective Service physical examination approximately 15 years later*

Condition of tonsils	Selectees assigned to Class			
	I-A		I-B or IV-F	
	Number	Percent	Number	Precent
Total	147	100.0	159	100.0
Present	114	77.6	133	83.6
Not enlarged	2	1.4	5	3.1
Enlarged	15	10.2	18	11.3
Diseased	97	66.0	110	69.2
Removed	33	22.4	26	16.4
Totally	29	19.7	23	14.5
Partially	4	2.7	3	1.9

The data of table 5 reveal that:

1. When in school, about two-thirds of the selectees were found to have diseased tonsils, and an additional sixth had already had the tonsils removed.
2. With respect to the status of the tonsils at school examination, no significant difference can be observed between selectees accepted and those rejected for military service.

It seems, therefore, that in this sample the condition of the tonsils during childhood was not related to the development of the physical defects regarded by Selective Service standards as rendering the individual unfit for full military duty. In contrast, an inferior state of nutrition, poor posture, and the relative retardation of growth (as measured by weight) all seem in the child to be associated with the later manifestation of physical abnormalities within the definition of the Selective Service standards. Although it is not possible here to investigate what adult defects may be associated particularly with the childhood status of each of the traits discussed, the present findings suggest rather strongly that these traits are indicative of a significant physical inferiority in children.

DISCUSSION

These findings indicate that a relatively large number of the selectees who have been rejected because of defective dentition and vision already gave evidence of the same defects 15 years ago when they were in elementary school. It is probable also that some of the selectees rejected for cardiovascular diseases and for ear defects could have been identified when in school. The data relative to the last-named conditions are not conclusive, but knowledge regarding their etiology and development support such a view. For most of the remaining physical causes of rejection one might suspect that some sign was also present in childhood. There is, however, no way of determining the validity of such an assumption, because the school examinations

were not directed toward the discovery of the corresponding defects in childhood. The results of the present study suggest also that growth as measured by weight, posture, and the physician's estimate of the state of nutrition—all traits that are frequently examined to determine the health status of the child—are useful as crude predictive indexes of adult physical development. On the other hand, the condition of the tonsils in childhood does not appear to have much significance in relation to the future physical status of the young adult.

The above data and findings, although based on a relatively small sample, enable us to visualize more clearly some of the fundamental aspects of the much-discussed topic of the physical fitness of selectees. Surgeon General Parran has recently said "* * * if it is stupid to waste money and material * * * it is treasonable to waste manpower."[4] It becomes, therefore, of a great deal more than academic interest to know that we have and have had for years a more or less effective way of predicting long in advance the physical status of adults of the now particularly important early productive ages.

It is particularly disturbing to find that, in spite of knowing, for instance, which children in a community would grow up into physically handicapped adulthood, the health professions, the lay professions, and especially society as a whole, has to date apparently failed to take full advantage of the knowledge.

In the not very remote past, public health and medical care programs have, it seems, been dominated by the concept of mortality, a concept not enlightening with reference to child health since mortality is lowest in childhood. The findings of this study seem instead to reinforce the views held by many that disease in adulthood is often brought about by the cumulative effects over a long period of time of many pathologic conditions, many incidents, some of which take place and are even perceived in early infancy. Consequently, the more information that is available, in concrete and well-defined terms, of the individual's past and present health, the more surely can his future physical status be estimated.

It appears rather obvious, on consideration of the findings presented here, that it is imperative for our national concern to guard to the utmost the health of children. On paper and in theory this is a view which all have accepted for some time. Actually, in many respects, lack of forethought, lack of planning, or even mistaken notions of execution of plans have apparently prevented the full realization of such a concept. Now it becomes even more essential to pass from theory to practice, to arrive at a definite formulation of what

[4] Parran, T.: Address delivered at the meeting of the American Academy of Pediatrics, Boston, Mass., Oct. 9, 1941.

school medical examinations should consist of, what their objectives ought to be, and, more important, to what end the findings are to be used. School medical examinations have in general been characterized by cursoriness and superficiality, even though in all fairness it must be recognized that they have produced a usable fund of information. However, as was shown above, the results are quite limited in scope and often less than precise.

If it be true, as few will deny, that the need for competent, healthy, physically fit young men is now and will be, for some years, at an all-time high, then this need must be explicitly recognized and satisfied. Satisfaction of this need involves acquiring information on all significant early (and especially remediable) defects, employing accurate measures of functional status, recording the pertinent information in objective and permanent form so as to serve as both a medical history and a basis for the evaluation of therapeutics, and finally, it involves the necessary corrective work. In these ways it would seem possible to attain not only effective prevention of damage from disease but also effective upbuilding of national physical status.

INDUSTRIAL INJURIES AMONG THE URBAN POPULATION AS RECORDED IN THE NATIONAL HEALTH SURVEY [1]

By JOAN KLEBBA, *Junior Statistician, United States Public Health Service*

The purpose of the present report is to summarize data collected in the National Health Survey (1935–36) [2] on accidental industrial injuries that had occurred among workers during the 12 months immediately preceding the enumerator's visit to the household. It does not include information on the causes and types of the accidents themselves, but is limited to consideration of certain social and economic aspects of the resulting injuries. Information of the latter nature is, of course, as important from the point of view of coping with the consequences of industrial accidents as that of the former is from the point of view of their prevention. Facts concerning frequency of injuries among workers in different income groups, variation in compensation hazard with age of worker, and prevalence of

[1] From the Environmental Sanitation Section of the Division of Public Health Methods, National Institute of Health. Acknowledgment is made to Rollo H. Britten, Senior Statistician, and James S. Fitzgerald for direction in the preparation of this report, and to Margaret T. Comstock for much of the statistical tabulation. Assistance in the preparation of these materials was furnished by the personnel of Work Projects Administration Official Projects Nos. 712159-658/9999 and 765-23-3-10.

[2] The National Health Survey was a house-to-house canvass of 703,092 urban families in 18 States and 36,801 families in certain rural areas, made to determine the frequency of serious disabling illness, medical care received therefor, and their relation to social and economic conditions. The survey was patterned on previous ones conducted by the United States Public Health Service and in general followed the established techniques developed in such surveys, information being obtained by trained enumerators from the housewife or other responsible member of the household. See Perrott, George St. J., Tibbitts, Clark, and Britten, Rollo H.: The National Health Survey: Scope and method of a Nation-wide canvass of sickness in relation to its social and economic setting. Pub. Health Rep., 54: 1663 (1939). Reprint 2098.

orthopedic impairments resulting from industrial injuries at given age levels are some of the data needed to implement any broad program for dealing with the existing problem.

SCOPE, DEFINITION, AND METHOD USED IN PRESENT STUDY

Scope of present study.—The present report summarizes material collected in over 700,000 urban households in the United States on nonfatal [3] industrial injuries occurring among 784,717 white and colored employed workers [4] 16 years of age and over,[5] and presents (*a*) frequency of industrial injuries disabling for 7 calendar days or more among nonmanual and manual workers,[6] by age, sex, and economic status; (*b*) days of disability per case and annual days of disability per person observed, by age; and (*c*) prevalence of orthopedic impairments due to industrial injuries, by age.[7]

Definition of industrial injury.—Only those nonfatal accidental injuries which, as described by the person interviewed, fulfilled the following requirements are included in the present report:

1. The injury must have been sustained by a worker while on duty.[8]
2. The injury must have caused disability (that is, inability to work) for at least 7 calendar days.

[3] This report does not present the information obtained on fatal cases because of its recognized incompleteness. It has been known since the United States Census of 1850 that mortality data gathered (during a single visit) in a house-to-house canvass are particularly subject to underenumeration. Disappearance of single-person households, breaking up of other households, and lack of coverage of institutions are some of the factors which result in abnormally low death rates from industrial injuries obtained in a house-to-house canvass.

[4] The term "employed workers," as used in this report, applies to persons (including those on work relief) engaged for wages in money or in kind. Those on vacation, on strike, or temporarily ill who were expecting to return to work, and part-time workers (except those who were attending school regularly) are also included.

[5] The National Health Survey covered 2,498,180 white and colored persons of known age, or 3.6 percent of the urban population of the United States (1930). The sample was chosen to be representative in general of cities in the United States according to region and size. In large cities (100,000 and over) the population to be canvassed was determined by a random selection of many small districts based on those used in the United States Census of 1930. In the smaller cities selected for study the population was enumerated completely. See article by Perrott, Tibbitts, and Britten cited in footnote 2 for a more detailed account of the sampling procedure and a comparison of certain characteristics of the population enumerated with those of the urban population as a whole (Census, 1930).

[6] The category "nonmanual workers" as used in this study is composed of professional persons, wholesale and retail dealers, proprietors, managers (except farmers), and officials, clerks, salesmen, and kindred workers; and "manual workers," of foremen, skilled, semiskilled, and unskilled workers (except farm laborers and servants).

The worker's occupation which was recorded in the National Health Survey was his usual one; persons who never had a job (including work relief jobs) were recorded as having "no occupation" and are not included in the present study. Also not included are those workers classified as servants, farmers, and farm laborers.

[7] For a summary of data obtained on illnesses and accidents, see Britten, Rollo H., Collins, Selwyn D., and Fitzgerald, James S.: The National Health Survey: Some general findings as to disease, accidents, and impairments in urban areas. Pub. Health Rep., 55:444 (1940). Reprint 2143.

[8] Instruction was given to the enumerator to include as industrial injuries both those growing out of the nature of the work itself (e. g., injury to hand resulting from catching it between the gears while operating a lathe) and those which did not (e. g., fracture resulting from fall on stairs in plant on way to or from machine room) with the following exceptions: (1) Injuries sustained while on duty by persons operating, riding in, or struck by a land, air, or water vehicle outside a railroad shop or yards or other industrial workplace not open to the public; and (2) injuries sustained while on duty by domestic servants. The former group has been classified in the National Health Survey as injuries resulting from public accidents, and the latter as injuries resulting from home accidents.

3. The injury must have been sustained during the 12 months immediately preceding the day of the visit.

Method of arriving at annual number of industrial injuries.—In order to obtain for the 12 months prior to the day of the visit the number of industrial injuries by duration of resulting disability it was necessary to add (*a*) the number of cases from which persons had recovered prior to the day of the visit to (*b*) the number of cases from which persons had not recovered prior to the day of the visit for which the estimated completed duration of disability was 7 calendar days or more.[9]

If the cases from which persons had not recovered prior to the day of the visit had been consistently reported in terms of the actual number of days of attained duration instead of largely in terms of the approximate number of weeks or months, a distribution of these cases by estimated completed duration could have been obtained by the following three steps:

1. Arranging a frequency distribution of cases from which persons had not recovered prior to the day of the visit in ascending order of magnitude of attained duration.

2. Finding the first differences of this frequency distribution.

3. Multiplying each member of the resultant distribution of first differences by the number of days in the period of duration of disability of the group of cases comprising that particular first difference.[10]

Because of the concentration, however, in the recorded distribution

[9] The National Health Survey recorded (in addition to injuries with periods of disability of 7 calendar days or more with both onset and recovery within the 12 months prior to the day of the visit): (1) Injuries causing disability on the day of the interview with onset within the study year whether or not the period of disability had attained a duration of 7 calendar days or more; (2) injuries not causing disability on the day of the interview which had onset prior to the study year and 7 calendar days or more duration within the study year; and (3) injuries causing disability on the day of the interview with onset prior to the study year. (Group 3 has been tabulated in the National Health Survey as permanent orthopedic impairments.)

[10] The assumption underlying the above method of determining the distribution of cases from which persons had not recovered prior to the day of the visit by estimated completed duration is that both the total number and the distribution by completed duration of cases beginning on the day of the visit is the same as the total number and the distribution by completed duration of cases beginning on any other day. (It should be pointed out that the effect of the variation in frequency which may have obtained from day to day during the 12 months prior to the day of the visit has been, for all practical purposes, eliminated by reason of the fact that enumeration lasted over a considerable period of time, about 6 months, on every working day of which a number of visits was made. The number of cases from which persons had not recovered prior to the day of the visit with any given attained duration on the day of the visit is in reality, therefore, a summation of such cases enumerated within the 6-month period.)

To elaborate, first let us consider only the group of cases beginning on the day of the visit, and ask how many of these were cases from which persons recovered on the following day.

The answer is found (on the basis of the assumption given above) by subtracting the number of cases which began the day before the visit but from which persons had not recovered on the day of the visit, i. e., the cases with 2 days' attained duration, from the number of cases beginning on the day of the visit. Similarly, the question as to how many of the cases beginning on the day of the visit from which persons had recovered on the second day following the visit is answered by subtracting the number of cases which began the second day before the visit but from which persons had not recovered on the day of the visit,i. e., the cases with 3 days' attained duration, from the number of cases beginning on the day of the visit but from which persons had not recovered the day following the visit. And in like manner the number of cases beginning on the day of the visit from which persons recovered 3, 4, 5, and more days after the visit may be determined.

The computation of these figures results in a frequency distribution by estimated completed duration of

of cases by duration in days at the points equal to 1, 2, 3, and more weeks or 1, 2, 3, and more months, it was necessary to introduce certain additional steps to obtain an estimate of the actual number of days in those durations which were recorded only in terms of the nearest whole number of weeks or months.[11]

---

cases beginning on any day during the 12-month period prior to the day of the visit as well as of those beginning on the day of the visit.

The next step is to determine the frequency distribution by estimated completed duration of all cases with onset within the 12-month period preceding the day of the visit and from which persons had not recovered prior to the visit.

Such distribution is obtained by multiplying the number of those cases beginning on the day of the visit in each of the groups having a particular estimated completed duration by the number of days in that duration. The correctness of this step is obvious on recognition of the fact that the annual number of cases of any given estimated completed duration is equal to the product of (*a*) the number of such cases beginning on the day of the visit and (*b*) the number of days before the visit on which cases of the specified duration may have begun in order to be included in the recorded number of cases from which persons had not recovered on the day of the visit.

[11] It was determined empirically that the relationship between frequency and attained duration of cases beginning within the study year and from which persons had not recovered prior to the day of the visit is linear when plotted on double logarithmic paper and may be described by the equation $Y_i = aX_i^b$ (b less than 0); where Y is frequency; X, duration; a, total number of cases from which persons had not recovered prior to the day of the visit; and where b determines the rate of change in frequency with unit change in duration.

Thirty values, ranging from −0.1 to −3.0, were in turn assigned to the parameter b. For each of these values of b all values of X (from 1 to 365) were substituted in the equation $Y_i = aX_i^b$ and the corresponding values of Y in units of a were determined, the values of Y thus obtained forming a frequency distribution by actual attained duration in units of a of all cases from which persons had not recovered prior to the day of the visit.

The first differences of this distribution were taken, resulting in a frequency distribution by estimated completed duration of all cases beginning on any given day.

The number of cases in each of the groups having a particular estimated completed duration in this frequency distribution of first differences was then multiplied by the number of days in that duration to obtain the desired frequency distribution of all cases with onset within the 12-month period preceding the day of the visit and from which persons had not recovered prior to the visit.

The following set of ratios was then computed for each value of b:

1. $\frac{S_{1-17}}{S_{1-365}}$, i. e., the ratio of (*a*) the sum of the frequencies by actual attained duration of all cases from which persons had not recovered prior to the day of the visit for values of X (duration) from 1 to 17 to (*b*) the sum of the frequency distribution by actual attained duration of all cases from which persons had not recovered prior to the day of the visit. (It might be pointed out that in the ratio $\frac{S_{1-17}}{S_{1-365}}$ the sum S_{1-17} was selected to be the numerator rather than any other value merely because the stability of $\frac{S_{1-17}}{S_{1-365}}$ was in general greater than that of any other ratio, since S_{1-17} was usually equal to approximately one-half of S_{1-365}.)

2. $\frac{R_{k-m}}{S_{1-365}}$, i. e., ratios of (*a*) the number of cases (with onset within the 12-month period preceding the day of the visit and from which persons had not recovered prior to the visit) with estimated completed duration in the range $k-m$ (where k is the number of days duration in the lower limit of the class interval for which the particular ratio is being computed and m, the number in the upper limit) to (*b*) the sum of the frequency distribution by actual attained duration of all cases from which persons had not recovered prior to the day of the visit. (In order to use the National Health Survey data as tabulated, it was necessary to compute 11 such ratios for each of the 30 values assigned to the parameter b, since 11 class intervals were employed in the tabulation of frequency by duration. Following are the class intervals used: 1–6 days, 7–10 days, 11–17 days, 18–24 days, 25–44 days, 45–74 days, 75–99 days, 100–134 days, 135–224 days, 225–344 days, 345–365 days.)

A smooth curve for each class interval was then drawn, by using the ratios $\frac{R_{k-m}}{S_{1-365}}$ ($k-m$ being the particular class interval for which the curve is being drawn) and $\frac{S_{1-17}}{S_{1-365}}$ as paired values of X and Y. There

The procedure used to obtain the annual number of cases disabling for 7 calendar days or more made it possible to establish two types of frequency rates: (1) The annual frequency of industrial injuries disabling for at least 7 calendar days but less than 12 months, and (2) the annual frequency of injuries from which persons had not recovered (i. e., were still unable to work) at the end of a 12-month period following the occurrence of the accident. Also, it made possible the establishment of (1) the annual days of disability per employee and (2) days of disability per case for industrial injuries disabling for at least 7 calendar days but less than 12 months.

It should be noted that since in the present study 84 percent of the injuries disabling for 7 calendar days or more were cases from which persons had recovered before the day of the visit, the annual frequency rate of industrial injuries disabling for at least 7 calendar days but less than 12 months was largely independent of estimates of completed duration of cases from which persons had not recovered prior to the day of the visit. The rate for cases disabling for 12 months or longer, however, was obviously based on estimates of completed duration.

Included with the cases disabling for 12 months are a few for which the estimated completed duration was more than 11 months but less than a full 12 months (345–365 days).

ANNUAL FREQUENCY AND SEVERITY OF NONFATAL INDUSTRIAL INJURIES BY SEX AND AGE

Frequency and amount [12] *of disability.*—The annual frequency of industrial injuries (sole, primary, and contributory causes [13]) disabling

were 30 such paired values available to determine each class interval curve, since frequency distributions in units of a corresponding to the 30 values assigned to b had been computed.

Then in order to obtain a frequency distribution by estimated completed duration from any given frequency distribution (e. g., for a particular age group) by actual attained duration of cases from which persons had not recovered prior to the day of the visit, the ratio $\frac{S_{1-17}}{S_{1-365}}$ was computed and used as abscissa and the corresponding ordinates were read on the interval curves to obtain the 11 factors by which the sum of the frequency distribution was to be multiplied to give the number of cases by estimated completed duration falling within each of the 11 class intervals.

[12] Based on periods of disability of 7 calendar days or more resulting from nonfatal industrial injuries sustained by workers 16 to 65 years of age. Rates for workers 65 years and over are not included because of the small number of cases.

[13] For a discussion of classification of disability according to sole, primary, and contributory causes see Britten, Collins, and Fitzgerald, op. cit., footnote 11, p. 448, and lines 21–26, p. 463.

In 78 percent of the reported periods of disability of 7 calendar days or more in which an industrial injury was involved, the sole cause (or diagnosis) was the injury, in 18 percent the injury was the primary cause, and in only 4 percent, a contributory cause.

A small number of injuries (258 out of a total of 9,463 industrial injuries among persons of all ages) contributory to other injuries have been included for convenience in tabulating.

for at least 7 calendar days but less than 12 months was 9.6 per 1,000 employees.[14]

The estimated annual frequency of industrial injuries from which the worker had not recovered at the end of 12 months was 1 per 1,000 employees.

The average annual number of calendar days of disability from industrial injuries disabling for at least 7 calendar days but less than 12 months was approximately one-half day per employee.

The average duration of periods of disability from such injuries was 51 days.

TABLE 1.—*Annual frequency of industrial injuries disabling for at least 7 calendar days but less than 12 months among male (nonmanual and manual) and female [1] workers 16 years and over, by age [2]*

Age (years)	Annual frequency per 1,000 employees					Ratio of the rate for each age group to that for all ages (all ages=100)					Number of cases, all workers
	Both sexes, all workers	Male workers			Female, all workers	Both sexes, all workers	Male workers			Female, all workers	
		Total	Nonmanual	Manual			Total	Nonmanual	Manual		
All ages, 16 and over	9.6	11.9	5.1	17.1	2.1	100	100	100	100	100	7,560
16–24	7.7	11.6	6.4	15.3	1.9	80	97	125	89	90	1,023
25–34	8.8	11.2	4.8	16.2	2.0	92	94	94	95	95	1,942
35–44	10.1	11.9	4.6	17.4	2.1	105	100	90	102	100	1,980
45–54	10.7	12.1	5.3	17.0	2.4	112	102	104	99	114	1,518
55–64	11.7	13.0	5.0	19.3	2.6	122	109	98	113	124	801
65 and over	12.3	13.7	4.9	22.0	[3]	128	115	96	129	[3]	296

[1] Rates not shown separately for nonmanual and manual female workers because of small number of cases.

[2] 5 cases only.

[14] Since the informant was asked at a single visit to recall accidents which had occurred among workers in the family during the previous 12 months, this rate is somewhat below the true value, even though a minimum period of disability (7 calendar days) was set in order to avoid too great underreporting.

The number of persons employed on the day of the visit is used as the number of employee-years worked during the 12 months prior to the day of the visit by the number of persons enumerated in the National Health Survey. Since the enumeration lasted over a considerable period of time (about 6 months) on every working day of which a number of visits was made, it is reasonable to suppose that the total of the number of persons found employed on each day during the survey does not differ substantially from the total number of days worked by the entire surveyed population during the 12 months prior to the day of the visit divided by the average number of working days in a year.

The number of employee-hours is not available for the persons enumerated in the National Health Survey. But the comparisons of relative changes by age and income (on which the findings of this report are primarily based) are independent of whether the base is measured in employee-hours or employee-years, since it is reasonable to assume that no individual age or income group was affected disproportionately by variation in the number of hours in the average working year to an extent sufficient to vitiate the comparisons. (In fact it is believed that the elimination of any bias introduced by using employee-years instead of employee-hours would make the present findings of increase with age and decrease with income in the rate for industrial injuries even more pronounced. See footnotes 18 and 27.) The selection of employee-years was made in view of the fact that the recorded frequency of cases of industrial injuries was for the 12 months immediately preceding the day of the visit.

Frequency and amount of disability [15] *by sex.*—The annual frequency of industrial injuries disabling for at least 7 calendar days but less than 12 months was almost 6 times as high for male workers as for female workers. As shown in table 1, the rate for male workers was 11.9 per 1,000 employees and that for female workers, 2.1.

TABLE 2.—*Estimated annual frequency of industrial injuries from which the worker had not recovered at the end of 12 months among male (nonmanual and manual) and female workers*[1] *16 years and over, by age* *

Age (years)	Annual frequency per 1,000 employees					Number of cases, all workers
	Both sexes, all workers	Male workers			Female, all workers	
		Total	Nonmanual	Manual		
All ages, 16 and over	1.0	1.2	0.33	1.9	0.27	797
16-24	.53	.81	----	1.1	----	71
25-34	.59	.73	----	1.1	----	130
35-44	1.0	1.2	----	1.9	----	203
45-54	1.4	1.5	----	2.4	----	195
55-64	2.0	2.2	----	3.4	----	136
65 and over	2.6	2.8	----	4.8	----	62

[1] Rates not shown by age for female workers and male nonmanual workers or separately for nonmanual and manual female workers because of small number of cases.

The estimated annual frequency rate of industrial injuries from which the worker had not recovered at the end of 12 months was almost 5 times as high for male workers as for female workers. As shown in table 2, the rate for male workers was 1.2 per 1,000 employees and that for female workers, 0.27.

This excess in the rate for males may not to any great extent be attributed to a sex differential in accident proneness.[16] Undoubtedly it is due in part to the more hazardous activities of the male workers.

Because of the probability of slightly more complete reporting by an informant of his or her own illness, the excess in the rate for males may be somewhat of an understatement, since in a greater percentage of instances females were the informants.

The average annual number of calendar days of disability from industrial injuries disabling for at least 7 calendar days but less than 12 months was 6 times as high for males (0.60 day per employee) as for females (0.10 day per employee).

The average duration of periods of disability from such injuries, however, was almost the same for male as for female workers (51 and 50 days).

[15] See footnote 12.

[16] See Britten, Rollo H., Klebba, Joan, and Hallman, David E.: Accidents in the urban home as recorded in the National Health Survey. Pub. Health Rep., 55: 2061 (1940). In this report it is shown that the National Health Survey rate for home accidents is almost 1½ times as high for females as for males.

Frequency and amount[17] *of disability by age.*[18]—The annual frequency of industrial injuries disabling for at least 7 calendar days but less than 12 months increased with age from 7.7 per 1,000 employees for persons 16–24 years to 12.3 for persons 65 years and over, but the rate of increase from one age group to the next is higher for younger persons than for older persons (table 1).

In the case of industrial injuries from which the worker had not recovered at the end of 12 months (table 2), the estimated annual

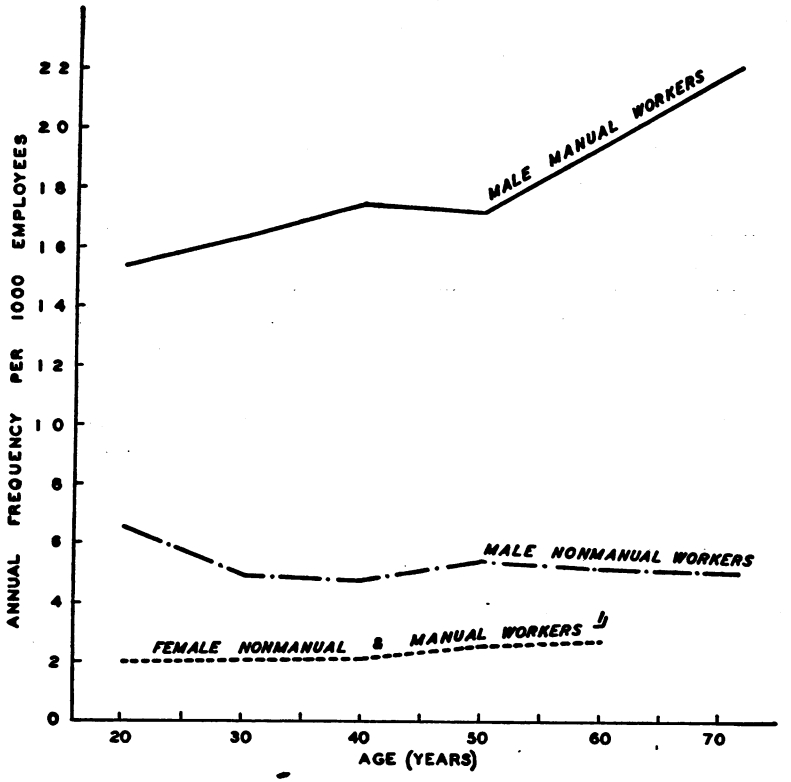

FIGURE 1.—Annual frequency of industrial injuries resulting in disability for at least 7 calendar days but less than 12 months among male (nonmanual and manual) and female workers 16 years and over, by age.
[1] Rates not shown separately for nonmanual and manual female workers or for female workers 65 years and over because of small number of cases.

frequency rate rose even more steeply with age, from 0.53 per 1,000 employees for persons 16–24 years to 2.6 for persons 65 years and

[17] See footnote 12.

[18] Because of the use of employee-years rather than employee-hours as the unit in which the base is measured, it is possible that the increase with age in frequency (both of industrial injuries disabling for at least 7 calendar days but less than 12 months and of those from which persons had not recovered at the end of a 12-month period following the occurrence of the accident) is somewhat understated, since younger persons may work more hours in a year than older persons.

Also, it is felt that the influence of age is understated because a greater proportion of older workers than of younger workers perform less hazardous work, e. g., more older workers are night watchmen while more younger ones are linemen.

over. In the case of these more severe industrial injuries the greatest proportional increase in the rate occurred among persons about 30 to 40 years of age; the estimated annual frequency was 0.59 for persons 25–34 years and 1.0 for persons 35–44 years.

The average annual number of calendar days of disability from industrial injuries disabling for at least 7 calendar days but less than 12 months increased with advancing age from 0.34 days per employee 16–24 years of age to 0.69 days per employee 55–64 years (table 3).

The average duration of periods of disability from such injuries also increased with advancing age, from 44 days for persons 16–24 years to 59 days for persons 55–64 years.

RELATION OF SOCIO-ECONOMIC STATUS AND ANNUAL FREQUENCY AND SEVERITY OF INDUSTRIAL INJURIES, BY AGE AND SEX

Frequency among male nonmanual and manual workers and among female workers[19] *by age.*—As is shown in table 1, the annual frequency rate of industrial injuries disabling for at least 7 calendar days but less than 12 months is approximately 8 times as high at each age for male manual workers as for female nonmanual and manual workers combined. As is also shown in table 1, the rate for male manual workers and for all female workers rises steadily with age: The rate rises from 15.3 for male manual workers 16–24 years to 22.0 for male manual workers 65 years and over, and from 1.9 for all female workers 16–24 years to 2.6 for all female workers 55–64 years of age.[20] In the case of male nonmanual workers, however, the trend with age is different: The highest rate (6.4) is for workers 16–24 years of age; after age 25 not only is there little variation with age, but after age 55 the variation that does exist is downward with advancing age. Comparisons of these rates (by age) for male nonmanual, male manual, and female workers may be made from figure 1.

As shown in table 2, for industrial injuries from which the worker had not recovered at the end of 12 months the estimated annual frequency rate for male manual workers (1.9 per 1,000 employees) is almost 6 times as high as that for nonmanual workers (0.33) and 7 times as high as that for female workers (0.27). The rate for male manual workers increases with advancing age from 1.1 for persons 16–24 years to 4.8 for persons 65 years and over.[21]

The frequency of nonfatal industrial injuries (resulting in either temporary or permanent disability) in 30 manufacturing industries was found by the Bureau of Labor Statistics to be 17.82 per million

---

[19] Rates are not shown separately for female nonmanual and manual workers because of the small number of cases.

[20] Rates are not shown for all female workers 65 years and over because of the small number of cases.

[21] Rates are not shown by age for female workers and male nonmanual workers or separately for nonmanual and manual female workers because of small number of cases.

employee-hours worked for the year 1935.[22] This rate is at least roughly comparable to the estimated National Health Survey rate for nonfatal industrial injuries of all durations (1–365 days or more) occurring during the 12 months prior to the day of the visit among male manual workers (34.5 per 1,000 employees [23]). The two rates would be found to be approximately equal if 2,000 hours (fifty 40-hour weeks) were to be taken as the annual average number worked per person by the employed population in the National Health Survey.

The finding of the present report concerning the relationship of age and frequency of industrial injuries, however, does not appear to substantiate that of certain other available inquiries. Previous studies indicate a decrease in frequency of industrial injuries with advancing age.[24]

In any attempt to determine the cause of the reversal in the trend with age found in this report from that stated in former studies it should be noted that the present survey differs from all of the other surveys in both scope and source of information. In the National Health Survey information was obtained from the worker or a member of his household, interviewed at his residence, and not from a State agency, insurance company, place of occupation, or sick benefit association; and enumeration was extended to noncompensated as well as compensated cases of industrial injuries, including those occurring in small establishments with insufficient number of employees to be covered by the usual type of compulsory reporting. Also, the occupations sampled in the National Health Survey were representative not only of selected industries but of the total urban labor market (except servants in private homes, persons in occupations involving motor vehicles operating in public places, and agricultural workers domiciled in a city).

Amount of disability among male nonmanual and manual workers and among female workers [25] by age [26].—As is shown in table 3, at each age the average annual number of calendar days of disability from industrial injuries disabling for at least 7 calendar days but less than 12 months is much higher for male manual workers than for male nonmanual or for female workers. For male manual workers the rate

---

[22] Fleming, Roy F., and Lotven, Jacob: Injury experience in 30 manufacturing industries, 1935 and 1936. Monthly Labor Review, 46:676 (1938), table 2.

[23] Unpublished data from the survey made by the Committee on the Costs of Medical Care show that over 45 percent of the total annual number of disabling cases from all causes (illnesses and accidents) are cases disabling less than 7 days. Based on this figure it is estimated that the annual frequency of nonfatal industrial injuries of all durations occurring among male manual workers in the National Health Survey population would be 34.5 per 1,000 employees (i. e., (*a*) 17.1 for cases disabling for at least 7 days but less than 12 months, plus (*b*) 1.9 for cases from which persons had not recovered at the end of 12 months, and finally plus (*c*) 15.5 for cases disabling 1–6 days).

[24] For a summary of the principal findings of the available surveys in regard to the relation of age to industrial injuries see Kossoris, Max D.: Relation of age to industrial injuries. Monthly Labor Review, 51:789 (1940).

[25] See footnote 19.

[26] See footnote 12.

rises from 0.67 days per employee 16–24 years to 1.1 days per employee 55–64 years. In the case of female workers there is also an increase with advancing age, the rate being 0.08 days per employee 16–24 years and 0.16 days per employee 55–64 years. For the male nonmanual worker, however, the rate follows a different pattern with advancing age: From 0.30 days per employee 16–24 years it decreases to 0.19 days per employee 25–34 years, then rises with age to 0.34 days per employee 55–64 years.

TABLE 3.—*Average annual days of disability per employee and days per case for industrial injuries disabling for at least 7 calendar days but less than 12 months among male (nonmanual and manual) and female workers 16–64 years,*[1] *by age*

Age (years)	Both sexes, all workers	Male workers			Female, all workers	Number of cases, all workers
		Total	Nonmanual	Manual		
	Annual days of disability per employee					
All ages, 16–64	0.49	0.60	0.25	0.87	0.10	7,264
16–24	.34	.52	.30	.67	.08	1,024
25–34	.39	.50	.19	.75	.09	1,941
35–44	.54	.63	.23	.93	.13	1,980
45–54	.60	.68	.28	.96	.15	1,518
55–64	.69	.77	.34	1.10	.16	801
	Days of disability per case					
All ages, 16–64	50.9	50.9	48.4	51.5	50.3	7,264
16–24	44.2	44.4	45.9	43.9	42.2	1,024
25–34	44.8	44.9	38.6	46.3	44.5	1,941
35–44	53.3	52.9	49.4	53.7	61.9	1,980
45–54	55.9	55.7	52.1	56.6	59.5	1,518
55–64	58.8	58.8	67.7	56.9	61.0	801

[1] Rates not shown separately for female nonmanual and manual workers or for workers 65 years and over because of the small number of cases.

The variation with age in the average duration of periods of disability is much greater for female workers than for male workers (table 3). For the former the rate rises from 42 days for persons 16–24 years to 61 days for persons 55–64 years. For male manual workers the rate increases from 44 days for persons 16–24 years to 57 days for persons 55–64 years. The rate for male nonmanual workers is 46 days for persons 16–24 years, decreases to 39 days for workers 25–34 years and then increases with advancing age to 68 days for persons 55–64 years.

As is evident in figure 2, the fluctuation with age in the average annual number of calendar days of disability per employee in the case of male nonmanual workers is due not only to the fluctuation with age in the frequency rate but also to the fluctuation with age in the average duration of period of disability.

In the case of male manual workers, although all three curves rise with age, it is evident that after age 45 the increase in the average number of calendar days of disability per employee reflects predomi-

nantly the increase in frequency since there is little change in the average duration of period of disability after this age.

In the case of female workers the average days of disability per

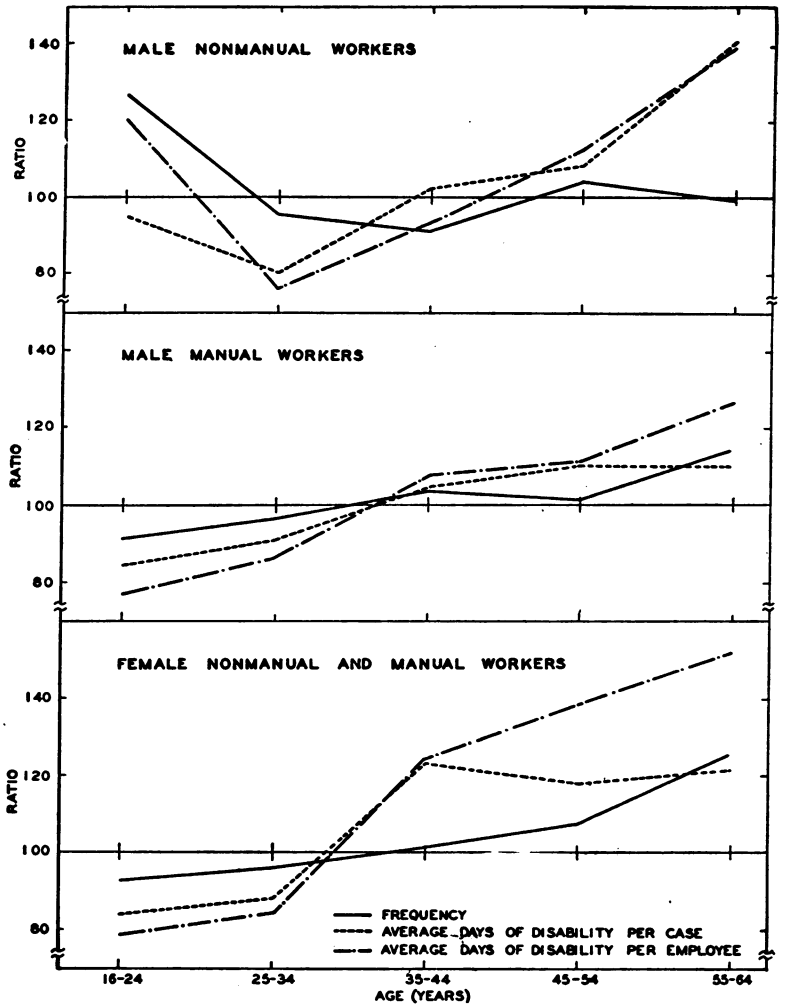

FIGURE 2.—Ratio of the rate for each age to that for all ages (16–64 years) for (1) frequency, (2) average days of disability per employee, and (3) average days of disability per case for industrial injuries resulting in disability for at least 7 calendar days but less than 12 months among male (nonmanual and manual) and female workers 16–64 years, by age. (Ratios not shown separately for female nonmanual and manual workers or for workers 65 years and over because of the small number of cases.) (Rate for all ages = 100).

employee rises with age, but after about age 45 the increase with advancing age reflects solely the increase in frequency, since after this age the average duration of period of disability decreased.

Frequency and economic status.—Workers in poor economic status [27] reported relatively more industrial injuries disabling for at least 7 calendar days but less than 12 months than did workers in those families in the higher income brackets (table 4). The annual frequency rate decreases progressively from 16.5 per 1,000 employees for workers observed in the relief group to 4.8 for workers in families with annual family income [28] of $2,000 and over.

TABLE 4.—*Annual frequency of industrial injuries disabling for at least 7 calendar days but less than 12 months among male (nonmanual and manual) and female [1] workers 16 years of age and over, by economic status [b]*

Annual family income and relief status	Annual frequency per 1,000 employees					Ratio of the rate for each income group to that for the highest income group ($2,000 and over=100)					Number of cases, all ages, 16 years and over
	Both sexes, all workers [2]	Male workers			Female, all workers	Both sexes, all workers	Male workers			Female, all workers	
		Total	Nonmanual	Manual			Total	Nonmanual	Manual		
All incomes	9.6	11.9	5.1	17.1	2.1	200	202	165	140	150	7,560
Relief	16.5	19.0	11.4	20.5	3.9	344	322	368	168	279	1,464
Nonrelief:											
Under $1,000	14.0	17.5	8.3	20.9	3.0	292	297	268	171	214	2,131
$1,000 to $1,500	10.1	12.4	6.0	16.2	2.0	210	210	194	133	143	1,818
$1,500 to $2,000	7.3	9.0	4.8	13.3	1.6	152	153	155	109	114	1,079
$2,000 and over	4.8	5.9	3.1	12.2	1.4	100	100	100	100	100	856

[1] Rates not shown separately for nonmanual and manual female workers because of small number of cases.
[2] Rates adjusted to the age composition of all nonmanual and manual workers 16 years and over (employed on day of visit) enumerated by the National Health Survey were as follows: Relief, 16.5; nonrelief: Under $1,000, 14.0; $1,000 to $1,500, 10.2; $1,500 to $2,000, 7.3; $2,000 and over, 4.7.

This inverse correlation of frequency rate and annual family income shown for the total number of industrial injuries disabling for at least 7 calendar days but less than 12 months also obtains for

[27] In the National Health Survey families were classified by income received during the 12 months preceding the interview and also by whether relief from official agencies had been received during that time. Persons in families with annual income under $1,000 comprised about 40 percent of the surveyed group; about 65 percent were in families with annual incomes under $1,500; and 80 percent in families with incomes under $2,000. Almost one-half of the lowest income group had been in receipt of relief during the year 1935.

[28] Economic status used is based on annual family income and is not necessarily that existing on the day of the injury. Nevertheless the variation in the frequency rate of industrial injuries with annual family income as shown and with income at the time of the accident probably differs little, if at all, except in the case of relief families. In this group, there may be a selection due to the fact that if a family had been on relief at any time during the 12-month period prior to the day of the visit that family was recorded as of relief status no matter what its actual annual income was. For example, at the time of the accident a worker may have been in a family with $1,500 and over annual family income, but because of the accident the family income may have been reduced to relief status during the interim between the date of the occurrence of the accident and that of the visit. In that event the injury would have been recorded as occurring among persons on relief. It is felt, however, that the effect of thus augmenting the rate for the relief group is more than offset by the fact that a greater proportion of the employed persons in the relief group than of those in any other economic status group worked a smaller average number of hours per year, e. g., persons on work relief and part-time workers. It is believed that the net result of these factors is an understatement in the decrease in the rate with rise in annual family income.

male nonmanual workers, male manual workers, and female nonmanual and manual workers. For male manual workers the rate decreases progressively from over 20 for workers in the relief group and the group with income of under $1,000 to 12.2 for workers in families with $2,000 and over annual income; for male nonmanual workers, from 11.4 among workers in the relief group to 3.1 for workers in families with annual income of $2,000 and over; and similarly for female nonmanual and manual workers, from 3.9 to 1.4.

In order to investigate the relation between frequency of injuries disabling for at least 7 calendar days but less than 12 months and economic status with the differential effect of age removed, the rates by economic status (all workers) have been adjusted to a standard age distribution.[29] The adjusted rates (shown in table 4, footnote 2) do not differ substantially from the crude rates.

TABLE 5.—*Estimated annual frequency of industrial injuries from which the worker had not recovered at the end of 12 months among male (nonmanual and manual) and female [1] workers 16 years and over, by economic status [b]*

Annual family income and relief status	Annual frequency per 1,000 employees					Number of cases, all ages, 16 years and over
	Both sexes, all workers [2]	Male workers			Female, all workers	
		Total	Nonmanual	Manual		
All incomes	1.0	1.2	0.33	1.9	0.27	797
Relief	2.6	3.0	----------	3.4	----------	229
Nonrelief:						
Under $1,000	1.6	2.0	----------	2.5	----------	238
$1,000 to $1,500	.89	1.1	----------	1.4	----------	160
$1,500 to $2,000	.56	.65	----------	1.1	----------	82
$2,000 and over	.36	.43	----------	1.0	----------	64

[1] Rates not shown by economic status for female workers and male nonmanual workers or separately for nonmanual and manual female workers because of small number of cases.

[2] Rates adjusted to the age composition of all nonmanual and manual workers 16 years and over (employed on day of visit) enumerated by the National Health Survey were as follows: Relief, 2.6; nonrelief: under $1,000, 1.6; $1,000 to $1,500, 0.92; $1,500 to $2,000, 0.57; $2,000 and over, 0.35.

The variation with income is even more marked for industrial injuries from which the worker had not recovered at the end of 12 months than for those disabling for at least 7 calendar days but less than 12 months (table 5). The estimated annual frequency of these more severe injuries decreases progressively from 2.6 per 1,000 employees for workers in the relief group to 0.36 for the group with annual family income of $2,000 and over, a decrease of 86 percent. For male manual workers the rate among the relief group (3.4 per 1,000 employees)

[29] The English method of standardizing rates was used, i. e., the population within each income and age group was multiplied by the annual frequency rate for all income groups in the corresponding age group, the products for each income group were summed, and the resulting sums were each divided by the actual population in the particular income group. The actual rate for all incomes was then expressed as percentages of the expected rates by economic status thus obtained. Each of these percentages was then applied to the actual rates by economic status to obtain the rates for each economic status standardized to the age distribution of the total number of workers (all incomes).

was over 3 times as high as that for workers in families with annual income of $2,000 and over (1.0 per 1,000 employees).[30]

There is no substantial difference in the crude rates for these more severe injuries and the rates adjusted for age composition (shown in table 5, footnote 2). (See footnote 29.)

As is shown in figure 3, the excess in the annual frequency rate for workers in low-income families over that for workers in families with annual income of $2,000 and over is much greater in the case of injuries from which the worker had not recovered at the end of 12 months than for injuries disabling for at least 7 calendar days but less than 12 months.

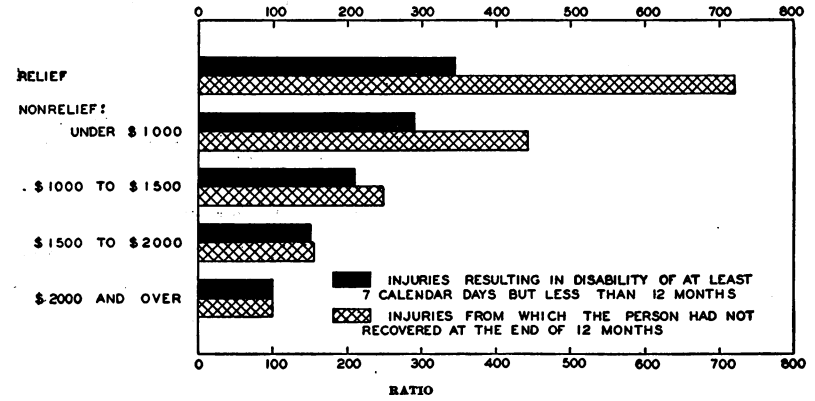

FIGURE 3.—Ratio of annual frequency rate for each income group to that for the highest income group ($2,000 and over= 100) for (1) industrial injuries resulting in disability for at least 7 calendar days but less than 12 months, and (2) industrial injuries from which the person had not recovered at the end of 12 months.

ORTHOPEDIC IMPAIRMENTS RESULTING FROM INDUSTRIAL INJURIES ACCUMULATED OVER THE ATTAINED LIFETIME OF THE SURVEYED POPULATION

Because of the time factor necessary to determine permanency of impairments (except amputations) it was impossible to assess the proportion of the industrial injuries occurring within the 12 months prior to the day of the visit which resulted in permanent orthopedic impairments. It was felt, however, that a prevalence rate of orthopedic impairments (resulting from industrial injuries) accumulated over the attained lifetime of all living individuals in the survey would closely approximate a true measure of the relative seriousness of the situation by age and sex despite this incompleteness for

[30] Rates are not shown by income for female workers and male nonmanual workers because of small number of cases.

current cases.[31] As table 6 shows, the prevalence of such impairments (including both loss of members and crippled or paralyzed members) among all persons (workers and nonworkers) 15 years and over in the surveyed population was 7.6 per 1,000 persons.

TABLE 6.—*Prevalence of orthopedic impairments among all persons (workers and nonworkers) 15 years and over in the surveyed population caused by industrial injuries [1] according to sex and age of person observed*

Sex	Prevalence per 1,000 persons by age (years)					Number of cases, all ages, 15 years and over
	All ages, 15 and over	15–24	25–44	45–64	65 and over	
Both sexes	7.59	1.06	6.37	12.90	16.94	14,381
Male	15.28	2.04	12.64	25.29	36.76	13,716
Female	.67	.22	.74	.88	.94	665

[1] Permanent effects of nonfatal industrial injuries accumulated over the attained lifetime of living individuals in the population observed (15 years and over).

Because of the greater proportion of males employed the prevalence of orthopedic impairments due to accidental industrial injuries was much greater among males (15.3 per 1,000 persons) than among females (0.67). For both males and females, however, the prevalence rate increased rapidly with advancing age. For persons 15–24 years the rate (both sexes) was 1.1 per 1,000; it was almost 6 times as high (6.4) in the age group 25–44, over 11 times as high (12.9) in the age group 45–64, and increased to almost 16 times that amount (16.9) among older persons (65 years and over). Undoubtedly this rapid increase in the rate with advancing age is due largely to the accumulation (over the attained lifetime of the population) of the permanent effects of accidental industrial injuries. The high rate among persons of the younger age groups in the present population (6.4 per 1,000 persons 25–44 years) should be noted.

As was shown in a previous report [32] over 70 percent of these orthopedic impairments involved the loss of members. Of the total number of losses 86 percent were fingers and toes and 14 percent were "major" members, i. e., members other than fingers and toes. In the case of crippled or paralyzed members, however, the situation was reversed, the percentage involving major members (77 percent) being much higher than that involving fingers and toes (23 percent).

[31] Impairments enumerated were of such a serious nature that the family informant considered them to be permanently crippling, deforming, or paralyzing (including loss of members). They may or may not have caused disability, i. e., inability to pursue usual activities of work, school, household duties, etc.

Since, in general, only one orthopedic impairment was coded for each individual, all references to total prevalent cases can also be considered as representing the total number of individuals affected. "One orthopedic impairment" may be inclusive of more than one member or part of the body, but when it was not possible to include under "one orthopedic impairment" all parts of the body affected for one person, the most serious impairment was coded.

[32] Britten, Collins, and Fitzgerald, op. cit.

SUMMARY

Aside from establishing for industrial injuries disabling for at least 7 calendar days but less than 12 months (*a*) an annual frequency rate per 1,000 employees (9.6), (*b*) annual number of days of disability per employee (one-half day), and (*c*) average days of disability per case (51 days) and estimating for industrial injuries from which the worker had not recovered at the end of 12 months an annual frequency rate per 1,000 employees (1.0), there are 6 major findings in this report:

(1) The frequency rates of industrial injuries (both in the case of those disabling for at least 7 calendar days but less than 12 months and of those from which the worker had not recovered at the end of 12 months) rise with advancing age.

(2) The average duration of periods of disability resulting from industrial injuries increases directly with the age of the injured worker.

(3) The frequency rate of industrial injuries (both in the case of those disabling for at least 7 calendar days but less than 12 months and of those from which the worker had not recovered at the end of 12 months) is about 5 times as high for male workers as for female workers.

(4) The annual frequency rate of industrial injuries among male manual workers is over 3 times as high as that for nonmanual workers in the case of those injuries disabling for at least 7 calendar days but less than 12 months, and is almost 6 times as high in the case of those from which the worker had not recovered at the end of 12 months. (The variation in exposure or amount of hazard by sex is not elimi ated in this comparison.)

(5) An inverse relationship obtains between the frequency rate of industrial injuries and amount of annual family income.

(6) The prevalence rate of permanent orthopedic impairments resulting from industrial injuries increases with advancing age, but the increase is due largely to the accumulation over the attained lifetime of the population of the permanent effects of accidental industrial injuries. The rate among male workers in the industrially effective age groups, 15–64 years, is markedly high.

CONCLUSIONS

These findings point toward the continuing importance of certain social and economic objectives, such as industrial accident prevention by the use of safety devices, provision for the added compensation hazard of older workers, adequate industrial injury insurance coverage for workers of all ages, and development of programs for vocational rehabilitation at different age levels of workers with permanent orthopedic impairments.

REFERENCES TO TABLES AND CHARTS

(These references are to be considered as supplementary to the basic description of the National Health Survey technique and definitions which have been given in "Scope and method of a Nation-wide canvass of sickness in relation to its social and economic setting," by George St. J. Perrott, Clark Tibbitts, and Rollo H. Britten. Pub. Health Rep., 54: 1663 (1939). Reprint 2098.)

[a] Based on 784,717 nonmanual and manual workers 16 years and over in 83 cities, distributed by age and sex as follows:

	All ages, 16 years and over	16–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65 years and over
Nonmanual and manual workers:							
Both sexes	784,717	133,673	221,282	195,856	141,338	68,508	24,060
Male	604,388	78,943	162,690	160,579	121,283	59,668	21,225
Female	180,329	54,730	58,592	35,277	20,055	8,840	2,835
Nonmanual workers:							
Both sexes	378,501	68,427	113,287	91,925	62,569	30,792	11,501
Male	260,822	32,820	71,498	69,179	50,803	26,246	10,276
Female	117,679	35,607	41,789	22,746	11,766	4,546	1,225
Manual workers:							
Both sexes	406,216	65,246	107,995	103,931	78,769	37,716	12,559
Male	343,566	46,123	91,192	91,400	70,480	33,422	10,949
Female	62,650	19,123	16,803	12,531	8,289	4,294	1,610

[b] Rate for all incomes (including unknown) based on 784,717 nonmanual and manual workers 16 years of age and over in 83 cities, distributed by sex and income as follows:

Annual family income, relief status	Both sexes	Male	Female
Total	784,717	604,388	180,329
Relief	88,940	74,122	14,818
Nonrelief:			
Under $1,000	151,894	115,904	35,990
$1,000 to $1,500	179,843	140,827	39,016
$1,500 to $2,000	147,145	113,463	33,682
$2,000 and over	178,937	134,298	44,639
Unknown income	37,958	25,774	12,184

Rates for 37,958 persons of unknown income are not shown.

[c] Based on 1,895,366 persons of known age in 83 cities, distributed by age and sex as follows:

	All ages, 15 years and over	15–24 years	25–44 years	45–64 years	65 years and over
Both sexes	1,895,366	446,369	820,826	485,762	142,409
Male	897,521	206,696	388,002	239,187	63,636
Female	997,845	239,673	432,824	246,575	78,773

DEATHS DURING WEEK ENDED NOVEMBER 29, 1941

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

	Week ended Nov. 29, 1941	Corresponding week, 1940
Data from 87 large cities of the United States:		
Total deaths	8,404	8,325
Average for 3 prior years	8,586	
Total deaths, first 48 weeks of year	399,998	400,623
Deaths per 1,000 population, first 48 weeks of year, annual rate	11.7	11.7
Deaths under 1 year of age	568	555
Average for 3 prior years	537	
Deaths under 1 year of age, first 48 weeks of year	25,386	24,086
Data from industrial insurance companies:		
Policies in force	64,683,252	64,822,543
Number of death claims	12,684	13,091
Death claims per 1,000 policies in force, annual rate	10.2	10.6
Death claims per 1,000 policies, first 48 weeks of year, annual rate	9.3	9.6

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 DECEMBER 6, 1941

Summary

Favorable health conditions continue to prevail with reference to the important communicable diseases. Of the 9 diseases included in the following weekly table, the incidence of only influenza, meningococcus meningitis, and poliomyelitis is above the 5-year (1936–40) median.

The number of reported cases of influenza increased slightly, from 2,478 to 2,742, and the incidence is above the 5-year median, but there is no indication of a general epidemic. Of the 2,742 cases reported, 2,201 occurred in the West South Central and South Atlantic States, where Texas reported 1,245, South Carolina 409, Virginia 250, Arkansas 117, and Oklahoma 104. Arizona, with 127 cases, was the only other State reporting more than 100 cases for the current week.

The number of cases of poliomyelitis dropped from 112 to 99. New York State with 16 cases, Tennessee with 12, and Alabama with 8, were the only States reporting more than 6 cases.

Of 25 cases of smallpox, Indiana reported 10 cases, Iowa 4, and Missouri 3. Ohio reported 18 cases of typhoid (16 last week) and New York 6 (as compared with 88 last week). Most of the remaining cases were reported in the southern States. Of 93 cases of endemic typhus fever, 44 cases were reported in Georgia, 12 in Texas, 11 in Louisiana, and 9 in Alabama.

The crude death rate for the current week in 87 large cities in the United States is 11.9 per 1,000 population, as compared with 11.8 last week and 12.1 for the 3-year (1938–40) average.

Telegraphic morbidity reports from State health officers for the week ended December 6, 1941, and comparison with corresponding week of 1940 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 1936–40	Week ended		Median 1936–40	Week ended		Median 1936–40	Week ended		Median 1936–40
	Dec. 6, 1941	Dec. 7, 1940		Dec. 6, 1941	Dec. 7, 1940		Dec. 6, 1941	Dec. 7, 1940		Dec. 6, 1941	Dec. 7, 1940	
NEW ENG.												
Maine	0	1	2	1	2	1	352	54	40	0	0	0
New Hampshire	0	0	0	----	----	----	8	0	2	0	0	0
Vermont	2	0	0	----	----	----	0	24	23	0	0	0
Massachusetts	2	6	4	----	----	----	141	236	282	5	1	2
Rhode Island	4	1	1	----	----	----	2	0	2	0	0	0
Connecticut	1	1	2	1	2	5	59	4	46	1	0	1
MID. ATL.												
New York [2]	16	15	33	[1]8	[1]3	[1]12	295	733	509	3	3	3
New Jersey	4	10	12	7	6	9	17	231	33	1	0	1
Pennsylvania	7	21	30	----	----	----	495	1,195	76	5	3	3
E. NO. CEN.												
Ohio	19	13	44	14	44	14	36	52	20	0	1	1
Indiana	17	9	20	47	1	12	17	20	14	1	0	0
Illinois	34	21	37	14	10	10	24	653	28	0	1	1
Michigan [3]	3	10	21	----	9	4	39	597	238	1	0	1
Wisconsin	1	0	3	4	69	27	0	242	68	2	0	0
W. NO. CEN.												
Minnesota	5	1	4	1	2	2	33	6	15	0	0	0
Iowa	2	2	3	2	3	3	32	46	16	1	2	0
Missouri	6	9	17	14	1	21	12	7	7	0	0	1
North Dakota	1	4	4	10	10	10	88	2	2	0	0	0
South Dakota	8	1	1	----	----	----	1	0	0	2	0	0
Nebraska	2	1	2	----	----	----	9	3	2	0	0	0
Kansas	5	4	9	8	14	10	110	32	32	0	0	1
SO. ATL.												
Delaware	0	0	1	1	----	----	2	7	3	0	1	0
Maryland [3]	12	1	18	3	6	13	85	4	14	4	1	2
Dist. of Col.	0	4	7	2	----	2	4	0	1	0	0	0
Virginia [3]	40	26	55	250	166	132	202	69	33	0	0	1
West Virginia	12	7	18	6	6	16	230	11	15	2	0	2
North Carolina [3]	70	15	72	6	6	6	267	26	139	0	2	2
South Carolina [3]	19	3	11	409	301	381	29	20	20	0	1	1
Georgia [3]	19	21	21	40	133	99	27	27	8	0	0	0
Florida [3]	4	8	11	10	14	6	2	4	4	0	0	0
E. SO. CEN.												
Kentucky	16	3	20	6	5	15	175	114	7	2	0	0
Tennessee	13	11	22	30	20	53	51	21	21	1	1	1
Alabama [3]	35	17	27	65	42	124	62	12	14	0	0	2
Mississippi [3] [5]	18	5	12	----	----	----	----	----	----	1	1	1
W. SO. CEN.												
Arkansas	22	6	15	117	83	83	79	5	5	0	0	0
Louisiana [3]	9	10	13	8	32	12	3	1	1	1	2	1
Oklahoma	17	21	21	104	288	113	6	2	4	1	0	1
Texas [3]	83	55	55	1,245	370	370	250	64	64	1	1	3
MOUNTAIN												
Montana	2	12	2	10	12	6	52	6	11	0	0	0
Idaho	0	1	1	----	17	5	8	0	24	0	0	0
Wyoming	0	1	1	2	8	----	3	1	1	0	0	0
Colorado	13	6	9	49	23	23	41	28	17	0	0	1
New Mexico	2	1	5	----	6	1	12	21	13	0	0	0
Arizona	1	1	6	127	471	92	51	29	3	0	0	0
Utah [3]	0	0	1	19	243	28	29	8	23	0	0	0
Nevada	0	0	----	----	----	----	3	0	----	0	0	----
PACIFIC												
Washington	0	1	2	2	95	----	6	31	31	0	0	1
Oregon	2	1	1	16	368	41	40	15	14	0	2	1
California	20	26	31	93	6,772	52	509	84	84	0	2	2
Total	569	393	740	2,742	9,663	1,984	3,998	4,747	4,063	35	25	34
49 weeks	15,661	14,789	26,043	589,698	191,873	169,793	855,421	257,640	279,485	1,915	1,568	2,700

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended December 6, 1941, and comparison with corresponding week of 1940 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended		Median 1936–40	Week ended		Median 1936–40	Week ended		Median 1936–40	Week ended		Median 1936–40
	Dec. 6, 1941	Dec. 7, 1940		Dec. 6, 1941	Dec. 7, 1940		Dec. 6, 1941	Dec. 7, 1940		Dec. 6, 1941	Dec. 7, 1940	
NEW ENG.												
Maine	6	0	0	18	19	11	0	0	0	2	4	2
New Hampshire	1	0	0	3	3	3	0	0	0	0	0	0
Vermont	0	0	0	7	2	6	0	0	0	0	0	0
Massachusetts	5	0	0	268	140	129	0	0	0	3	1	1
Rhode Island	0	0	0	10	7	11	0	0	0	0	0	0
Connecticut	0	0	0	39	33	44	0	0	0	1	1	1
MID. ATL.												
New York [3]	16	2	2	273	268	302	0	0	0	6	14	7
New Jersey	4	2	1	95	136	103	0	0	0	5	1	1
Pennsylvania	2	1	2	137	234	312	0	0	0	6	3	7
E. NO. CEN.												
Ohio	5	7	2	259	212	338	0	0	1	18	6	6
Indiana	0	5	1	99	114	143	10	1	3	1	4	2
Illinois	4	5	2	196	294	324	0	7	5	1	8	8
Michigan [3]	0	2	2	141	154	406	1	5	1	7	1	1
Wisconsin	1	17	2	140	146	155	1	2	6	1	2	1
W. NO. CEN.												
Minnesota	2	2	2	89	67	118	1	18	18	0	0	0
Iowa	0	4	1	42	102	92	4	3	10	0	1	0
Missouri	0	3	1	49	54	122	3	0	5	2	2	5
North Dakota	1	2	0	21	3	26	0	1	1	1	0	0
South Dakota	1	3	0	50	16	18	0	0	2	1	0	0
Nebraska	0	2	0	13	33	27	0	0	0	1	0	0
Kansas	1	1	0	88	82	151	1	0	0	1	3	2
SO. ATL.												
Delaware	0	0	0	22	12	12	0	0	0	0	0	1
Maryland [3]	1	0	0	61	39	51	0	0	0	4	1	3
Dist. of Col	0	0	0	15	15	12	0	0	0	1	0	1
Virginia [3]	3	5	1	97	52	55	0	0	0	5	5	4
West Virginia	1	5	0	51	43	52	1	0	0	5	0	5
North Carolina [3]	1	1	1	99	105	88	0	0	0	6	2	4
South Carolina [3]	3	0	0	17	20	11	0	0	0	3	3	3
Georgia [3]	2	1	1	42	27	27	0	0	1	5	8	4
Florida [3]	0	2	0	7	5	9	0	0	0	2	5	2
E. SO. CEN.												
Kentucky	2	3	1	100	96	68	0	0	0	9	4	3
Tennessee	12	0	1	58	51	45	1	0	0	4	7	7
Alabama [3]	8	1	1	42	35	33	0	0	0	0	5	4
Mississippi [3] [3]	3	1	1	25	22	18	0	0	0	3	1	1
W. SO. CEN.												
Arkansas	1	0	1	5	13	16	1	1	2	7	2	3
Louisiana [3]	3	1	1	14	7	9	0	0	0	9	14	7
Oklahoma	2	1	1	24	20	20	1	0	3	2	1	6
Texas [3]	2	2	4	67	37	100	0	0	2	8	10	24
MOUNTAIN												
Montana	0	0	0	48	16	30	0	3	4	0	1	1
Idaho	0	0	0	3	12	24	0	0	1	0	0	1
Wyoming	0	0	0	8	7	12	0	0	0	0	0	0
Colorado	0	1	0	28	33	33	0	0	22	0	0	0
New Mexico	0	0	1	12	17	17	0	0	0	3	3	5
Arizona	0	0	0	4	4	5	0	0	0	0	0	0
Utah [3]	0	1	1	22	13	19	0	0	0	0	0	0
Nevada	0	0	------	2	0	------	0	0	------	0	1	------
PACIFIC												
Washington	2	3	1	25	35	57	0	0	2	0	1	1
Oregon	2	0	0	20	20	40	0	8	8	2	0	2
California	2	5	5	136	99	214	0	1	3	5	2	6
Total	99	91	68	3,091	2,974	3,834	25	50	119	140	127	144
49 weeks	8,904	9,600	7,125	118,622	146,519	175,202	1,322	2,292	9,285	8,309	9,288	13,857

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended December 6, 1941, and comparison with corresponding week of 1940—Continued

Division and State	Whooping cough	
	Week ended	
	Dec. 6, 1941	Dec. 7, 1940
NEW ENG.		
Maine	36	66
New Hampshire	19	2
Vermont	13	7
Massachusetts	218	272
Rhode Island	36	7
Connecticut	58	61
MID. ATL.		
New York [1]	675	473
New Jersey	259	171
Pennsylvania	165	678
E. NO. CEN.		
Ohio	229	305
Indiana	17	13
Illinois	281	140
Michigan [3]	282	342
Wisconsin	354	161
W. NO. CEN.		
Minnesota	72	111
Iowa	22	27
Missouri	9	51
North Dakota	10	17
South Dakota	9	3
Nebraska	2	7
Kansas	84	121
SO. ATL.		
Delaware	11	30
Maryland [3]	28	81
Dist. of Col.	20	14
Virginia [2]	85	75
West Virginia	40	33
North Carolina [2]	142	243
South Carolina [2]	44	23
Georgia [2]	7	26
Florida [2]	10	9
E. SO. CEN.		
Kentucky	90	67
Tennessee	43	15
Alabama [2]	21	26
Mississippi [2 3]	----------	----------
W. SO. CEN.		
Arkansas	30	14
Louisiana [2]	1	9
Oklahoma	4	17
Texas [2]	120	119
MOUNTAIN		
Montana	41	2
Idaho	12	8
Wyoming	13	4
Colorado	50	40
New Mexico	32	16
Arizona	11	19
Utah [3]	31	24
Nevada	8	4
PACIFIC		
Washington	160	62
Oregon	30	8
California	192	316
Total	4,126	4,339
49 weeks	199,121	159,619

[1] New York City only.
[2] Typhus fever, week ended December 6, 1941, 93 cases, as follows: New York, 1; Virginia, 1; North Carolina, 7; South Carolina, 4; Georgia, 44; Florida, 3; Alabama, 9; Mississippi, 1; Louisiana, 11; Texas, 12.
[3] Period ended earlier than Saturday.

WEEKLY REPORTS FROM CITIES

City reports for week ended November 22, 1941

This table lists the reports from 136 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.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	----	0	2	1	12	0	0	0	7	18
New Hampshire:											
Concord	0	----	0	0	0	0	0	0	0	0	7
Manchester	0	----	0	0	0	15	0	0	0	0	16
Nashua	0	----	0	0	0	2	0	0	0	4	7
Vermont											
Barre	0	----	----	0	----	0	0	----	0	0	----
Burlington	0	----	0	0	0	0	0	0	0	0	10
Rutland	0	----	0	0	0	0	0	0	0	0	3
Massachusetts:											
Boston	1	----	0	12	15	27	0	5	0	20	195
Fall River	2	----	0	1	0	17	0	8	0	0	43
Springfield	1	----	0	7	1	10	0	1	0	5	36
Worcester	0	----	0	2	4	8	0	1	0	7	37
Rhode Island:											
Pawtucket	1	----	0	1	0	2	0	0	0	0	15
Providence	5	----	0	2	5	11	0	2	0	30	52
Connecticut:											
Bridgeport	0	----	0	1	1	4	0	0	1	2	30
Hartford	0	----	0	0	6	1	0	0	1	0	52
New Haven	0	----	0	23	1	2	0	2	0	14	54
New York:											
Buffalo	0	----	0	0	6	12	0	3	0	16	115
New York	13	7	2	9	60	95	0	73	4	261	1,375
Rochester	0	----	0	1	1	4	0	0	0	3	57
Syracuse	0	----	0	0	3	3	0	0	1	24	52
New Jersey:											
Camden	0	1	1	0	3	3	0	1	0	6	35
Newark	0	2	0	2	3	10	0	7	0	38	87
Trenton	0	----	0	0	1	2	0	0	0	3	42
Pennsylvania:											
Philadelphia	3	2	2	5	24	69	0	17	3	55	510
Pittsburgh	6	2	1	0	0	22	0	11	0	19	153
Reading	0	----	0	0	0	0	0	0	0	2	22
Scranton	0	----	----	0	----	0	0	----	0	5	----
Ohio:											
Cincinnati	3	----	1	0	1	9	0	5	0	14	118
Cleveland	1	6	1	2	4	22	0	7	0	27	194
Columbus	4	1	1	1	2	5	0	3	0	7	107
Toledo	0	----	0	0	0	5	0	2	0	18	50
Indiana:											
Anderson	0	1	0	1	2	0	0	0	0	1	12
Fort Wayne	1	----	0	0	3	0	0	1	0	0	26
Indianapolis	3	----	2	2	7	20	0	1	2	18	104
Muncie	0	----	0	0	2	0	0	1	0	1	11
South Bend	0	----	0	0	0	1	0	0	0	0	20
Terre Haute	0	----	0	2	1	0	0	0	0	0	14
Illinois:											
Alton	0	----	0	0	2	1	0	0	0	3	7
Chicago	19	1	2	12	22	49	0	28	0	114	703
Elgin	0	----	0	0	2	0	0	0	0	2	12
Moline	0	----	0	0	0	1	0	0	0	3	7
Springfield	1	----	0	0	1	2	0	0	0	0	30
Michigan:											
Detroit	2	----	0	12	8	90	0	8	0	87	233
Flint	0	----	0	0	5	1	0	0	0	6	28
Grand Rapids	0	----	0	2	0	4	0	0	0	15	36
Wisconsin:											
Kenosha	0	----	0	0	1	0	0	0	0	3	7
Madison	0	----	0	1	0	1	0	0	0	0	19
Milwaukee	4	----	0	4	4	17	0	3	0	129	92
Racine	0	----	0	0	0	4	0	0	0	11	6
Superior	0	----	0	1	0	0	0	0	0	3	10
Minnesota:											
Duluth	0	----	0	1	0	3	0	0	0	2	19
Minneapolis	0	----	1	0	1	11	0	1	0	14	95
St. Paul	0	----	0	1	1	5	0	2	0	18	59

City reports for week ended November 22, 1941—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								
Iowa:											
Cedar Rapids	0			0		2	0		0	0	
Davenport	0			0		0	0		0	0	
Des Moines	4		0	0	0	6	0	0	0	0	25
Sioux City	0			0		0	0		0	2	
Waterloo	1			0		3	0		0	2	
Missouri:											
Kansas City	0	2	1	5	8	12	0	2	0	2	75
St. Joseph	0		0	3	7	8	0	0	0	0	28
St. Louis	2		0	2	10	19	0	3	1	9	202
North Dakota:											
Fargo	0		0	0	1	0	0	0	0	0	10
Grand Forks	0			0		0	0		0	0	
Minot	0		0	10	0	0	0	0	0	0	2
South Dakota:											
Aberdeen	0			0		3	0		0	3	
Sioux Falls	0		0	0	0	1	0	0	0	0	9
Nebraska:											
Lincoln	0			0		0	0		0	2	
Omaha	0		0	0	3	3	0	3	0	0	70
Kansas:											
Lawrence	0	1	1	0	0	0	0	0	0	0	2
Topeka	0	1	0	1	2	4	0	1	0	3	14
Wichita	0		0	1	1	4	0	1	0	7	30
Delaware:											
Wilmington	1		0	1	0	8	0	1	0	0	22
Maryland:											
Baltimore	2	4	2	29	14	9	0	10	0	24	246
Cumberland	0		0	2	0	3	0	0	0	0	12
Frederick	0		0	0	0	0	0	1	0	0	5
Dist. of Columbia:											
Washington	0		0	2	8	14	0	8	0	14	180
Virginia:											
Lynchburg	1		0	0	3	0	0	0	1	0	12
Norfolk	1		0	0	1	3	0	0	0	1	20
Richmond	3		1	0	2	8	0	0	0	0	47
Roanoke	0		0	0	0	2	0	0	0	0	8
West Virginia:											
Charleston	0	1	0	1	1	0	0	0	0	0	13
Huntington	1			0		0	0		0	0	
Wheeling	0		0	10	1	1	0	0	0	2	14
North Carolina:											
Gastonia	0			0		0	0		0	0	
Raleigh	0		0	0	3	3	0	0	0	0	15
Wilmington	2		0	17	2	1	0	0	0	6	17
Winston-Salem	3		0	136	0	3	0	1	0	3	25
South Carolina:											
Charleston	1	9	2	0	2	4	0	0	0	1	21
Florence	0		0	0	3	1	0	0	0	0	15
Greenville	0		0	0	0	2	0	0	0	0	4
Georgia:											
Atlanta	1	18	2	0	5	10	0	1	0	0	92
Brunswick	0		0	0	0	0	0	0	0	1	5
Savannah	0	1	1	2	3	4	0	2	1	0	35
Florida:											
Miami	0	2	0	0	1	0	0	1	0	1	34
St. Petersburg	0		0	0	0	0	0	0	0	3	29
Tampa	0		0	0	2	0	0	0	0	1	31
Kentucky:											
Ashland	1		0	10	1	0	0	2	1	0	10
Covington	1		0	1	1	2	0	2	0	0	11
Lexington	0		0	0	3	0	0	1	0	3	16
Louisville	0		0	3	4	20	0	1	0	38	65
Tennessee:											
Knoxville	0		0	0	3	0	0	0	0	0	27
Memphis	1		1	1	4	6	0	6	0	16	88
Nashville	0		1	0	5	6	0	4	0	3	58
Alabama:											
Birmingham	3	5	1	1	8	12	0	4	0	0	87
Mobile	1		2	0	4	2	0	0	0	0	23
Montgomery	1			0		1	0		0	1	
Arkansas:											
Fort Smith	0			0		1	0		2	0	
Little Rock	1	4	0	0	1	0	0	0	0	4	28
Louisiana:											
Lake Charles	1		0	0	1	0	0	0	0	0	1
New Orleans	3	8	2	1	20	4	0	12	2	1	169
Shreveport	0		0	0	6	0	0	0	1	0	33

City reports for week ended November 22, 1941—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								
Oklahoma:											
Oklahoma City	1	9	0	0	2	2	0	1	4	0	42
Tulsa	0	------	0	26	2	7	1	1	0	0	22
Texas:											
Dallas	4	------	0	11	7	11	0	1	0	3	72
Fort Worth	0	------	2	2	1	1	0	0	0	1	33
Galveston	0	------	0	0	2	1	0	1	0	0	20
Houston	4	------	0	0	4	10	0	10	0	0	92
San Antonio	1	30	2	0	7	0	0	6	0	2	70
Montana:											
Billings	0	------	0	0	1	0	0	0	0	0	11
Great Falls	0	------	0	4	1	0	0	1	0	2	8
Helena	0	------	0	2	0	0	0	0	0	7	4
Missoula	0	3	0	0	0	0	0	0	0	0	12
Idaho:											
Boise	0	------	0	0	1	0	0	0	0	1	8
Colorado:											
Colorado Springs	0	------	0	0	0	1	0	2	0	3	8
Denver	3	17	0	2	1	2	0	2	0	27	73
Pueblo	0	------	0	75	1	2	0	0	0	1	7
New Mexico:											
Albuquerque	0	------	0	0	0	0	0	4	0	1	5
Arizona:											
Phoenix	1	30	--------	0	-------	0	0	-------	0	0	--------
Utah:											
Salt Lake City	0	------	1	1	2	2	0	0	0	4	34
Washington:											
Seattle	0	------	1	1	2	2	0	2	0	28	83
Spokane	0	------	0	0	1	3	0	0	0	4	26
Tacoma	0	------	0	0	1	0	0	0	1	6	29
Oregon:											
Salem	0	------	--------	0	-------	0	0	-------	0	0	--------
California:											
Los Angeles	4	11	4	7	4	0	0	18	0	19	347
Sacramento	0	------	0	0	3	0	0	0	0	0	41
San Francisco	1	1	0	3	3	4	0	8	0	10	189

State and city	Meningitis, meningococcus		Poliomyelitis cases	State and city	Meningitis, meningococcus		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Iowa:			
Boston	2	0	0	Waterloo	1	1	0
New York:				Maryland:			
Buffalo	1	0	0	Baltimore	0	0	1
New York	4	1	3	District of Columbia:			
Rochester	0	0	3	Washington	0	0	1
Syracuse	0	0	2	West Virginia:			
New Jersey:				Huntington	0	0	1
Newark	1	0	0	Tennessee:			
Pennsylvania:				Nashville	0	0	5
Philadelphia	0	0	6	Alabama:			
Pittsburgh	0	1	0	Birmingham	0	0	1
Ohio:				Texas:			
Cincinnati	1	0	1	Dallas	1	1	0
Illinois:				Washington:			
Chicago	3	0	4	Seattle	0	0	1
Michigan:				California:			
Detroit	2	0	1	San Francisco	1	0	0
Minnesota:							
Duluth	0	0	2				
Minneapolis	0	0	2				
St. Paul	0	0	1				

Encephalitis, epidemic or lethargic.—Cases: Worcester, 1; New York, 2; St. Joseph, 1; Fargo, 1; Wichita, 1; Great Falls, 1. Deaths: New York, 1; Philadelphia, 1; Omaha, 1; Wichita, 1; Great Falls, 1.
Pellagra.—Cases: Kansas City, 1; Charleston, S. C., 2; Savannah, 3; Birmingham, 1.
Typhus fever.—Cases: Charleston, S. C., 2; Savannah, 2; Nashville, 1; Montgomery, 3.

Rates (annual basis) per 100,000 population for a group of 90 selected cities (population, 1940, 33,929,112)

Period	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases
		Cases	Deaths							
Week ended Nov. 22, 1941	17.06	21.05	5.84	65.78	55.79	114.03	0.00	45.95	2.92	183.08
Average, 1936-40	23.77	36.19	5.44	136.69	73.78	138.40	1.09	48.93	4.66	176.61

TERRITORIES AND POSSESSIONS

HAWAII TERRITORY

Plague (rodent).—A rat found on November 7, 1941, at Paauhau, Hamakua District, Island of Hawaii, T. H., has been proved positive for plague.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Weeks ended November 1 and November 8, 1941.—During the weeks ended November 1 and November 8, 1941, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada, as follows:

Week ended November 1, 1941

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis			1	1	4				5	11
Chickenpox		12		96	347	55	53	21	102	686
Diphtheria		19	2	27	4	8	16		2	78
Dysentery				4						4
Influenza		8			1				27	36
Lethargic encephalitis							[1] 1			[1] 1
Measles				270	93	10	6	1	20	400
Mumps		1		256	104	40	109	1	68	579
Pneumonia		4			11	2	1	1	5	24
Poliomyelitis		1	6		2	3	2		1	15
Scarlet fever		14	8	96	206	5	21	23	19	392
Tuberculosis	2	13	13	105	48	2		1		184
Typhoid and paratyphoid fever				6	1	1	12	2	1	23
Whooping cough		7	3	115	146	2	7		31	311

[1] Encephalomyelitis.

Week ended November 8, 1941

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis		1		5	5	2			2	15
Chickenpox		5		232	229	18	68	5	128	685
Diphtheria	1	19	2	33	2	1	11			69
Dysentery				9	10				1	20
Influenza		12			4	2			30	48
Lethargic encephalitis						2	[1] 5			7
Measles				316	75	1	3	1	12	408
Mumps				206	89	49	44	4	116	508
Pneumonia		2			7	1			10	20
Poliomyelitis		1	11	1	4			1	2	20
Scarlet fever		12	7	145	208	21	14	11	19	437
Trachoma									1	1
Tuberculosis	4	4	1	84	41	43				177
Typhoid and paratyphoid fever		2		26	1		3			32
Whooping cough			2	256	163	3	3		50	477

[1] Encephalomyelitis.

COSTA RICA

Communicable diseases—October 1941.—During the month of October 1941, certain communicable diseases were reported in Costa Rica as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	13	1	Scarlet fever	5	
Influenza	250	1	Typhoid and paratyphoid fever	11	

FINLAND

Communicable diseases—September 1941.—During the month of September 1941, cases of certain communicable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Diphtheria	120	Poliomyelitis	9
Dysentery	2	Scarlet fever	165
Influenza	522	Typhoid fever	41
Paratyphoid fever	219		

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 of each month.

Plague

China—Fukien Province.—A report dated November 22, 1941, states that bubonic plague in epidemic form has appeared at Shaowu and Yangkow in the interior of Fukien Province, China.

New Caledonia.—On November 21, 1941, two cases of pneumonic plague with two deaths were reported in New Caledonia, one of the cases being in Noumea and the other in a native village 12 miles from Noumea. It is reported that quarantine measures have been taken in all areas which it is suspected may be infected.[1]

Yellow Fever

Colombia.—Deaths from yellow fever have been reported in Colombia as follows: Intendencia of Meta—Villavicencio, October 30, one; November 7, one. Santander Department—Bolivar, October 14, one; October 17, one; San Vincente de Chucuri, October 24, one; October 30, one.

French West Africa.—During the period November 1–10, 1941, five cases of yellow fever were reported in French West Africa, no specific location being given.

Gold Coast—Mepom.—On November 3, 1941, one suspected case of yellow fever with one death was reported in Mepom, Gold Coast

[1] For report of outbreak of plague in New Caledonia earlier in the year see PUBLIC HEALTH REPORTS, July 4, 1941, p. 1408.

HEALTH OF ADOLESCENTS IN BUENOS AIRES, ARGENTINA

During the first quarter of 1940, the division of school hygiene of the National Department of Health in Buenos Aires examined 27,000 young persons 12 to 18 years of age. In general, 10.5 percent presented an anomaly of some kind, not including dental caries, which was found in 34 percent of those examined. Twenty-eight percent of the younger children had some infection exclusive of the eyes (15 to 21 percent) and ears (5 to 8 percent). The pathologic index of the older children was about one-sixth that of the younger group.

Good general health conditions were found in 96 percent of the older children, with 4 percent showing a lower health index, consisting of chronic nutritional disturbances, together with congenital or other defects associated with partial deficiencies (statistics covering 500,000 elementary school children showed nutritional impairment in 3 percent). In the group examined, the incidence of hypertrophy of the tonsils and adenoids was 0.52 percent, as compared with 9.6 percent in children of elementary school age. This difference is attributed to spontaneous regression and medical care. Ocular disturbances were found in 5.4 percent of the older group, as compared with an incidence rate three times greater in elementary school children, a difference considered due to corrective measures.

The functions of the division of school hygiene consist not only in diagnosis and statistical surveys, but in taking measures for early treatment.—*J. Am. Med. Assoc.*, Aug. 16, 1941.

UNFITNESS FOR MILITARY SERVICE IN ARGENTINA

In 1928, 25.3 percent of recruits were found unfit for military duty. This percentage rose to 42.1 in 1939. The causes of unfitness assigned in 1939, in a report on 12,893 recruits in Buenos Aires, were as follows: Insufficient body size, 126; underweight, 366; insufficient chest index, 3; constitutional weaknesses, 1,527; nutrition and metabolic disorders, 68; endocrine dysfunction, 10; respiratory disorders, 60; digestive disorders, 1,613; circulatory disorders, 150; urogenital disturbances, 116; cutaneous disturbances, 356; auditory disturbances, 58; ophthalmologic disturbances, 315; nervous disturbances, 54; disturbances of hemopoietic organs, 5; allergies and poisoning, 10; infectious diseases, 4; tuberculosis, 44; congenital malformation, dystrophia, deformation and mutilation, 997; traumas, 94; and tumors, 6. These conditions were found in 6,175 (47.1 percent) of the 12,893 recruits.—*J. Am. Med. Assoc.*, Aug. 16, 1941.

×