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A NONFLAMMABLE PYRETHRUM SPRAY FOR USE IN AIRPLANES

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The increase of international travel by air has brought forth new problems in controlling the spread of quarantinable diseases. With specific reference to yellow fever, the destruction of infected *Aëdes aegypti* on airplanes while in flight presents itself as one means of restricting the possible spread of this disease. In order to accomplish this end, however, it is necessary to have an agent which will kill these mosquitoes without hazard to human occupants of the airplanes. Pyrethrum in a kerosene base answers this purpose in certain respects; it is comparatively innocuous to human beings while at the same time lethal to *Aëdes* in low concentrations. It has the disadvantage of being flammable.

Recent observations [1] at the New Orleans quarantine station showed that only 2 to 4 grams per 1,000 cubic feet of a pyrethrum concentrate in kerosene (2 grams of pyrethrins per 100 cc) were lethal to *Aëdes* when used as a fine spray. Since that time additional observations have been made at this station with pyrethrum in various and modified bases or vehicles with the object of developing a nonflammable mixture.

CONDITIONS AND METHOD OF EXPERIMENTATION

The conditions under which mosquitoes were secured for experimentation were essentially the same as described in a previous report.[1] Briefly, a pure colony of *Aëdes aegypti* was maintained and bred under controlled conditions. Larvae, taken from troughs in the breeding cages, were fed on yeast or bread crumbs, and, as pupae appeared they were separated and placed in test tubes. Freshly hatched imagoes that appeared in the tubes were transferred to test cages made of mosquito netting. Here they were fed on sugar water until the cage was ready for testing. In practically all cases the mosquitoes were from 1 to 3 days old when exposed to the insecticide.

[1] The destruction of mosquitoes in airplanes. By C. L. Williams and W. C. Dreessen. Pub. Health Rep., vol. 50, no. 20, May 17, 1935, pp. 663-671.

The method of experimentation was to blow the insecticide into a closed room in the form of a very fine spray. Immediately after spraying, cages of test mosquitoes were placed therein. The room was then sealed during the shortest period of exposure [2] (as shown in the tables), after which it was opened and one of the cages removed. It was again closed and sealed for an additional exposure period, at the end of which time the second cage was removed. The test mosquitoes were thereafter kept under observation for at least 24 hours unless they revived or survived the exposure, in which cases they were usually observed for a week, and their ability to bite and to feed on human blood was noted. The results of the tests have been so recorded in the tables that the percentage of mosquitoes knocked down at the end of the period of exposure and the percentage dead in 24 hours are shown.

PYRETHRUM EXTRACT IN CARBON TETRACHLORIDE BASE

Pyrethrum extract (2 percent pyrethrins) in a carbon tetrachloride base was tested. Data on these experiments are shown in table 1. It will be observed that relatively large amounts of insecticide were necessary to secure uniformly lethal effects. It is suggested from these findings that the lethal concentration of this agent for *Aëdes aegypti* is between 40 and 60 cc per 1,000 cubic feet. The latter amount was too great to be tolerated by observers who were accustomed to remain in the room during the spraying operation and during the period that the mosquitoes were exposed to the effects of the insecticide. This was the only instance that ill effects were noted in human beings among any of the pyrethrum experiments; it was manifested by irritation of the mucous membranes of the nose and throat and a feeling of slight vertigo and faintness, followed later by mild headache.

TABLE I.—*Experiments with pyrethrum extract in carbon tetrachloride*

Experiment no.	Cubic centimeters of insecticide per 1,000 cubic feet	Time of exposure	Number of *Aëdes*		Percent knocked down at end of exposure	Percent killed in 24 hours
			Female	Total		
		Minutes				
1	4	5	31	52	81	80.0
		10	16	33	97	72.7
2	10	10		31	90	51.6
3	20	5	25	38	100	86.9
		10	27	40	100	90.0
4	40	5	34	58	100	94.8
		15	43	60	100	93.3
5	60	5	34	45	100	100.0
		10	49	61	100	100.0

[2] In some instances, as shown in the tables, both cages in a given experiment were exposed the same length of time.

MIXTURES OF PYRETHRUM IN CARBON TETRACHLORIDE AND IN KEROSENE

The next step was to test various mixtures of pyrethrum in carbon tetrachloride and pyrethrum in a kerosene base. A few tests quite unexpectedly developed the fact that mixtures of these two materials in quite varying proportions were practically as effective as pyrethrum of the same strength in a kerosene base. The mixtures used were made up from carbon tetrachloride containing approximately 2 percent of pyrethrins and refined kerosene containing approximately 2 percent of pyrethrins.

In table 2 the outstanding result appears that even when the kerosene portion of the mixture is as little as one-fifth, the lethal effect on *Aëdes aegypti* is the same as when much larger proportions of kerosene base are used. Thus, in experiment 10, a mixture of 4 parts of the carbon-tetrachloride extract and 1 part of the kerosene-base extract killed 100 percent of *Aëdes aegypti* in 5 minutes when sprayed in amounts of 5 cc per 1,000 cubic feet.

TABLE 2.—*Experiments with pyrethrum extract in mixtures of carbon tetrachloride and kerosene*

Experiment no.	Cubic centimeters of insecticide per 1,000 cubic feet		Time of exposure	Number of *Aëdes*		Percent knocked down at end of exposure	Percent killed in 24 hours
	CCl_4 base	Kerosene base		Female	Total		
			Minutes				
6	5.0	5.0	5	41	56	100	100
			10	34	56	100	100
7	5.0	4.0	5	51	65	100	100
			10	44	65	100	100
8	19.0	1.0	5	37	50	100	100
			10	41	50	100	100
9	9.0	1.0	5	25	54	100	100
			10	18	53	100	100
10	4.0	1.0	5	18	50	100	100
			10	13	47	100	100
11	4.0	1.0	5	22	50	100	100
			10	19	50	100	100
12	4.5	.5	5	23	50	100	100
			10	28	50	100	100
13	4.5	.5	5	31	50	100	100
			10	21	50	100	98
14	4.5	.5	5	17	50	100	100
			10	22	50	100	100
15	4.5	.5	5	27	50	100	92
			10	24	50	100	100
16	4.5	.5	5	29	50	100	100
			5	26	50	100	100
17	4.5	.5	5	24	49	100	100
			5	29	49	100	94
18	4.0	1.0	5	22	50	100	100
			5	18	50	100	100
19	4.0	1.0	5	18	50	100	100
			5	27	50	100	100
20	4.0	1.0	5	23	50	100	100
			5	29	50	100	100
21	4.0	1.0	5	16	50	100	100
			5	21	50	100	100
22	4.0	1.0	5	22	40	100	100
			5	17	44	100	100

The varying mixtures when used in amounts of 5 or 10 cc per 1,000 cubic feet did not cause noticeable irritation or other symptoms to observers remaining in the room up to periods of 15 minutes.

All of the various mixtures used were not subjected to inflammability tests; however, tests were made of the mixture of 1 part kerosene-base extract to 4 parts carbon-tetrachloride base extract. This mixture was found by ordinary tests to be nonflammable. Further extensive studies of it from this viewpoint are under way. It would appear that the possibility of a flammable residue of oil remaining on exposed surfaces of fabrics and the like after evaporation of the carbon tetrachloride need hardly be considered, for the reason that the absolute amounts to be sprayed are quite small—not over 10 cc per 1,000 cubic feet (this is twice the apparent lethal dose).

These mixtures have a higher specific gravity than oil extracts and, in consequence, are not as readily sprayed, requiring in air sprayers a slightly higher pressure.

PYRETHRUM IN KEROSENE MIXED WITH CARBON TETRACHLORIDE

A mixture of 1 part pyrethrum extract in kerosene (containing 2 percent pyrethrins) and 4 parts carbon tetrachloride (containing no pyrethrins) has been made up and at the present writing has been tested in one experiment in which 5 cc per 1,000 cubic feet, with 5 minutes' exposure, killed 100 percent of exposed *Aëdes aegypti* (50 males, 24 females). In view of the fact that the pyrethrum content of the mixture was not over 0.4 percent, this result was unexpected and surprising. By ordinary tests this mixture is nonflammable.[3]

AGE INCIDENCE OF SPECIFIC CAUSES OF ILLNESS [1]

Based on Records for 9,000 Families in 18 States Visited Periodically for 12 Months, 1928–31

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Preceding reports (7, 8) have considered the age incidence of cases and deaths in broad groups of causes corresponding roughly to organ systems, such as respiratory and digestive diseases. Each of these broad disease groups includes a great variety of disorders, ranging in

[3] Since this report was written, three additional tests have been made with this mixture, in all of which 100 percent of the mosquitoes were killed by five minutes' exposure. Furthermore, we have found that a kerosene extract containing 0.4 percent of pyrethrins is about as effective against *Aëdes aegypti* as is one containing 2 percent of pyrethrins.—C. L. W.

[1] From the Office of Statistical Investigations, U. S. Public Health Service.

This is the sixth of a series of papers on sickness and medical care in this group of families (4, 5, 6, 7, 8). The survey of these families was organized and conducted by the Committee on the Costs of Medical Care; the tabulation was done under a cooperative arrangement between the Committee and the Public Health Service. Committee publications based on the results deal primarily with costs, and Public Health Service publications primarily with the incidence of illness and the extent and kind of medical care, without regard to cost. As costs are meaningless without some knowledge of the extent and nature of the service received, there is inevitably some overlapping. The Committee staff, particularly Dr. I. S. Falk and Miss Margaret Klem, cooperated in the tabulation of the data.

Special thanks are due to Dr. Mary Gover, who assisted in the analysis, to Miss Lily Vanzee, who was in immediate charge of tabulating the data, to Drs. Amanda L. Stoughton and R. R. Jones, for advice and assistance in classifying the causes of sickness and death, and to other members of the statistical staff of the Public Health Service for advice and assistance in the preparation of the study.

the respiratory group from coryza to pneumonia and tuberculosis, in the digestive class from indigestion to appendicitis and gall-stones, and in the circulatory group from cervical adenitis to organic heart disease. The diagnosis groups used were based on the International List of Causes of Death; but any broad disease classification that might have been devised would have contained many such inconsistencies.

While the broad groups of diseases have some degree of homogeneity, the age incidence of the specific affections have more interest and more meaning in epidemiology. The present paper considers the age incidence of these more or less specific diseases. Because many of them, such as coryza, indigestion, poison ivy, and scabies, do not appear as causes of mortality, no attempt is here made to compare the incidence of cases and deaths. In a subsequent paper the case incidence of those causes that are important in both sickness and mortality, such as pneumonia and appendicitis, will be considered in relation to deaths.

SOURCE OF THE DATA

The data included in the present paper are the results of periodic canvasses of 8,758 white families living in 130 localities in 18 States and including 39,185 individuals. Each family was visited at intervals of 2 to 4 months for a period long enough to obtain a sickness record for 1 year. On the first call a record was made of the number of members of the household, together with data about sex, age, marital status, and communicable disease history of each person. On succeeding visits the canvasser recorded all illness that had occurred since the preceding call, with such pertinent facts about each case as the date of onset, the duration of disability and of confinement to bed, the nature of such medical service as was obtained, and the termination of the illness. Thus there are available certain facts about the observed population and the illnesses suffered in the course of 12 months.[2]

DEFINITION OF AN ILLNESS AND THE CLASSIFICATION OF ITS CAUSES

Illness as here used refers to both injury and disease. What was actually included as cases, however, was necessarily influenced not only by the informant's (usually the housewife's) conception of illness, but also by her memory. With visits as infrequent as at intervals of 2 to 4 months, it is inevitable that many of the nondisabling illnesses would be terminated and forgotten before the next visit of the enumerator. However, if the record includes most of the real illnesses and excludes only the minor disorders, it may be as useful as a more complete one.

[2] Further details on the method of collecting the data and the characteristics and geographic distribution of the surveyed population are included in the first report in the series (4).

Illnesses that originated prior to the study and caused sickness during the year are included with those having their onset within the period of observation; 93 percent had their onset within and 7 percent prior to the year. The inclusion of these illnesses of prior onset is necessary to give proper representation to chronic ailments. A large proportion of the cases of such diseases as tuberculosis, cancer, diabetes, and cardio-renal affections originated prior to the study. A preceding paper shows for each diagnosis the number of cases with prior onset (4).

Considering an illness in the sense of a continuous period of sickness, one finds only 4.3 percent designated as due to more than one cause. In general, the more important or more serious cause was used as primary, except where a disease like pneumonia is commonly recognized as following measles or influenza, in which cases the antecedent condition was taken as primary.[3] In the present paper on the incidence of specific diseases, such as tonsillitis, appendicitis, and whooping cough, all cases with the given diagnosis are counted whether it was the sole, primary, or contributory cause of the illness. In earlier papers on illness for all causes and for broad disease groups the rates were based on sole or primary causes only, so that a continuous period of sickness would not be counted as two illnesses.

INCIDENCE OF SPECIFIC CAUSES OF ILLNESS AT ALL AGES

Figure 1 shows for all ages the annual case rates per 1,000 for the specific affections that make up the several broad disease groups. The rates have been adjusted to the age distribution of the white population of the registration States, 1929–30.[4]

The rates range from 100 per 1,000 for coryza and colds to less than 1 per 1,000 for the infrequent ailments. Not only do respiratory disorders as a whole stand out as the most frequent cause of illness, but the common subgroups, such as coryza and colds, influenza and grippe, and bronchitis, all remain at the head of the list of specific diseases. Tonsillitis, sore throat, and other diseases of the pharynx make another rather homogeneous group that is larger than any specific nonrespiratory category. If all of the many trivial colds had been recorded, as in a few special respiratory studies (9, 11, 14), the rates for such affections would have been about 10 times those recorded in these studies. The cases here included are probably those of more than average severity.

Of the communicable or infectious diseases, whooping cough and measles lead in incidence. Rheumatism is the predominant affection,

[3] Further details on the method of classifying the causes of illness are included in the first report in the series (4).

[4] Rates for a similar list of diagnoses were given in the first paper (4) without adjustment to a standard age distribution and they therefore differ from the adjusted rates in fig. 1 and tables 1 and 2. See preceding paper (7) for the distribution of the white population in the registration States to which the rates are adjusted.

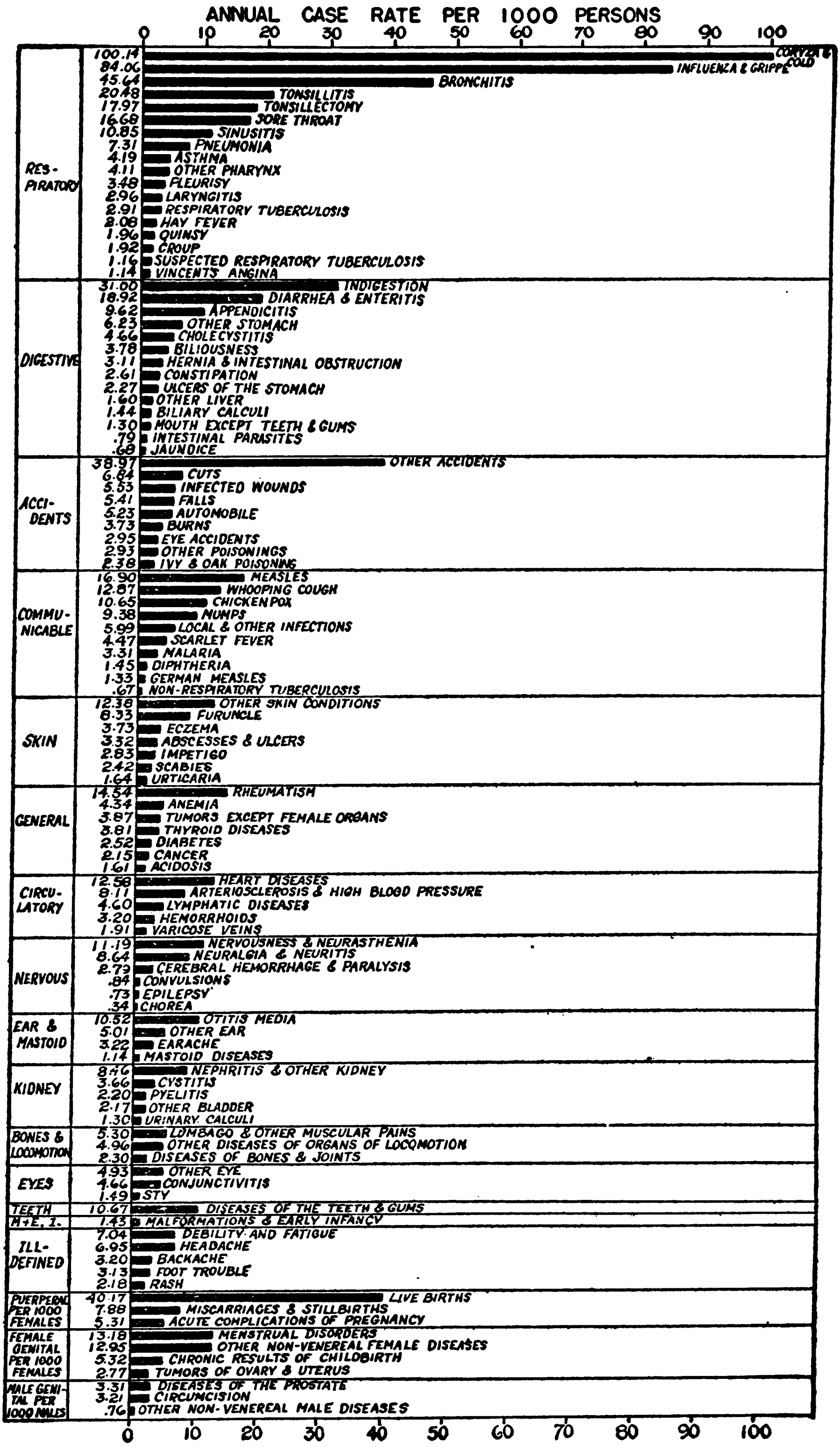

FIGURE 1.—Incidence of illness from specific causes among canvassed white families in 18 States during 12 consecutive months, 1928–31. (Rates adjusted to the age distribution of the white population of the registration States, 1929–30.)

in frequency of cases, among those general ailments that are not included in the epidemic group. In the digestive class, indigestion, and diarrhea and enteritis are the most frequent, but appendicitis comes third in the list. Discussion of the frequency of other diseases seems unnecessary, since the whole list is included in figure 1 and can be seen in that chart.

AGE INCIDENCE OF SPECIFIC DISEASES

In representing graphically the age incidence of the various diseases it is impracticable to plot them on the same rate scale. In the series of age curves, a separate page is devoted to each of the broad diagnosis groups. The specific affections are plotted in different sections, diseases having about the same mean rate for all ages being put in the same section of the chart. The scales are so made that the adjusted rate for all ages for the various diseases represents an interval on the vertical rate scale that corresponds to about 20 years on the horizontal age scale. This relationship is necessarily approximate, since no two diseases have exactly the same rate. However, the curves for the various disorders approach what they would be if plotted on a relative basis as the ratio of the rate in each age to the rate for all ages. In this way the relative variability with age is roughly comparable from one section of the chart to another and at the same time the vertical scales are expressed in actual rates, so that a given point on a curve can be read as so much per 1,000 population of that specific age.

Incidence rates for all diseases except those of the female genital organs and puerperal conditions are included in table 1, in 5-year age groups to 25 years and in 10-year groups to 65 and over. In a number of instances where the cases are few, there are large fluctuations in the rates that are apparently due to chance; in the charts, some combinations into broader age groups are made where such chance fluctuations are particularly large, but in the majority of the diseases the charts represent the rates as they appear in the tables.

TABLE 1.—*Age incidence of specific diseases—Canvassed white families in 18 States during 12 consecutive months, 1928–31 (sole, primary, and contributory causes)*

Diagnoses, with International List numbers, 1920 revision	Number of cases	All ages[1]		Age									
		Crude	Adjusted[2]	Under 5	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65 and over
		Annual case rates per 1,000 population											
Respiratory diseases (11, 31, 97–107, 109):													
Influenza and grippe (11)	3,320	86.1	84.06	106.7	90.6	71.4	57.1	74.1	92.0	92.9	87.1	72.6	82.2
Bronchitis and chest colds (99)	1,883	48.9	45.64	106.7	56.2	30.4	30.2	29.7	37.1	32.9	39.7	50.9	64.1
Coryza and colds, unqualified (part of 97, part of 107)	4,134	107.3	100.14	189.4	122.5	92.6	72.1	71.7	87.4	88.9	87.1	108.6	96.2
Vincent's angina (part of 109)	40	1.0	1.14	.7	.9	.4	2.9	3.8	1.1	.7	.3	-----	1.0
Tonsillitis (part of 109)	897	23.3	20.48	36.5	37.8	22.3	20.7	17.0	21.6	18.0	9.5	8.8	5.0
Quinsy (part of 109)	70	1.8	1.96	.5	.9	.2	2.3	2.8	5.0	2.2	1.2	2.0	-----
Sore throat (part of 109)	656	17.0	16.68	17.6	21.0	21.0	19.0	13.7	13.5	14.7	12.5	21.1	17.0
Tonsillectomy and adenoidectomy (part of 109)	841	21.8	17.97	27.0	54.4	31.1	15.1	14.6	13.1	10.0	6.0	2.0	3.0
Other pharynx and tonsil affections (part of 109)	173	4.5	4.11	6.5	4.2	6.6	2.9	2.8	5.1	3.5	4.2	2.0	1.0
Laryngitis (part of 98)	109	2.8	2.96	1.8	2.6	1.3	2.9	1.9	4.3	2.9	5.1	3.4	2.0
Croup (part of 98)	112	2.9	1.92	13.8	5.1	1.1	-----	-----	.2	.2	-----	-----	-----
Pneumonia, all forms (100, 101)	316	8.2	7.31	23.6	10.9	4.8	5.3	3.3	2.7	3.4	4.5	6.8	17.0
Sinusitis (part of 97)	395	10.3	10.85	1.6	4.4	7.7	12.1	10.4	16.5	18.2	10.4	13.6	5.0
Asthma (105)	150	3.9	4.19	3.3	4.5	3.1	.7	1.9	4.1	3.7	6.0	7.5	10.0
Hay fever (part of 107)	76	2.0	2.08	.2	1.1	1.7	1.6	.5	3.5	3.7	2.1	3.4	1.0
Pleurisy (102)	114	3.0	3.48	.4	1.9	1.5	1.6	9.4	3.7	3.5	4.5	4.1	5.0
Respiratory tuberculosis (part of 31)	105	2.7	2.91	.7	2.5	2.9	2.9	3.8	4.1	3.0	2.7	2.7	3.0
Suspected respiratory tuberculosis (part of 31)	47	1.2	1.16	.2	1.9	2.6	.7	2.4	1.9	.5	.6	-----	-----
Other respiratory diseases	274	7.1	6.60	11.3	10.0	4.4	7.2	3.3	5.5	6.8	5.1	5.4	8.0
Epidemic, endemic, and infectious diseases (1–42, exc. 11, 31):													
Tuberculosis, nonrespiratory (32–37)	30	.8	.67	1.3	.9	1.1	.7	.9	.5	1.0	-----	-----	-----
Malaria (5)	129	3.3	3.31	2.0	3.3	4.2	3.9	4.7	3.4	4.4	3.0	1.4	1.0
Measles (7)	940	24.4	16.90	74.4	69.6	19.1	6.9	.5	2.8	.8	.3	.7	-----
German measles (part of 25)	61	1.6	1.33	2.2	3.0	3.3	3.3	.5	.5	.2	.6	-----	-----
Whooping cough (9)	739	19.2	12.87	79.8	43.4	7.0	1.6	1.4	.9	.8	-----	-----	1.0
Mumps (13)	466	12.1	9.38	14.7	33.8	22.3	9.5	2.4	4.4	3.4	1.5	1.4	-----
Chicken pox (part of 25)	596	15.5	10.65	40.6	51.6	12.0	2.0	.5	1.9	.7	-----	-----	-----
Scarlet fever (8)	232	6.0	4.47	9.8	18.2	11.2	2.6	.5	1.4	.5	.9	-----	-----
Diphtheria (10)	70	1.8	1.45	3.5	4.9	2.0	1.6	1.9	.3	.8	.3	-----	-----
Local and other infections (41)	233	6.1	5.99	3.8	6.7	8.3	7.2	5.2	6.0	5.6	6.9	6.8	2.0
Other diseases of this group	230	6.0	5.50	6.3	10.0	8.1	2.0	4.3	5.3	4.2	5.4	3.4	6.0

[1] "All ages" includes a few of unknown age.

[2] Rates for all ages are adjusted to the age distribution of the white population of the registration States; this population (years of life, 1929–30) is given for specific ages in table 1 of a preceding paper (7).

TABLE 1.—*Age incidence of specific diseases—Canvassed white families in 18 States during 12 consecutive months, 1928–31 (sole, primary, and contributory causes)*—Continued

Diagnoses, with International List numbers, 1920 revision	Number of cases	All ages: Crude	All ages: Adjusted	Age: Under 5	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65 and over
		Annual case rates per 1,000 population											
Other general diseases (43–69):													
Cancer (43–49)	52	1.3	2.15	----	----	----	----	----	0.3	1.7	3.9	5.4	18.0
Benign tumors, exclusive of female organs (50)	127	3.3	3.87	0.7	0.7	1.7	3.6	1.4	3.9	6.2	5.7	6.8	9.0
Rheumatism, acute and chronic (51, 52)	439	11.4	14.54	.9	4.4	2.4	3.6	2.4	11.0	18.5	26.3	46.8	47.1
Diabetes (57)	72	1.9	2.52	----	1.1	.4	1.6	----	1.2	2.4	4.5	8.8	10.0
Anemia, all forms (58)	146	3.8	4.34	.7	1.9	2.4	4.9	4.7	6.4	3.4	6.3	6.1	7.0
Diseases of the thyroid gland (60)	134	3.5	3.81	.4	1.2	2.6	4.6	5.2	6.2	3.9	7.2	2.7	1.0
Acidosis (part of 69)	70	1.8	1.61	4.5	2.1	.9	.7	2.4	1.6	1.3	.9	1.4	----
Other general diseases	101	2.6	2.71	4.0	.9	1.7	1.3	2.8	1.1	4.2	3.9	6.8	1.0
Diseases of nervous system (70–84):													
Cerebral hemorrhage and paralysis (74, 75)	65	1.7	2.79	.2	.2	----	.3	----	.9	1.0	4.5	4.7	28.1
Epilepsy (78)	26	.7	.73	.4	.3	.7	2.9	.5	.2	.8	.3	.7	1.0
Convulsions (79, 80)	48	1.3	.84	7.1	.5	.9	.3	----	.2	----	----	----	----
Chorea (81)	16	.4	.34	----	1.1	1.7	.7	----	----	----	----	----	----
Neuralgia and neuritis (82)	269	7.0	8.64	----	.3	1.1	.3	1.4	11.3	11.8	18.8	25.8	18.0
Nervousness, neurasthenia, nervous breakdown (part of 84)	367	9.5	11.19	.9	2.8	1.5	3.9	11.8	17.9	15.7	18.2	19.0	17.0
Other nervous diseases	99	2.6	2.69	2.2	2.3	2.6	2.9	.9	1.4	2.5	3.3	6.8	4.0
Diseases of eyes and annexa (85):													
Sty (part of 85)	64	1.7	1.49	2.9	1.9	1.3	2.0	.9	1.8	1.2	.9	.7	1.0
Conjunctivitis, pinkeye, sore eye (part of 85)	208	5.4	4.66	8.9	11.2	4.6	4.3	.9	4.6	2.7	1.8	4.1	4.0
Other eye diseases	176	4.6	4.93	3.1	4.0	2.9	2.6	2.4	3.7	4.9	9.3	9.5	10.0
Diseases of ears and mastoid process (86):													
Earache (part of 86)	154	4.0	3.22	9.4	7.7	4.8	2.6	1.4	1.4	1.2	2.1	2.0	----
Otitis media (part of 86)	518	13.4	10.52	40.5	22.2	11.2	4.9	5.2	6.0	4.9	6.6	3.4	1.0
Other ear diseases (part of 86)	183	4.7	5.01	4.9	3.7	4.4	5.3	3.3	3.9	5.7	2.7	10.9	9.0
Diseases of mastoid process (part of 86)	52	1.3	1.14	2.7	2.8	.4	1.6	.9	1.1	.7	.3	.7	----
Diseases of circulatory system (87–96):													
Diseases of heart (87–90)	336	8.7	12.58	1.1	2.8	4.4	7.2	6.1	5.1	8.9	15.2	31.2	80.2
Hemorrhoids (part of 93)	111	2.9	3.20	.2	.2	----	1.0	2.4	3.5	8.4	6.6	3.4	3.0
Varicose veins or ulcer (part of 93)	51	1.3	1.91	----	----	----	----	.5	1.6	2.4	2.1	6.8	10.0
Diseases of lymphatic system (94)	232	6.0	4.60	16.1	13.1	5.5	1.6	3.8	2.5	2.0	.9	.7	----
Arteriosclerosis and high blood pressure (part of 91, part of 96)	185	4.8	8.11	----	----	----	----	----	1.6	4.1	13.1	28.5	66.1
Other circulatory diseases	113	2.9	3.50	1.1	1.4	1.5	2.6	1.9	2.7	4.9	4.2	8.8	9.0
Diseases of teeth and gums (part of 108)	448	11.6	10.67	24.7	7.2	6.6	6.9	12.7	13.5	12.0	9.9	6.8	----

Diseases of digestive system (part of 108, 110–127):													
Diseases of mouth except teeth and gums (part of 108)	61	1.6	1.30	4.9	2.1	.9	.3	.9	1.1	.5	1.5	.7	
Ulcers of stomach and duodenum (111)	76	2.0	2.27					1.4	3.0	4.9	4.8	3.4	4.0
Indigestion, upset stomach, nausea (part of 112)	1,226	31.8	31.00	57.0	29.4	20.8	18.0	19.3	23.2	31.4	36.7	36.0	51.1
Biliousness (part of 205)	145	3.8	3.78	2.4	4.9	6.1	2.6	2.8	3.0	3.5	3.3	6.1	4.0
Other and ill-defined stomach diseases (part of 112)	238	6.2	6.23	13.6	4.5	1.3	3.6	1.9	6.7	5.2	4.5	14.9	10.0
Diarrhea and enteritis (113, 114)	829	21.5	18.92	70.4	17.9	8.1	8.2	11.3	11.9	13.5	15.2	17.7	27.1
Intestinal parasites except hookworm (116)	43	1.1	.79	4.7	1.7	.7	.3	.5		.3			
Appendicitis (117)	352	9.1	9.62	1.5	6.3	10.5	18.4	17.0	15.6	9.6	3.3	5.4	8.0
Hernia, intestinal obstruction (118)	106	2.7	3.11	3.5	1.4	1.1	1.3	1.9	2.8	2.0	6.0	6.1	8.0
Constipation (part of 119)	92	2.4	2.61	4.2	.5	1.1	.7	2.8	2.5	2.7	2.7	7.5	3.0
Biliary calculi (123)	42	1.1	1.44					1.4	2.5	1.9	1.2	2.7	6.0
Cholecystitis (part of 124)	143	3.7	4.66				.7	2.4	4.4	7.8	11.3	8.8	13.0
Jaundice (part of 124)	31	.8	.68	1.1	1.7	.9	1.0	.5	.9	.2	.3		
Other and ill-defined liver diseases (part of 124)	48	1.3	1.60	.2	.5		.3	1.9	1.4	1.3	4.2	3.4	4.0
Other and ill-defined diseases of the digestive system	110	2.9	3.04	1.4	1.6	2.0	1.6	4.3	2.8	5.1	3.0	5.4	3.0
Diseases of kidneys and urinary system (128–134):													
Pyelitis (part of 131)	93	2.4	2.20	3.8	3.1	.9	.7	1.9	2.5	2.7	2.4	2.0	1.0
Nephritis and other kidney diseases (128, 129, part of 131)	264	6.9	8.46	3.5	3.7	3.5	2.3	5.2	7.3	8.8	11.3	16.3	35.1
Calculi of urinary passages (132)	45	1.2	1.30				.3	.5	2.5	2.9	2.1	1.4	2.0
Cystitis (part of 133)	113	2.9	3.66	1.3	1.1		.7	.9	3.0	6.1	3.3	8.8	17.0
Other diseases of bladder, diseases of urethra (part of 133, 134)	80	2.1	2.17	2.9	3.1	.4		.5	1.2	2.0	3.6	4.1	6.0
Diseases of skin and cellular tissue (151–154):													
Furuncle (152)	319	8.3	8.33	4.3	6.8	7.9	16.4	7.5	10.3	10.1	6.9	5.4	3.0
Abscesses and ulcers (153, part of 154)	127	3.3	3.32	3.1	2.6	3.9	3.6	1.9	3.5	3.2	3.9	3.4	4.0
Impetigo (part of 154)	144	3.7	2.83	7.1	9.8	6.3	3.3	.5	.5	.7	.6		
Urticaria, hives (part of 154)	69	1.8	1.64	2.9	2.1	1.7	1.3	1.4	1.8	1.0	1.8	2.0	
Scabies (part of 154)	111	2.9	2.42	2.9	6.5	6.8	5.3	.9	.2	.8	.3	.7	1.0
Eczema (part of 154)	160	4.1	3.73	12.1	1.7	2.6	3.3	3.8	3.2	2.9	4.2	1.4	2.0
Other and ill-defined skin diseases	465	12.1	12.38	11.4	12.3	15.8	15.1	13.7	9.9	8.6	12.2	10.9	20.0
Diseases of bones and organs of locomotion (155–158):													
Diseases of bones and joints, except tuberculosis and rheumatism (155, 156)	82	2.1	2.30	.7	1.4	2.6	2.0	2.8	3.0	2.4	1.8	2.7	4.0
Lumbago and other muscular pains (158)	167	4.3	5.30		.3	.7	1.6	.9	5.3	8.8	11.3	17.0	8.0
Other diseases of organs of locomotion	183	4.7	4.96	4.2	2.5	6.3	3.3	2.8	3.5	5.4	9.3	9.5	3.0
Congenital malformations and other diseases of early infancy (159–163)	84	2.2	1.43	12.5	1.7	.9	.3						
Accidents and other external causes (165–203):													
Poisoning by ivy, oak, and other plants (part of 177)	96	2.5	2.38	.7	4.4	4.4	2.6	1.4	2.3	2.2	1.5	2.0	2.0
Other accidental poisonings (175, 176, part of 177)	119	3.1	2.93	4.9	3.7	2.0	1.3	2.8	2.5	4.1	1.8	4.1	2.0
Automobile accidents (188c)	191	5.0	5.23	3.1	4.9	2.4	6.2	7.1	5.5	6.2	4.8	5.4	7.0
Accidental burns (179)	155	4.0	3.73	6.5	4.7	4.2	2.9	2.8	3.7	3.2	3.6	1.4	4.0
Accidental injuries by cutting or piercing instruments (184)	293	7.6	6.84	7.4	13.3	12.5	7.5	6.1	4.4	6.1	4.2	4.7	1.0
Accidental falls (185)	197	5.1	5.41	9.3	4.5	3.7	3.3	3.8	3.7	3.7	3.6	7.5	19.0
Eye accidents (part of 88, part of 202)	118	3.1	2.95	2.7	3.3	1.3	3.3	2.4	5.3	3.7	2.1	.7	2.0
Infected wounds (part of 202)	212	5.5	5.53	3.1	4.4	7.2	7.5	4.7	6.7	5.9	6.6	2.7	4.0
Other accidental injuries	1,506	39.1	38.97	33.2	42.5	48.2	46.6	33.0	31.4	39.3	38.2	37.3	46.1

Table 1.—*Age incidence of specific diseases—Canvassed white families in 18 States during 12 consecutive months, 1928–31 (sole, primary, and contributory causes)*—Continued

Diagnoses, with International List numbers, 1920 revision	Number of cases	All ages		Age									
		Crude	Adjusted	Under 5	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65 and over
		Annual case rates per 1,000 population											
Other and ill-defined causes (164, 204, 205):													
Foot trouble (part of 205)	104	2.7	3.13	-----	0.2	1.3	1.6	3.8	2.3	5.4	3.9	5.4	10.0
Headache (part of 205)	243	6.3	6.95	0.2	2.3	4.6	.7	7.1	12.1	10.3	11.6	10.2	5.0
Backache (part of 205)	106	2.7	3.20	-----	.2	.2	.7	3.8	4.4	7.3	4.5	4.1	5.0
Debility, fatigue, exhaustion, malnutrition, loss of weight (part of 205)	255	6.6	7.04	4.9	5.3	4.2	4.9	4.7	10.5	7.1	8.1	9.5	11.0
Rash, unqualified (part of 205)	106	2.7	2.18	8.9	3.1	2.2	2.3	.9	.9	1.3	1.5	-----	1.0
Other and unknown causes of sickness	450	11.7	13.38	9.3	7.0	8.3	8.9	8.0	12.9	12.8	16.1	18.3	46.1
Population, both sexes (years of life)		[1] 38,544		5,513	5,715	4,568	3,050	2,119	5,640	5,930	3,351	1,473	998
		Annual case rates per 1,000 males											
Nonvenereal diseases of male genital organs and annexa (135–142):													
Diseases of prostate (135)	31	1.6	3.31	-----	-----	-----	-----	-----	0.8	0.7	1.6	7.5	41.2
Circumcision (part of 136)	95	5.0	3.21	27.8	3.9	1.7	-----	-----	.4	-----	.5	-----	-----
Other nonvenereal diseases of male genital organs (part of 136)	20	1.1	.76	5.0	.3	.4	1.3	-----	-----	.3	.5	-----	-----
Population, males (years of life)		[1] 18,896		2,808	2,820	2,301	1,527	894	2,402	2,979	1,845	804	437

[1] "All ages" includes a few of unknown age.

The diseases of the female genital organs and puerperal conditions are shown separately in table 2 in 5-year age groups to 55 years. The communicable diseases and a few other affections that are largely confined to childhood are shown in single years of age up to 15 in table 3, but are also included in the general table in the broader age groups.

TABLE 2.—*Age incidence of puerperal conditions and diseases of the female genital organs—canvassed white families in 18 States during 12 consecutive months, 1928–31 (sole, primary, and contributory causes)*

Diagnoses, with International List numbers, 1920 revision	All ages [1]			Age									
	Number of cases	Crude	Adjusted [2]	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–64	65 and over
		Annual case rates per 1,000 females											
Puerperal state (143–150):													
Abortions, miscarriages, and stillbirths (part of 143)	149	7.6	7.88	1.3	26.1	20.9	22.8	17.5	10.5	1.1	----	----	----
Live births (part of 145, 149)	761	38.8	40.17	17.1	125.7	150.0	116.5	67.3	27.4	5.7	----	----	----
Acute complications of pregnancy and childbirth	101	5.1	5.31	1.3	16.3	17.5	17.1	9.9	4.0	1.1	----	----	----
Nonvenereal diseases of female genital organs (137–142): [3]													
Chronic results of childbirth	102	5.2	5.32	1.3	7.3	12.1	18.3	11.1	7.3	3.4	4.8	4.5	1.8
Cysts and tumors of ovary and uterus (137, 139)	46	2.3	2.77	-----	3.3	3.4	3.4	6.4	5.6	3.4	8.0	4.5	3.6
Menstrual disorders and uterine hemorrhage (140, part of 141)	231	11.8	13.18	23.6	21.2	21.5	14.3	21.1	16.9	30.7	23.9	3.0	1.8
Other and ill-defined nonvenereal diseases of female organs (part of 141, 142)	252	12.8	12.95	3.9	15.5	32.9	34.3	31.0	22.6	13.7	8.0	3.0	3.6
Population, females (years of life)	[1] 19,627			1,523	1,225	1,487	1,751	1,710	1,241	879	627	669	561

[1] "All ages" includes a few of unknown age.
[2] Rates for all ages are adjusted to the age distribution of the white population of the registration States. This population (years of life, 1929–30) is given for specific ages in table 1 of a preceding paper (7).
[3] Rates for the age groups under 15 are as follows:

	Under 5	5–9	10–14
Menstrual disorders	----------	----------	4.0
Other and ill-defined nonvenereal diseases of female genital organs	2.2	1.7	1.8

Respiratory.—Figure 2 shows the various respiratory diseases. The influenza and grippe curve is the usual one that has been characteristic of those diseases in the several minor epidemics since 1918, as found by special surveys and in the Hagerstown study (2, 12). As indicated by respiratory studies, both coryza and bronchitis have age curves that are somewhat different from cases reported as influenza or grippe (9). Tonsillitis, tonsillectomy, and other diseases of the pharynx show high rates among children, particularly in the school ages, with a tendency to decline as age increases. Pneumonia exhibits the characteristic curve, with high rates among the young and old, like the pneumonia of nonepidemic years and of recent respiratory epidemics, but unlike that of the 1918 epidemic, which

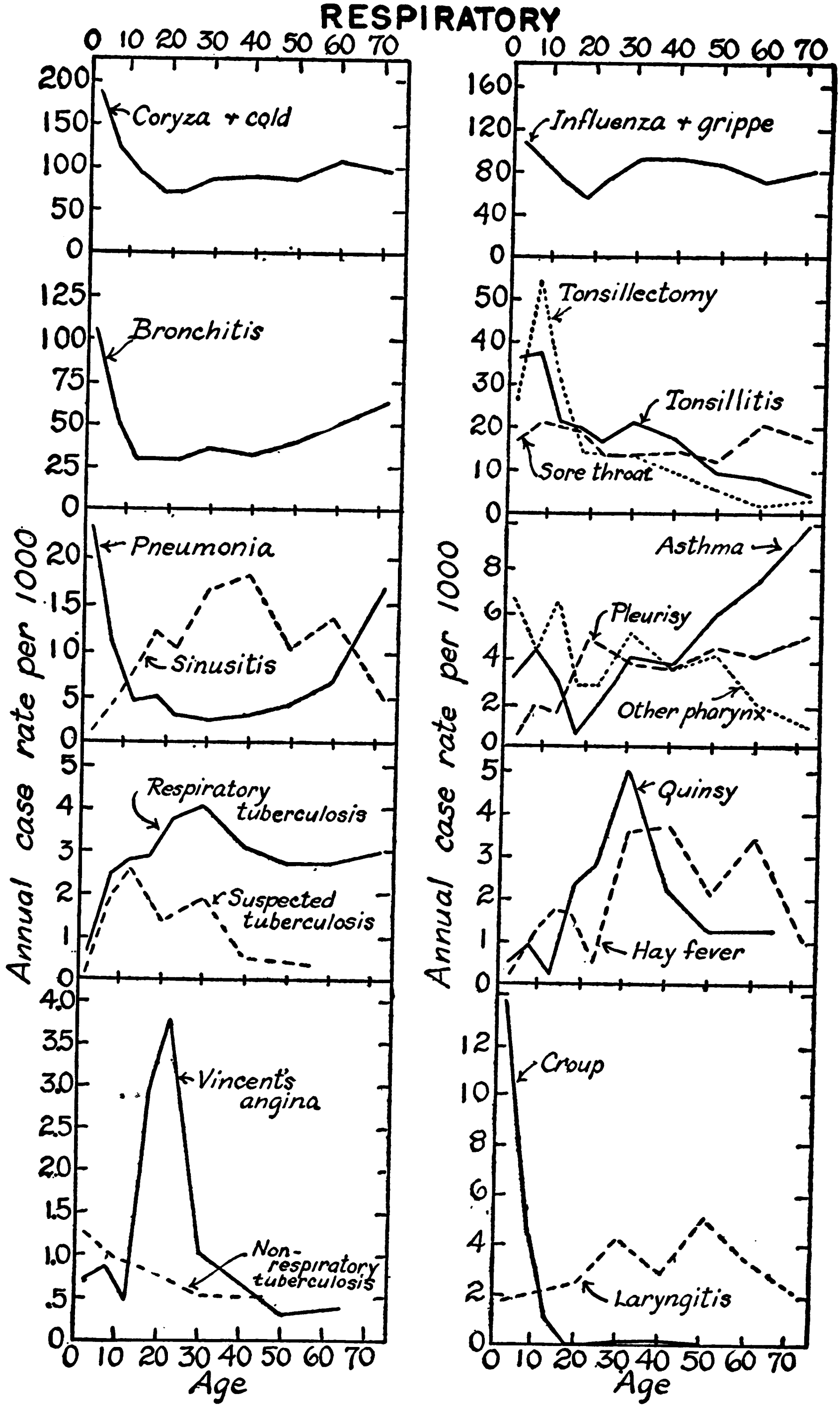

FIGURE 2.—Age incidence of various respiratory diseases—canvassed white families in 18 States during 12 consecutive months, 1928–31. (Scales are so made that the adjusted rate for all ages represents an interval on the vertical rate scale that corresponds roughly to 20 years on the horizontal age scale. In a few instances the rates as plotted represent broader age groups than those shown in the tables.)

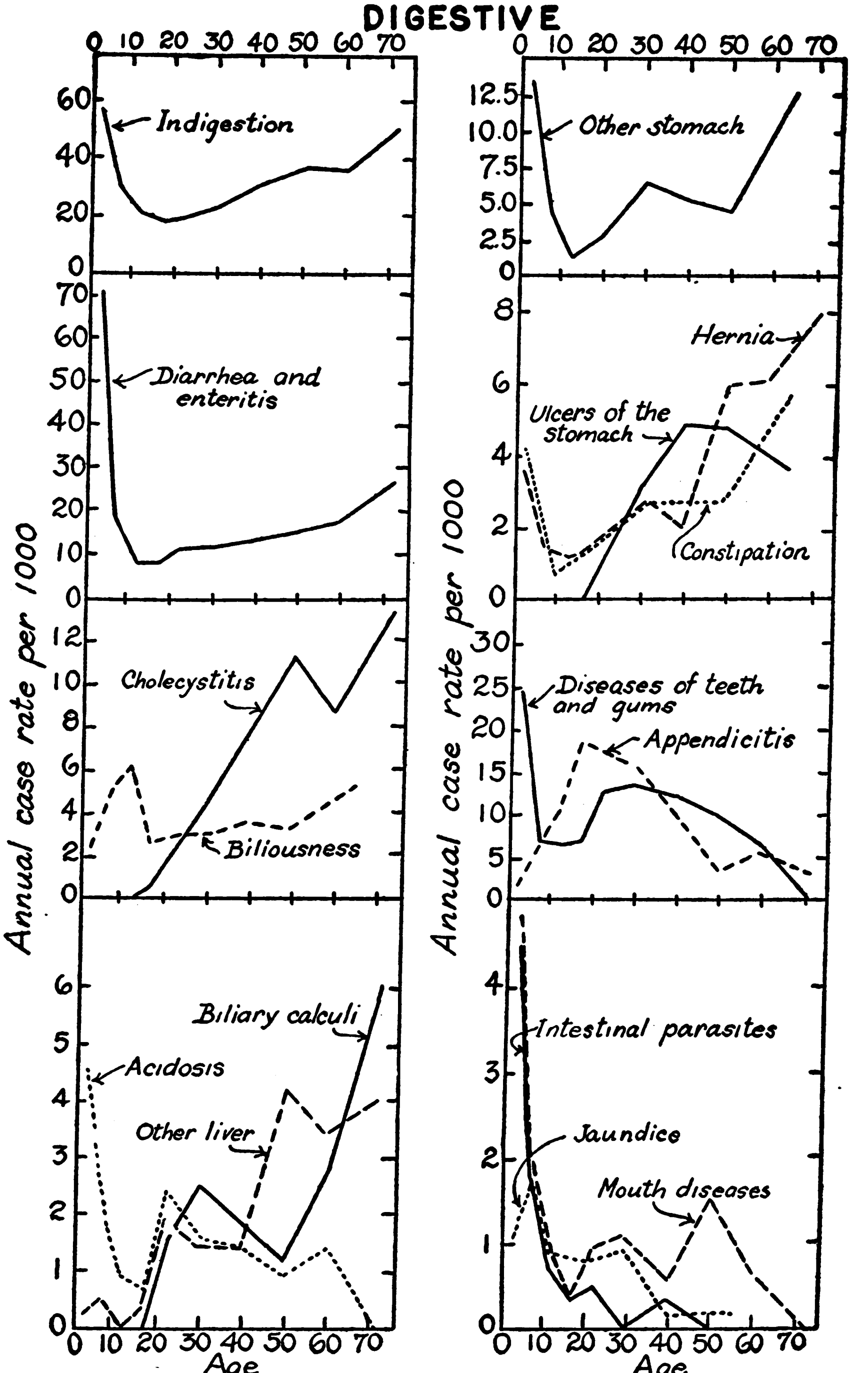

Figure 3.—Age incidence of various digestive diseases. (See fig. 2 for source of data and details about scales and plotting.)

was high among young adults (2, 12). The only other respiratory disease that shows any marked rise in the older ages is asthma. Unlike asthma, hay fever is higher in the middle adult than in the older ages. Both asthma and hay fever have secondary childhood peaks between 5 and 15 years, which are followed by lower rates before the high adult incidence begins.

Several of the respiratory diseases exhibit age curves that are high among young adults, with low rates both preceding and following these peaks, viz, sinusitis with a maximum at 40 years, quinsy with a maximum at 30 years, and Vincent's angina with a maximum from 15 to 25 years. Pleurisy is low among children, with a rather rapid rise to 20 or 25 years and a gradual rise thereafter. Laryngitis, as found in a preceding study (1), is relatively low in childhood when tonsillitis is high, and gradually increases to a maximum at about 50 years, when the tonsillitis rate is low. Croup (nondiphtheretic) is seldom reported above 10 years.

Respiratory tuberculosis has a maximum at 30 years, but the rate continues relatively high to the end of the life span. Suspected tuberculosis, which in some instances apparently refers only to a type of child that is particularly susceptible to tuberculosis, has an earlier peak, 10 to 14 years. The peak for nonrespiratory tuberculosis is under 5 years, with a gradual decline as age increases.

Digestive.—Figure 3 shows the diseases of the digestive system, including the teeth and gums. Several of these diseases have especially high rates among children under 5 years, viz, diarrhea and enteritis, indigestion and other stomach ailments, acidosis, diseases of the mouth, diseases of the teeth and gums (presumably "teething"), and intestinal parasites. Indigestion and other stomach ailments and diarrhea and enteritis reach their minima at 10 to 20 years, with a gradual rise to old age. After teething difficulties of young children, there is a period from 5 to 19 years when the teeth are not reported as the cause of much illness, but nevertheless are subject to much decay, as evidenced by the results of dental examinations (3). After 20 years of age the frequency of illness associated with the teeth again rises, but it declines gradually from 30 years to the end of the life span. The incidence of jaundice is highest in childhood. Cholecystitis, biliary calculi, and other diseases of the liver are practically absent in childhood and tend to increase to their maxima in the oldest ages; the secondary peak in biliary calculi at 30 years is probably not significant as the number of cases is small. Attacks reported as biliousness, which may refer to liver or to stomach disorders, are more frequent in school than in preschool or adult ages. Hernia and constipation increase with age above 15 years, but both diagnoses have higher rates among young children than among adolescents. Appendicitis is relatively rare in the ages under 5 and above 45 years, the peak being at 15 to 19. Ulcers of the stomach and duodenum are rare, but the indications are that they are more frequent from 40 to 50 years than before or after those ages. None was reported under 20 years.

Eyes and ears.—Figure 4 shows diseases of the eyes and ears. Conjunctivitis, pink eye, and other inflammatory eye disorders are high among children, with definitely lower rates among adults. Sty is also frequent in the youngest ages, but there is a secondary peak at 30 years. Other miscellaneous eye ailments show a gradual increase up to about 50 years, after which there is not much change; in this respect they are similar to defective vision, as indicated by the Snellen and Jaeger tests (10).

Earache, otitis media, and diseases of the mastoid process are all high in young children, with a marked decline to 20 years and a tend-

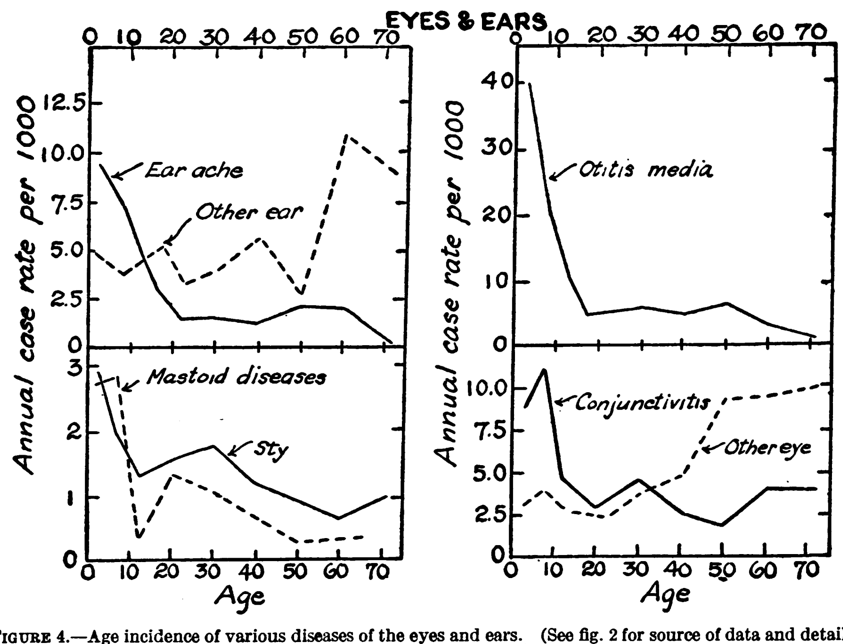

FIGURE 4.—Age incidence of various diseases of the eyes and ears. (See fig. 2 for source of data and details about scales and plotting.)

ency toward a gradual decline thereafter. Miscellaneous other ear conditions increase rather markedly with age after about 50 years.

Skin.—Figure 5 shows the diseases of the skin. Nearly all of these affections are high at the early ages; eczema, urticaria, and rash without other qualification are highest among children under 5 years. Impetigo and scabies are lower in the preschool than in the school ages; impetigo declines markedly after 10 years, but scabies is relatively high from 5 to 20, with a drop to a low level thereafter. Boils and carbuncles definitely increase to about 20 years, after which the rate declines to the end of the life span.

Accidents.—The various kinds of accidents (fig. 6) have rather different age curves. Injuries due to falls show the greatest variation with age, being high among young children and old people. Burns are more frequent under 5 than at any other age. Ivy, oak, and other plant poisonings are high from 5 to 15 years, with a drop to a relatively low level that is maintained to the end of the life span. Other poisonings are highest under 5 years, declining until the adolescent ages, after which there is considerable increase. Eye accidents have a definite peak at 30 years of age, presumably due to industrial hazards. Injuries by cutting and piercing instruments are high among children, particularly from 5 to 15 years, with declining rates as age increases. Automobile accidents are lower among children than adults, but there is a small peak at 5 to 9 years which probably represents the age when

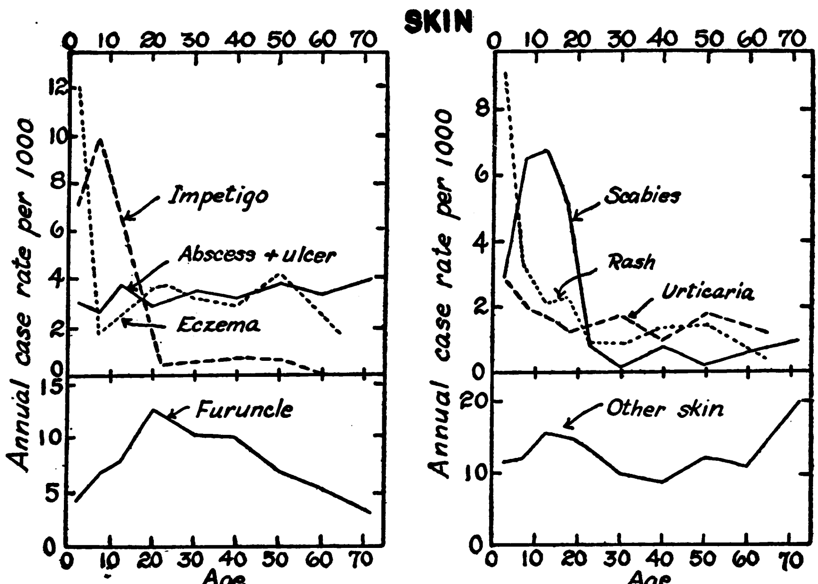

FIGURE 5.—Age incidence of various skin diseases. (See fig. 2 for source of data and details about scales and plotting.)

children are playing on the streets and are too young to keep out of the path of automobiles. After 15 there is little variation with age in the frequency of injury from automobile accidents. Infected wounds are slightly more frequent in adolescence than at other ages. Local and other infections, in which there was included no report of a scratch or injury, have an age curve that is similar to infected wounds, suggesting that many of these cases are really infected wounds. Miscellaneous and ill-defined accidents, which constitute the great majority of the injuries, show slightly higher rates from 5 to 20 and above 65 years than at other ages.

Female diseases and the puerperal state.—Figure 7 shows the age incidence of diseases of the female genital organs and puerperal condi-

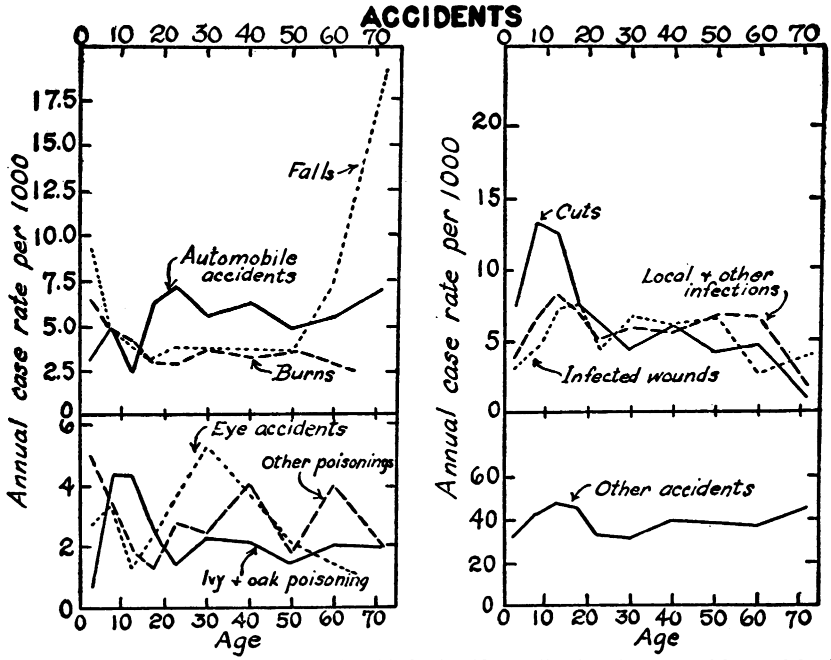

FIGURE 6.—Age incidence of injury from various kinds of accidents. (See fig. 2 for source of data and details about scales and plotting.)

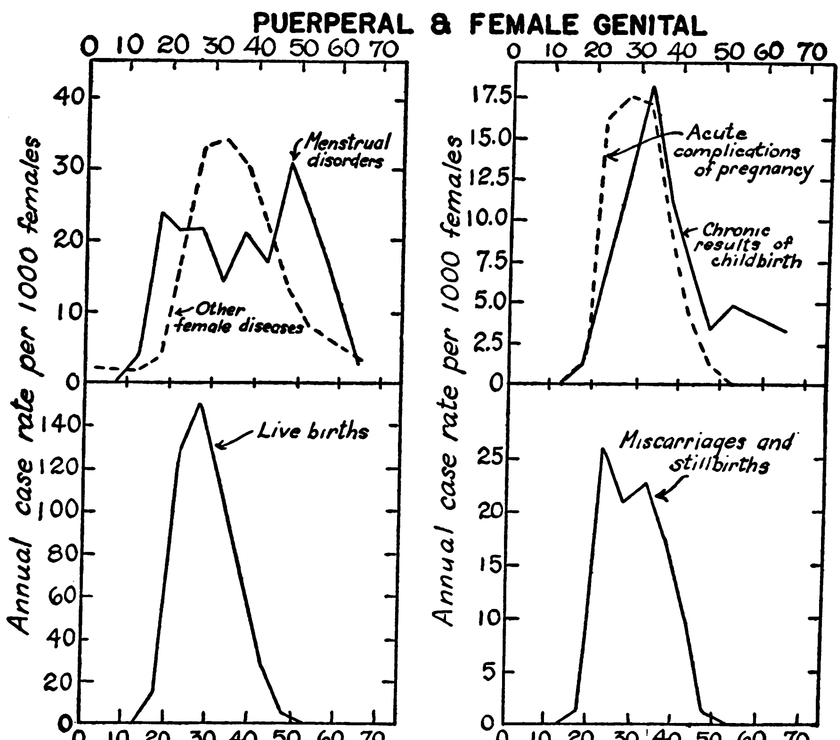

FIGURE 7.—Age incidence of puerperal conditions and diseases of the female genital organs. (See fig. 2 for source of data and details about scales and plotting.)

tions. The latter group refer by definition to the childbearing ages; but, except for menstrual disorders, the diseases of the female organs are also confined largely to those ages. The complications and sequelae of childbearing have been divided into the acute ailments accom-

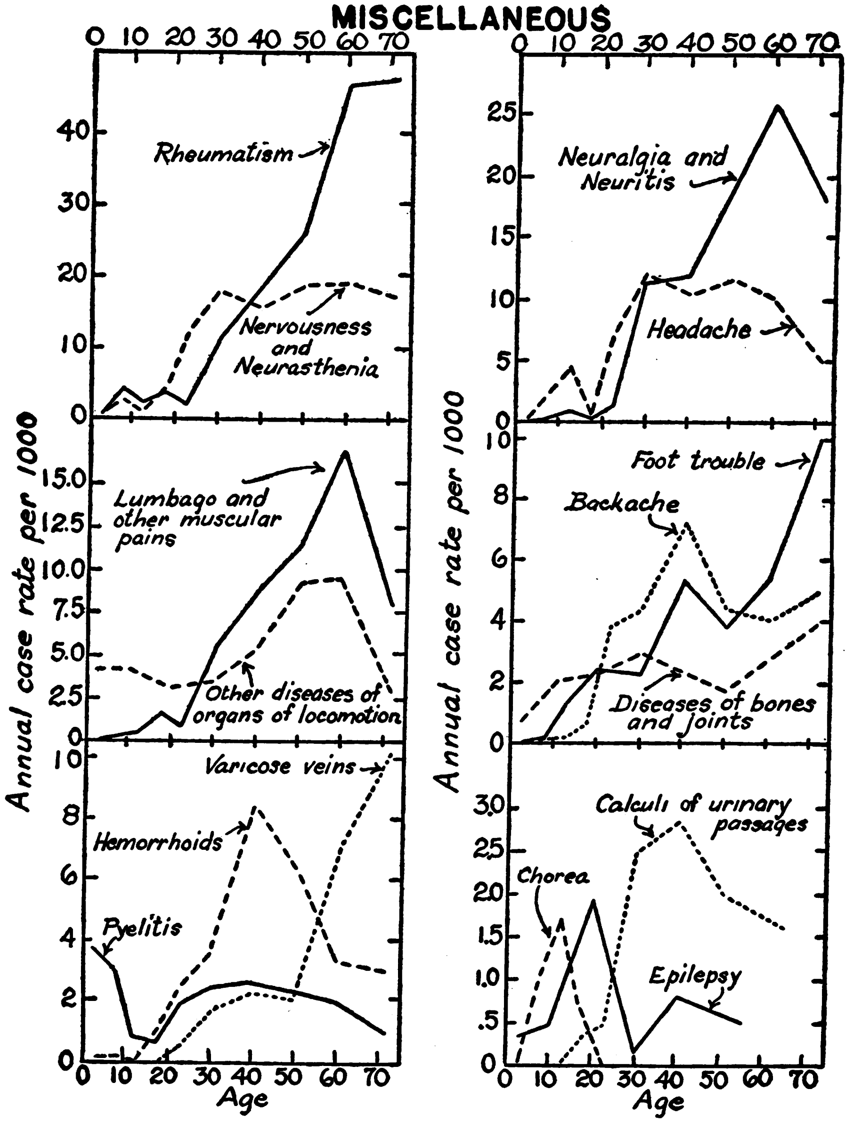

FIGURE 8.—Age incidence of various specific diseases in a miscellaneous group. (See fig. 2 for source of data and details about scales and plotting.)

panying pregnancy and birth during the study, and chronic affections such as lacerations and displacements resulting from prior births. In the latter category there are some old cases in ages considerably beyond the childbearing period. Miscarriages and stillbirths have their peak slightly earlier than live births. Both of these categories might be more properly related to married women, but in this paper they are related to all females in the same way as the various female diseases. In menstrual disorders, shown as a single category, the first peak comes at 15 to 19 years, with a decline thereafter; but there is a second and

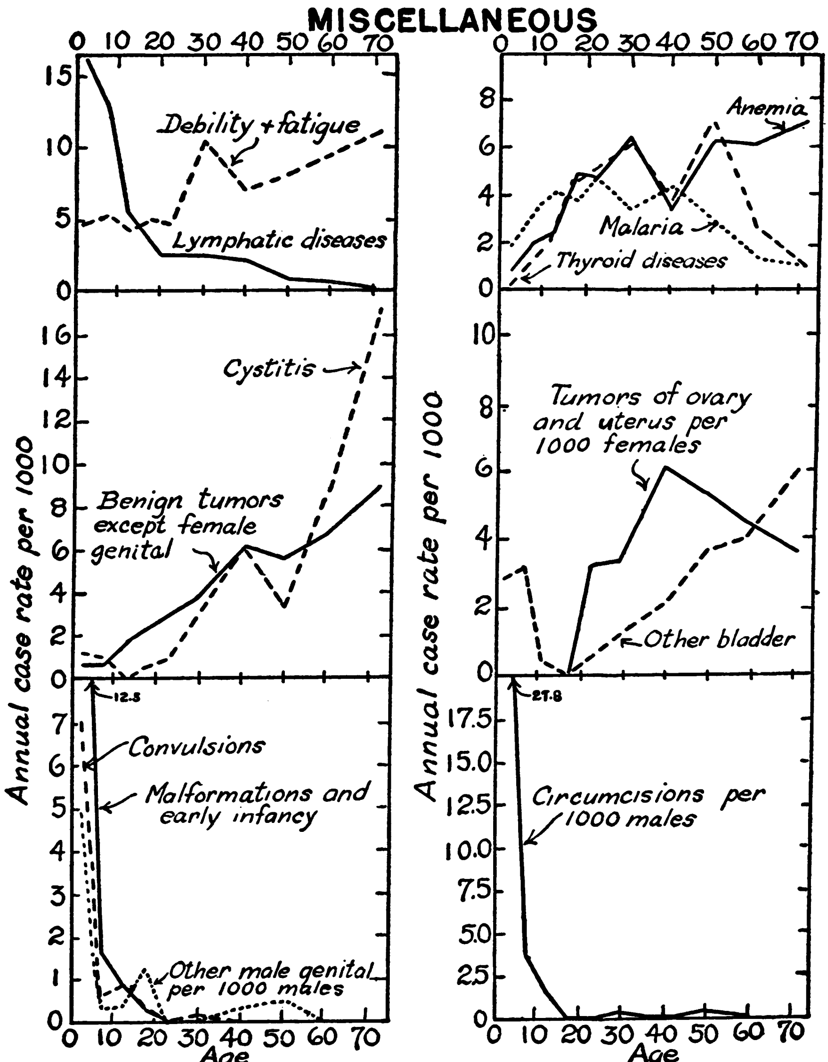

FIGURE 9.—Age incidence of various specific diseases in a miscellaneous group. (See fig. 2 for source of data and details about scales and plotting.)

higher peak at 45 to 49 representing the menopause. Tumors of the ovaries and uterus are plotted in figure 9 with other tumors.

Miscellaneous.—Figures 8 and 9 show the age incidence of miscellaneous diseases classified in the International List of Causes of Death as nervous, circulatory, kidney and bladder, male genital, malformations and early infancy, organs of locomotion, and general nonepidemic diseases, except those maladies in these categories that are commonly designated as the diseases of old age. Figure 8 shows rheumatism, neuralgia and neuritis, lumbago and other muscular pains, backache, and a class of miscellaneous diseases of the organs of locomotion which consists largely of affections of the muscles and related tissues. The incidence of all of these aches, pains, and inflammations of the muscles and nerves rises with age, but the oldest group, 65 years and over, has a lower rate than preceding ages in several categories, and in rheumatism the rate is only slightly above the preceding age. The curves for nervousness and neurasthenia, headache, anemia, and diseases of the thyroid gland are all similar. With the exception of headache, which has a secondary peak at 10 to 14 years, these ailments are rare in childhood; the rates increase gradually to about 30 years and remain approximately the same to the end of the life span, except thyroid diseases, which are definitely lower above 55, and headache, which is reported less frequently above 65 years.

Pyelitis is high among children under 10 and reaches a second maximum at 40 years, but the variation with age is not marked. Calculi of the urinary passages is seldom reported under 20 and reaches a maximum at 40 years, followed by a decline to the end of the life span. Cystitis and other bladder disorders increase with age, but the rate is also high among children for affections other than cystitis. Benign tumors increase with age; the curve for tumors of the female genital organs increases with age to about 40 years, with a decline thereafter. The diseases of the lymphatic system, largely of the cervical glands, are high among children under 10, with a rapid decline to 20 years and a gradual decline thereafter to the end of the life span. No cases of chorea were reported outside of the ages 5 to 15 years. Epilepsy has a peak at 20, with fewer illnesses from this cause before and after that age. Malaria is relatively low under 5, rising to a maximum at 20 to 40 years, with a general decline thereafter. More illness from hemorrhoids was reported at ages 35 to 44 than before or after that age period; physical examinations of adults indicate a continuous rise with age (13), but the decline after 40 years in the curve of the cases that caused illness is quite definite. The rate for varicose veins rises continuously with age, in agreement with results of physical examinations.

At the bottom of figure 9 are several diagnoses from which illness is seldom reported except among children, viz, congenital malformations and diseases of early infancy, convulsions, circumcision, and other nonvenereal disorders of the male genital organs except prostate diseases. In all these affections the rates are very low except under 5, and a large part of the cases occur under 1 year of age. Table 3 shows the rates for these disorders in single years for children under 5.

Degenerative.—The ailments of old age, sometimes designated as the degenerative diseases, are plotted in figure 10. They are so definitely

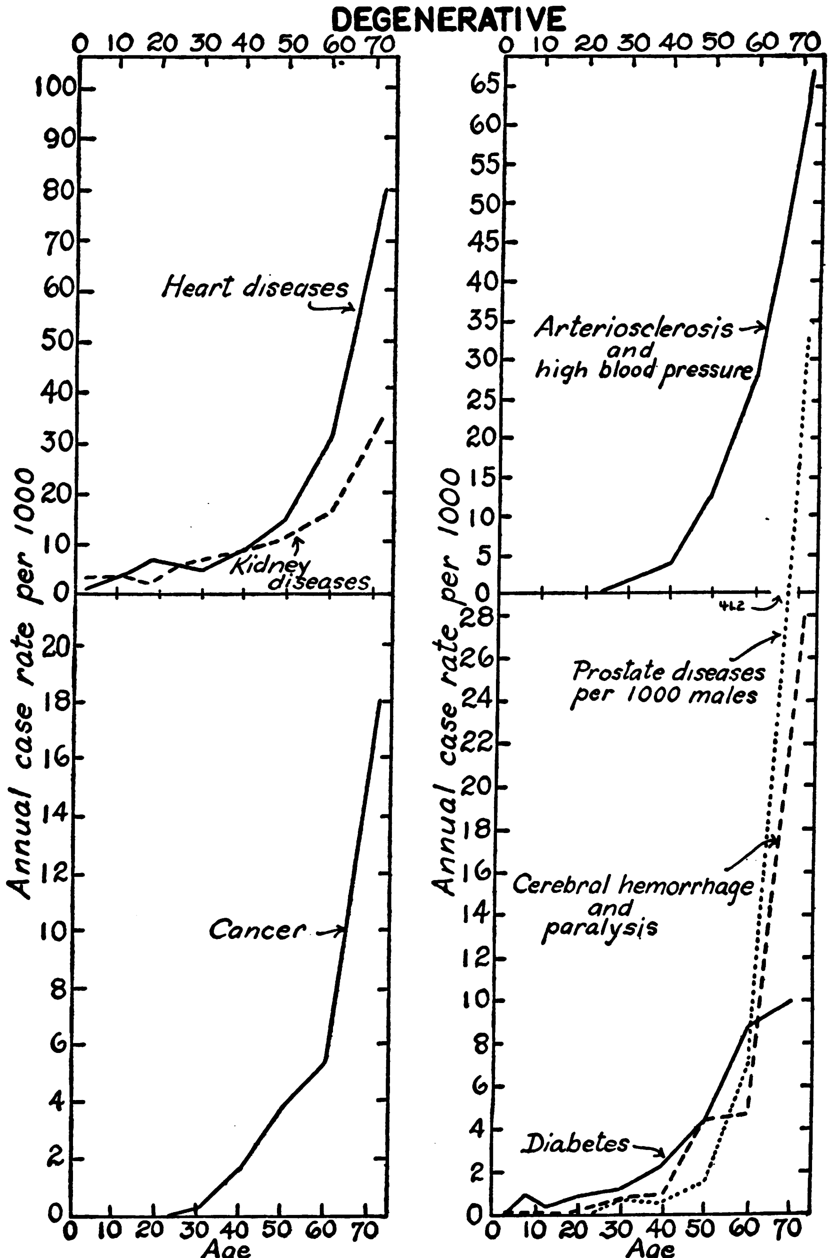

FIGURE 10.—Age incidence of various degenerative diseases. (See fig. 2 for source of data. Scales are so made that the adjusted rate for all ages represents an interval on the vertical rate scale that corresponds roughly to 15 years on the horizontal age scale.)

associated with old age that it is impracticable to maintain the same scale as used in the previous graphs. In this chart the adjusted rate for all ages is made equal to approximately 15 years on the horizontal age scale. Every one of these ailments rises sharply with age. Heart diseases show a small secondary peak at 15 to 19 years, which presumably represents rheumatic and other acute affections of the heart that occur in childhood. The rise with age in kidney disorders is not so sharp as in heart diseases; however, if kidney affections are limited to those definitely diagnosed as nephritis, the increase with age is greater. The rise with age in diabetes is approximately the same as

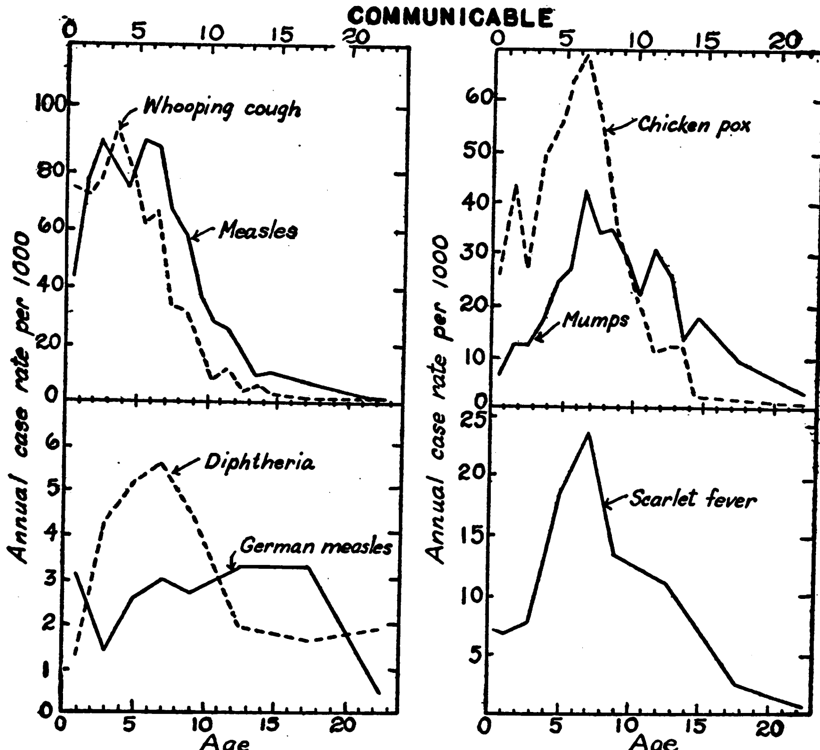

FIGURE 11.—Age incidence of various communicable diseases of childhood. (See fig. 2 for source of data. Scales are so made that the rate for all ages under 15 years represents an interval on the vertical rate scale that corresponds roughly to 10 years on the horizontal age scale. In some instances the rates as plotted represent broader age groups than those shown in the tables.)

in kidney diseases. Cancer, arteriosclerosis, and prostatic affections are highly concentrated in the older ages.

Communicable diseases.—The communicable diseases of children (fig. 11) are so largely confined to the younger ages that they have been plotted in single years, except scarlet fever, diphtheria, and German measles, in which the cases are too few to subdivide to that extent. Table 3 shows the rates in single years below 15 for the various diseases in this group.

TABLE 3.—*Age incidence of the communicable and other diseases of childhood—canvassed white families in 18 States during 12 consecutive months, 1928–31 (sole, primary, and contributory causes)*

Age	Measles	Whooping cough	Mumps	Chicken pox	Scarlet fever	Diphtheria	German measles	Diarrhea and enteritis	Congenital malformations and diseases of early infancy [1]	Convulsions	Circumcision [1]	Other nonvenereal diseases of male genital organs	Population (years of life): Both sexes	Population (years of life): Male
	Annual case rate per 1,000 population										Annual case rate per 1,000 males			
All ages under 15:														
Crude	56.7	45.6	23.8	36.3	13.2	3.5	2.8	33.4	5.3	2.9	11.7	2.0	15,796	7,929
Adjusted [2]	54.14	42.67	23.91	34.86	13.18	3.46	2.82	31.16	4.86	2.71	10.71	1.84		
Under 1	43.4	74.7	6.1	26.3	7.1		3.1	116.2	56.6	5.1	118.5	14.6	990	481
1	76.9	70.6	12.7	43.6	6.3	2.4		108.6	2.4	15.1	12.3	1.5	1,261	652
2	92.0	77.6	12.4	27.8	6.7	4.8	1.4	47.9	4.8	5.7	5.4	3.6	1,044	558
3	82.1	94.2	16.8	48.5	8.4	3.7		37.3	2.8	6.5	7.5	3.7	1,072	535
4	75.0	82.9	24.4	54.1	20.1	6.1	2.6	40.1	1.7	1.7	10.3	3.4	1,146	582
5	91.3	63.1	27.3	64.0	15.4	4.3		23.0					1,172	558
6	88.9	65.6	42.3	69.1	20.7	6.0	3.0	11.2					1,158	569
7	66.6	34.2	34.2	57.2	27.3	5.1		18.8	1.7	.5	3.9	.3	1,171	615
8	58.8	31.5	34.8	38.9	14.1	5.8	2.7	20.7					1,207	565
9	38.7	19.9	29.8	25.8	12.9	3.0		14.9					1,007	513
10	27.9	8.4	22.3	20.4	10.2	4.6		9.3					1,077	542
11	25.5	12.2	31.0	11.1	12.2	1.1		7.8					903	461
12	18.6	4.4	26.2	12.0	15.3	2.2	3.3	5.5	.9	.9	1.7	.4	915	467
13	9.6	6.0	13.3	12.1	12.1			6.0					829	401
14	10.7	3.5	17.8	2.4	5.9	1.2		11.8					844	430
	Total number of cases under 15 years													
Number	895	720	376	574	209	56	44	527	83	46	93	16		

[1] Case rates per 1,000 under 1 month are as follows:

	Monthly basis	Annual basis	Number of cases
Congenital malformations and diseases of early infancy	49.2	590	40
Circumcision per 1,000 males	103.6	1,243	40

[2] Rates for all ages under 15 years are adjusted (using 5-year age groups only) to the age distribution of the white population of the registration States. This population (years of life, 1929–30) is given for specific ages in table 1 of a preceding paper (7).

The peak occurs earlier in whooping cough than in any of the other diseases, the maximum incidence being at 3 years, with a small secondary peak at 6, which may be the effect of additional exposure in school. Measles shows a double peak, the first at 2 and the second at 5 and 6 years of age; the latter peak is presumably associated with school entrance. Measles case rates at 2, 5, and 6 years are approximately the same. Chicken pox, mumps, and scarlet fever all remain relatively low in the preschool period, with peaks at 6 to 7 years of age. Diphtheria reaches a peak at about the same age as scarlet fever. The number of cases of German measles is small but the peak incidence appears to come at a definitely later age, the rates at 10 to 14 and 15 to 19 being the highest and approximately the same. Since the rates for the communicable diseases are very low beyond 25 years, the charts show only the ages under 25. Rates for adult ages are included with other diseases in table 1.

SUMMARY

Records of illness were obtained on 8,758 white families in 130 localities in 18 States for a period of 12 consecutive months between February 1928 and June 1931. Each family was visited at intervals of 2 to 4 months to obtain the data.

The surveyed families include representation from nearly all geographic sections, from rural, urban, and metropolitan areas, from all income classes, and consist of both native- and foreign-born persons. The proportions of these various elements included are not identical with those in the population of the United States, but the variations are not generally large. In other respects also the surveyed group is not dissimilar to families in the general white population of the United States.

This paper presents in graphs and tables the age incidence of all of the specific diseases that were reported in sufficient numbers to approximate a reasonably accurate age curve. While there are irregular chance variations in many of the curves, they serve to indicate the general picture of the age incidence of even the less frequent diagnoses.

It is impossible to summarize in a few words the data on so many diseases, but the charts afford a summary view of the results.

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COURT DECISION ON PUBLIC HEALTH

City ordinance, providing that barber shops should be closed during certain hours, held void.—(California Supreme Court; *Ganley* v. *Claeys et al.*, 40 P. (2d) 817; decided Jan. 21, 1935.) An ordinance of the city of Martinez provided that all barber shops should be closed from 6:30 p. m. of each day until 8 o'clock of the following morning, except on Saturdays and days preceding specified holidays, on which days they should close at 8 p. m. and remain closed on Sundays and the specified holidays. The lower court declared the ordinance void. On appeal, the supreme court, in the following language, pointed out that the protection of the public health was the purpose assigned for the adoption of the ordinance:

> * * * It is said, and a witness testified, that the inspectors are only on duty from 9 a. m. until 5 p. m., and that 90 percent of the complaints from the public concern violations occurring late in the evening or on Sundays or holidays; hence the ordinance is a health measure. * * *

The appellate court pointed out that the State had acted to completely regulate barbering and took the view that the ordinance did not have a reasonable relation to the protection of the public health. The court's opinion closed with the following:

> * * * in the barbering business the regulation is accomplished by limiting the practitioners to those who understand and will comply with sanitary methods adopted and approved by the State. It is apparent that, if the latter course is successfully pursued, the barbering business is completely and thoroughly regulated. It is equally obvious that, if the respondent in this case is not one who understands and who will not conform to the sanitary methods adopted, compelling him to close his shop an hour earlier is not going to accomplish that purpose. in view of these facts, we are of the opinion that the rule adopted in the Laramie case [*State* v. *City of Laramie*, 40 Wyo. 74, 275 P. 106] is the proper one, and that the ordinance has not a reasonable relation to the purpose assigned for its adoption.

Judgment affirmed.

DEATHS DURING WEEK ENDED SEPT. 21, 1935

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

	Week ended Sept. 21, 1935	Corresponding week, 1934
Data from 86 large cities of the United States:		
Total deaths	7,404	6,899
Deaths per 1,000 population, annual basis	10.3	9.6
Deaths under 1 year of age	508	572
Deaths under 1 year of age per 1,000 estimated live births	47	53
Deaths per 1,000 population, annual basis, first 38 weeks of year	11.5	11.5
Data from industrial insurance companies:		
Policies in force	67,580,404	67,200,682
Number of death claims	10,872	11,238
Death claims per 1,000 policies in force, annual rate	8.4	8.7
Death claims per 1,000 policies, first 38 weeks of year, annual rate	9.8	10.0

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended Sept. 28, 1935, and Sept. 29, 1934

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Sept. 28, 1935, and Sept. 29, 1934

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934
New England States:								
Maine	8						0	0
New Hampshire						11	0	0
Vermont		1			8		0	0
Massachusetts	6	10			12	5	1	2
Rhode Island	1	1			2	4	1	0
Connecticut	3		8	1	9	17	0	1
Middle Atlantic States:								
New York	27	30	[1] 15	[1] 3	62	60	8	3
New Jersey	15	20	7	12	57	18	2	2
Pennsylvania	39	49			28	105	7	5
East North Central States:								
Ohio	40	61	19	32	16	28	2	5
Indiana	68	34	22	15	4	22	1	1
Illinois	60	42	9	4	14	54	4	2
Michigan	31	10	5		20	44	2	1
Wisconsin		2	28	16	38	47	1	1
West North Central States:								
Minnesota	2	9			7	24	0	1
Iowa [2]	19	9			1	4	1	1
Missouri	52	45	28	41	18	51	1	4
North Dakota	2	2			4	6	0	2
South Dakota		2				13	0	0
Nebraska	8	6	1		6	1	0	0
Kansas	16	9			5	8	0	0
South Atlantic States:								
Delaware			1		6		0	0
Maryland [3] [4]	14	7	3	35	7	11	1	0
District of Columbia	17	10	1		1	2	3	0
Virginia	38	57			4	14	2	1
West Virginia	45	55	26	11	6	21	1	3
North Carolina [4]	66	104	5		9	12	0	0
South Carolina [4]	24	13	176	142	1	3	0	0
Georgia [4]	35	60					0	1
Florida [4]	9	12			3	1	0	0
East South Central States:								
Kentucky	50	66	2		44	9	4	1
Tennessee	47	60	39	7	18	3	2	1
Alabama [4]	44	51	9	6	8	25	2	0
Mississippi [3]	31	30					0	1

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Sept. 28, 1935, and Sept. 29, 1934—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934
West South Central States:								
Arkansas	13	14	10	9	-------	2	1	0
Louisiana	22	12	5	3	3	3	1	1
Oklahoma [5]	23	12	27	37	1	2	1	1
Texas [4]	72	34	30	45	10	5	0	0
Mountain States:								
Montana	5	-------	6	8	5	4	0	0
Idaho	1	-------	-------	2	-------	1	0	0
Wyoming	1	-------	-------	-------	8	1	0	0
Colorado	10	4	-------	-------	6	5	0	0
New Mexico	4	2	2	-------	-------	2	0	1
Arizona	2	-------	18	10	2	10	0	0
Utah [3]	-------	-------	-------	-------	1	-------	0	0
Nevada	-------	-------	-------	-------	-------	-------	-------	-------
Pacific States:								
Washington	1	7	-------	-------	13	40	0	0
Oregon	-------	-------	18	26	118	3	1	1
California	29	32	24	22	87	47	2	0
Total	995	984	539	487	672	748	52	43
First 39 weeks of year	22,422	24,418	106,475	51,909	698,966	672,284	4,545	1,804

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934
New England States:								
Maine	14	1	3	20	0	0	2	5
New Hampshire	4	0	1	1	0	0	0	0
Vermont	7	0	6	7	0	0	0	2
Massachusetts	88	2	59	88	0	0	3	3
Rhode Island	32	0	10	4	0	0	0	2
Connecticut	33	1	13	9	0	0	5	1
Middle Atlantic States:								
New York	150	12	173	113	0	0	26	26
New Jersey	51	4	35	38	0	0	12	6
Pennsylvania	15	4	188	187	0	0	34	67
East North Central States:								
Ohio	7	23	157	294	0	0	35	50
Indiana	1	7	86	62	0	0	14	9
Illinois	14	12	217	245	1	1	33	49
Michigan	30	14	51	92	0	0	20	24
Wisconsin	4	10	145	141	1	1	5	8
West North Central States:								
Minnesota	2	4	83	55	0	4	6	4
Iowa [2]	3	0	41	33	0	0	7	20
Missouri	2	1	59	43	0	0	10	37
North Dakota	0	0	12	11	4	0	1	2
South Dakota	0	2	10	12	1	1	0	1
Nebraska	1	0	21	13	4	0	0	0
Kansas	4	3	27	40	8	1	10	4
South Atlantic States:								
Delaware	0	0	9	1	0	0	2	4
Maryland [3, 4]	13	1	28	36	0	0	17	18
District of Columbia	7	1	14	17	0	0	2	0
Virginia	10	1	34	51	0	0	20	21
West Virginia	0	5	81	79	0	0	25	34
North Carolina [4]	15	0	66	91	0	0	24	25
South Carolina [4]	1	0	10	6	0	0	11	21
Georgia [4]	0	0	23	8	0	0	26	19
Florida [4]	1	0	4	5	0	0	1	12

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Sept. 28, 1935, and Sept. 29, 1934—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934	Week ended Sept. 28, 1935	Week ended Sept. 29, 1934
East South Central States:								
Kentucky	19	7	76	49	0	1	62	43
Tennessee	3	3	55	72	0	0	33	28
Alabama [4]	1	1	14	31	0	0	20	22
Mississippi [3]	0	0	20	15	0	0	7	7
West South Central States:								
Arkansas	4	0	18	3	1	0	13	9
Louisiana	1	0	5	9	0	0	27	9
Oklahoma [5]	0	1	8	15	0	0	18	17
Texas [4]	1	7	31	24	1	7	47	41
Mountain States:								
Montana	0	24	31	6	0	0	2	7
Idaho	0	4	27	3	0	0	10	7
Wyoming	0	0	11	8	5	1	0	5
Colorado	1	0	24	40	5	4	4	4
New Mexico	0	3	6	13	0	0	20	19
Arizona	1	2	8	6	0	0	0	1
Utah [3]	0	1	28	4	0	0	3	0
Nevada								
Pacific States:								
Washington	0	25	35	20	2	12	5	7
Oregon	3	10	37	32	0	0	4	6
California	26	45	110	120	0	0	24	9
Total	569	241	2,210	2,272	33	33	650	715
First 39 weeks of year	8,508	5,807	189,034	156,911	5,484	3,888	13,452	15,912

[1] New York City only.
[2] Rocky Mountain spotted fever, week ended Sept. 28, 1935, Iowa, 1 case.
[3] Week ended earlier than Saturday.
[4] Typhus fever, week ended Sept. 28, 1935, 36 cases, as follows: Maryland, 2; North Carolina, 1; South Carolina, 2; Georgia, 14; Florida, 2; Alabama, 8; Texas, 7.
[5] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
July 1935										
Colorado	9	39			219		3	139	2	10
New Hampshire		2					1	16	0	3
Puerto Rico		71	18	895	20	2	1		0	124
August 1935										
Mississippi	3	62	565	12,661	36	421	3	32	2	47
Montana		7	16		39		0	9	2	24
Nevada					7		0	10	0	3
New Hampshire							36	7	0	1
New York	54	59		15	911		1,193	372	0	126
Rhode Island	1	5			248		125	14	0	4
South Carolina		188	232	2,410	16	189	9	12	1	117
Virginia	12	97	458	76	61	18	278	77	0	188

Summary of monthly reports from states—Continued

July 1935

	Cases
Chickenpox:	
Colorado	51
Puerto Rico	63
Dysentery:	
Puerto Rico	19
Epidemic encephalitis:	
Colorado	2
Impetigo contagiosa:	
Colorado	1
Leprosy:	
Puerto Rico	1
Mumps:	
Colorado	88
Puerto Rico	40
Ophthalmia neonatorum:	
Puerto Rico	5
Paratyphoid fever:	
Colorado	1
Puerperal septicemia:	
Puerto Rico	8
Tetanus:	
Puerto Rico	16
Tetanus, infantile:	
Puerto Rico	8
Whooping cough:	
Colorado	44
Puerto Rico	212

August 1935

	Cases
Chickenpox:	
Mississippi	136
Montana	27
Nevada	2
New York	203
Rhode Island	21
South Carolina	12
Virginia	10
Dengue:	
Mississippi	13
South Carolina	3
Devil's grippe (Dabney's grippe):	
Virginia	11
Diarrhea:	
South Carolina	523
Dysentery:	
Mississippi (amoebic)	52
Mississippi (bacillary)	577
New York (amoebic)	8
New York (bacillary)	156
Rhode Island (bacillary)	1
Virginia (bacillary, and diarrhea)	837
Epidemic encephalitis:	
Montana	1
New York	11
South Carolina	3
German measles:	
Montana	12
New York	194
Hookworm disease:	
Mississippi	358
South Carolina	96
Mumps:	
Mississippi	217
Montana	11
Rhode Island	31
South Carolina	65
Virginia	78
Ophthalmia neonatorum:	
New York	8
South Carolina	5
Paratyphoid fever:	
New York	18
South Carolina	7
Virginia	7
Puerperal septicemia:	
Mississippi	23
Rabies in animals:	
Mississippi	4
New York [1]	2
South Carolina	33
Rocky Mountain spotted fever:	
Montana	2
Virginia	10
Scabies:	
Montana	1
Septic sore throat:	
Montana	7
New York	23
Rhode Island	6
Virginia	4
Tetanus:	
New York	5
Trachoma:	
Virginia	2
Trichinosis:	
New York	7
Virginia	1
Tularaemia:	
Montana	2
Nevada	5
Virginia	8
Typhus fever: [2]	
South Carolina	2
Virginia	2
Undulant fever:	
Mississippi	2
New York	34
Rhode Island	1
Virginia	3
Vincent's infection:	
Montana	2
New York [1]	64
Whooping cough:	
Mississippi	474
Montana	185
Nevada	1
New York	1,541
Rhode Island	48
South Carolina	124
Virginia	155

[1] Exclusive of New York City.
[2] The report of 1 case of typhus fever in Wyoming in July, PUBLIC HEALTH REPORTS of Aug. 30, 1935, p. 1187, was an error, no case of typhus fever having been reported to the State Department of Health during the year.

WEEKLY REPORT FROM CITIES

City reports for week ended Sept. 21, 1935

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

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	------	0	0	0	0	0	0	1	4	29
New Hampshire:											
Concord	0	------	0	0	0	0	0	0	0	0	6
Nashua	0	------	------	0	------	0	0	------	0	0	------
Vermont:											
Barre	0	------	0	0	0	0	0	0	0	0	0
Burlington	0	------	0	0	0	0	0	0	0	0	19
Rutland	0	------	0	0	0	2	0	0	0	0	7
Massachusetts:											
Boston	0	------	1	1	13	9	0	5	0	12	191
Fall River	0	------	0	0	0	2	0	0	0	5	24
Springfield	0	------	0	0	1	1	0	0	0	2	22
Worcester	0	------	0	0	1	8	0	1	0	0	56
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	16
Providence	0	------	0	2	3	5	0	1	1	30	45
Connecticut											
Bridgeport	0	------	0	0	1	3	0	1	1	0	34
Hartford	0	------	0	1	1	3	0	1	0	13	38
New Haven	0	------	1	0	2	3	0	0	0	4	36

City reports for week ended Sept. 21, 1935—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								
New York:											
Buffalo	0	------	0	1	12	19	0	7	9	10	137
New York	23	8	1	10	51	32	0	57	19	121	1,216
Rochester	0	------	0	1	2	1	0	0	0	1	53
Syracuse	0	------	0	2	1	2	0	1	0	17	47
New Jersey:											
Camden	3	------	0	0	0	1	0	1	2	2	16
Newark	0	1	0	1	3	2	0	5	0	23	62
Trenton	0	------	0	0	0	2	0	1	1	0	27
Pennsylvania:											
Philadelphia	4	4	1	4	13	35	0	17	4	74	388
Pittsburgh	0	2	1	0	19	23	0	8	3	17	178
Reading	0	------	0	1	2	1	0	0	0	0	27
Scranton	1	------	------	1	------	2	0	------	0	0	------
Ohio:											
Cincinnati	8	------	0	0	10	7	0	13	2	10	159
Cleveland	3	6	0	1	14	5	0	6	4	54	191
Columbus	5	1	1	0	1	16	0	2	2	1	101
Toledo	1	------	0	2	3	3	0	1	2	9	52
Indiana:											
Anderson	0	------	0	1	0	1	0	0	1	2	10
Fort Wayne	12	------	0	0	2	3	0	0	0	0	22
Indianapolis	3	------	0	5	16	10	0	2	2	22	102
Muncie	0	------	0	0	0	1	0	0	0	0	5
South Bend	1	------	0	1	0	2	0	0	0	0	11
Terre Haute	1	------	0	0	0	0	0	0	0	0	12
Illinois:											
Alton	4	------	0	0	1	2	0	0	0	0	6
Chicago	16	3	4	15	34	53	0	26	4	133	644
Elgin	0	------	0	0	2	3	0	1	0	0	17
Moline	0	------	0	0	0	0	0	0	0	0	5
Springfield	0	------	0	0	5	1	0	0	0	5	------
Michigan:											
Detroit	3	5	0	4	20	12	0	19	2	138	228
Flint	1	------	0	0	0	4	0	0	0	3	27
Grand Rapids	0	------	0	1	0	9	0	2	2	7	49
Wisconsin:											
Kenosha	0	------	0	0	0	5	0	0	0	4	5
Milwaukee	0	1	1	5	3	19	0	4	1	64	100
Racine	0	------	0	0	0	13	0	0	0	7	5
Superior	0	------	0	0	0	0	0	1	0	0	5
Minnesota:											
Duluth	0	------	0	0	1	3	0	1	0	0	20
Minneapolis	5	------	0	2	4	26	0	0	4	5	89
St. Paul	0	------	0	0	7	9	0	3	0	9	54
Iowa:											
Davenport	0	------	------	0	------	1	0	------	0	0	------
Des Moines	0	------	------	0	------	2	0	------	0	0	35
Sioux City	0	------	------	0	------	6	0	1	0	5	------
Waterloo	3	------	------	0	------	2	0	------	0	1	------
Missouri:											
Kansas City	0	------	2	0	6	4	0	4	0	2	85
St. Joseph	5	------	0	0	4	2	0	1	0	0	33
St. Louis	5	------	0	0	8	20	0	0	4	9	194
North Dakota:											
Fargo	0	------	0	0	0	3	0	0	0	3	6
Grand Forks	0	------	------	2	------	0	0	------	0	2	------
Minot	0	------	0	1	0	1	0	0	0	0	9
South Dakota:											
Aberdeen	0	------	0	0	------	0	0	------	0	0	------
Nebraska:											
Omaha	2	------	0	0	4	4	0	1	0	1	51
Kansas:											
Lawrence	0	------	0	1	1	0	0	1	0	0	7
Topeka	0	------	0	0	0	0	0	0	0	7	4
Wichita	0	------	0	1	4	0	0	0	0	0	22
Delaware:											
Wilmington	2	------	0	0	2	0	0	0	0	1	25
Maryland:											
Baltimore	0	2	0	1	7	5	0	16	4	11	176
Cumberland	0	------	0	0	0	0	0	0	1	0	7
Frederick	0	------	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	10	------	0	0	8	12	0	12	1	3	138

City reports for week ended Sept. 21, 1935—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								
Virginia:											
Lynchburg	1	------	0	0	1	0	0	1	2	14	11
Norfolk	0	------	0	0	1	1	0	2	0	1	25
Richmond	0	------	0	0	2	1	0	4	0	0	53
Roanoke	5	------	0	0	0	2	0	0	0	0	9
West Virginia:											
Charleston	9	------	0	0	1	1	0	0	0	0	13
Huntington	3	------	------	0	------	11	0	------	0	0	------
Wheeling	0	------	0	1	4	3	0	1	1	1	21
North Carolina:											
Gastonia	1	------	0	0	1	1	0	0	1	0	3
Raleigh	0	------	0	0	1	0	0	2	0	0	12
Wilmington	0	------	0	1	0	0	0	0	0	1	9
Winston-Salem	2	------	0	0	2	1	0	0	4	1	9
South Carolina:											
Charleston	0	4	0	0	2	0	0	0	0	0	14
Columbia	0	------	0	0	0	0	0	0	0	0	13
Florence	0	------	0	0	1	0	0	0	0	0	11
Greenville	0	------	0	0	0	2	0	1	0	0	6
Georgia:											
Atlanta	8	3	1	0	3	3	0	2	0	8	71
Brunswick	0	------	0	0	1	0	0	0	0	2	3
Savannah	0	------	0	0	0	0	0	3	0	0	32
Florida:											
Miami	1	1	0	0	0	1	0	2	0	0	24
Tampa	1	------	0	3	1	1	0	0	2	0	21
Kentucky:											
Ashland	5	------	------	0	------	0	0	------	0	2	------
Covington	0	------	0	0	0	2	0	0	0	2	12
Lexington	6	------	0	0	2	0	0	2	0	0	21
Louisville	5	------	0	0	7	8	0	1	1	3	75
Tennessee:											
Knoxville	2	------	0	0	1	1	0	1	2	0	27
Memphis	4	------	0	0	0	9	0	4	2	13	69
Nashville	0	------	0	0	1	4	0	0	1	0	47
Alabama:											
Birmingham	2	1	0	1	1	6	0	6	0	0	62
Mobile	7	------	0	0	0	0	0	1	1	0	16
Montgomery	2	------	------	0	------	0	0	------	0	1	------
Arkansas:											
Fort Smith	0	------	------	0	------	2	0	------	0	1	------
Little Rock	4	------	0	0	2	0	0	2	1	0	------
Louisiana:											
Lake Charles	0	------	0	0	2	1	0	0	1	0	8
New Orleans	17	------	0	4	7	0	0	18	1	3	147
Shreveport	0	------	0	0	1	0	0	1	1	0	31
Oklahoma:											
Tulsa	3	------	------	0	0	2	0	0	2	2	------
Texas:											
Dallas	7	------	0	0	2	8	0	1	0	0	55
Fort Worth	1	------	0	1	2	2	0	2	0	3	30
Galveston	0	------	0	0	0	0	0	0	0	0	14
Houston	9	------	0	0	1	2	0	4	1	0	62
San Antonio	0	------	1	0	4	0	0	5	0	0	41
Montana:											
Billings	0	------	0	0	2	1	0	0	1	2	6
Great Falls	0	------	0	0	0	0	0	0	0	9	10
Helena	0	------	0	0	1	0	0	0	0	3	4
Missoula	0	------	0	0	1	7	0	0	0	0	3
Idaho:											
Boise	0	------	0	0	0	0	0	0	0	0	4
Colorado:											
Colorado Springs	0	------	0	0	0	0	0	3	0	2	10
Denver	5	------	0	1	5	11	0	3	1	2	88
Pueblo	0	------	0	0	3	4	0	0	0	2	11
New Mexico:											
Albuquerque	0	------	0	0	0	0	0	5	1	4	13
Utah:											
Salt Lake City	0	------	0	0	2	16	0	1	0	11	26
Nevada:											
Reno	0	------	0	1	0	0	0	0	0	0	1

City reports for week ended Sept. 21, 1935—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								
Washington:											
Seattle	0			0	2	0	0	2	1	2	80
Spokane	0			3		2	0	3	0	3	34
Tacoma	0		0	0	0	3	0	1	0	0	23
Oregon:											
Portland	0		0	2	3	9	0	0	0	0	59
Salem	0	1		0		4	0		0	1	
California:											
Los Angeles	8	8	2	6	9	21	0	11	6	16	276
Sacramento	4		0	5	1	4	0	2	3	1	24
San Francisco	0	2	0	22	5	20	0	11	0	13	167

State and city	Meningococcus Meningitis		Poliomyelitis cases	State and city	Meningococcus Meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Maine:				Wisconsin:			
Portland	0	0	3	Milwaukee	0	0	1
Vermont:				Racine	0	0	1
Burlington	0	0	1	Minnesota:			
Massachusetts:				Minneapolis	0	0	2
Boston	1	0	68	St. Paul	0	0	1
Fall River	0	0	7	Missouri:			
Springfield	0	0	3	St. Louis	1	0	0
Worcester	0	0	3	Nebraska:			
Rhode Island:				Omaha	0	0	1
Pawtucket	0	0	3	Maryland:			
Providence	0	0	14	Baltimore	3	0	5
Connecticut:				District of Columbia:			
Bridgeport	0	0	4	Washington	2	0	7
Hartford	0	0	3	Virginia:			
New Haven	0	0	2	Richmond	0	0	3
New York:				Kentucky:			
New York	17	3	142	Lexington	0	0	1
New Jersey:				Louisville	1	2	5
Newark	0	0	1	Tennessee:			
Pennsylvania:				Memphis	1	0	0
Philadelphia	3	2	7	Alabama:			
Ohio:				Birmingham	2	1	0
Cincinnati	2	2	0	Louisiana:			
Columbus	1	1	2	New Orleans	1	0	2
Indiana:				Colorado:			
Muncie	0	0	1	Colorado Springs	0	0	3
Illinois:				California:			
Chicago	1	0	1	Los Angeles	0	0	11
Springfield	0	0	1	Sacramento	0	0	1
Michigan:				San Francisco	0	1	0
Detroit	1	1	12				
Flint	0	1	1				

Dengue.—Cases: Miami, 1.

Epidemic encephalitis.—Cases: New York, 1; Philadelphia, 1; Kansas City, Mo., 3; St. Joseph, 1. Deaths: Louisville, 2.

Pellagra.—Cases: Savannah, 3; Miami, 1; Memphis, 1; New Orleans, 2, Dallas, 1.

Typhus fever.—Cases: New York, 2; Baltimore, 1; Charleston, S. C., 1; Mobile, 1.

FOREIGN AND INSULAR

CANADA

Vital statistics—First quarter 1935—Comparative.—The Bureau of Statistics of the Dominion of Canada has published the following preliminary statistics for the first quarter of 1935. The rates are computed on an annual basis. There were 19.5 live births per 1,000 population during the first quarter of 1935 and 20.6 per 1,000 population in the same quarter of 1934. The death rate was 10.5 per 1,000 population for the first quarter of 1935 and 10 per 1,000 population for the first quarter of 1934. The infant mortality rate for the first quarter of 1935 was 83 per 1,000 live births and 73 in the same period of 1934. The maternal death rate was 5.8 per 1,000 live births for the first quarter of 1935, and 5.9 for the same quarter of 1934.

The accompanying tables give the numbers of births, deaths, and marriages by Provinces for the first quarter of 1935, and deaths from certain causes in Canada for the first quarter of 1935, and the corresponding quarter of 1934, and by Provinces for the first quarter of 1935:

Number of births, deaths, and marriages, first quarter 1935

Province	Live births	Deaths (exclusive of still-births)	Deaths under 1 year of age	Maternal deaths	Marriages
Canada [1]	52,822	28,396	4,407	309	11,695
Prince Edward Island	471	226	33	2	73
Nova Scotia	2,770	1,770	236	21	658
New Brunswick	2,511	1,283	227	11	426
Quebec	18,077	8,741	1,841	111	2,570
Ontario	15,129	9,795	962	94	4,256
Manitoba	3,202	1,512	264	14	833
Saskatchewan	4,813	1,667	381	26	898
Alberta	3,465	1,517	316	13	1,091
British Columbia	2,384	1,885	147	17	890

[1] Exclusive of Yukon and the Northwest Territories.

Cause of death	Canada [1] (first quarter)		Province, first quarter, 1935								
	1934	1935	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Automobile accidents	107	172	------	4	2	33	101	9	2	10	11
Cancer	2,609	2,667	14	156	103	696	996	181	154	147	220
Diarrhea and enteritis	504	446	2	16	5	280	63	22	21	25	12
Diphtheria	71	55	------	1	3	25	6	8	5	4	3
Diseases of arteries	2,038	2,074	11	116	88	452	1,015	96	80	85	131
Diseases of the heart	4,506	4,453	43	214	160	983	2,043	225	197	230	358
Homicide	34	28	------	------	------	5	11	1	3	6	2
Influenza	804	1,629	5	130	48	653	524	39	78	85	67
Measles	27	172	------	15	10	90	13	22	17	4	1
Nephritis	1,521	1,597	22	90	41	741	459	49	71	45	79
Pneumonia	2,291	2,516	16	169	124	691	817	175	195	194	135
Poliomyelitis	7	13	------	------	------	4	6	1	1	1	------
Puerperal causes	323	309	2	21	11	111	94	14	26	13	17
Scarlet fever	55	91	2	1	3	48	25	1	5	5	1
Smallpox	2	3	------	------	------	2	------	------	1	------	------
Suicide	195	232	1	9	1	33	93	18	24	20	33
Tuberculosis	1,637	1,676	10	135	89	723	307	108	77	70	157
Typhoid fever and paratyphoid fever	63	46	------	4	2	31	3	3	------	2	1
Other violent deaths	933	1,017	4	59	40	220	391	60	63	61	119

[1] Exclusive of Yukon and the Northwest Territories.

GREAT BRITAIN

England and Wales—Infectious diseases—13 weeks ended June 29, 1935.—During the 13 weeks ended June 29, 1935, cases of certain infectious diseases were reported in England and Wales as follows:

Disease	Cases	Disease	Cases
Diphtheria	12,915	Puerperal pyrexia	1,522
Ophthalmia neonatorum	1,211	Scarlet fever	25,952
Pneumonia	14,004	Smallpox	1
Puerperal fever	648	Typhoid fever	320

England and Wales—Vital statistics—Second quarter ended June 30, 1935.—During the quarter ended June 30, 1935, 155,962 live births and 121,920 deaths were registered in England and Wales. The following statistics are taken from the Quarterly Return of Births, Deaths, and Marriages, issued by the Registrar General of England and Wales. The figures are provisional.

Birth and death rates in England and Wales, quarter ended June 30, 1935

Annual rates per 1,000 population:	
Live births	15.50
Stillbirths	.65
Deaths, all causes	12.10
Deaths under 1 year of age	[1] 56
Deaths from—	
Diarrhea and enteritis (under 2 years of age)	[1] 4.80
Annual rates per 1,000 population—Contd.	
Deaths from—Continued.	
Diphtheria	0.08
Influenza	.28
Measles	.04
Scarlet fever	.02
Violence	.51
Whooping cough	.05

[1] Per 1,000 live births.

IRISH FREE STATE

Vital statistics—Second quarter, 1935.—The following statistics for the Irish Free State for the quarter ended June 30, 1935, are taken from the Quarterly Return of Marriages, Births, and Deaths issued by the Registrar General, and are provisional:

	Number	Rates per 1,000 population		Number	Rates per 1,000 population
Population	3,033,000		Deaths from—Continued.		
Marriages	3,063	4.00	Influenza	341	0.45
Births	14,913	19.70	Measles	111	
Total deaths	10,933	14.40	Puerperal sepsis	22	[2] 1.48
Deaths under 1 year of age	993	[1]	Scarlet fever	14	
Deaths from—			Tuberculosis (all forms)	1,085	1.43
Cancer	797	1.05	Typhoid fever	21	
Diarrhea and enteritis (under 2 years of age)	111		Typhus fever	2	
Diphtheria	102		Whooping cough	35	

[1] Deaths under 1 year per 1,000 births, 67.
[2] Per 1,000 births.

MEXICO

Anthrax.—A report dated September 7, 1935, stated that anthrax was prevalent among cattle in the State of Durango, in the area north of the city of Durango. A later report, dated September 18, stated that anthrax had appeared in southern San Luis Potosi and northern Guanajuato.

Smallpox.—During the month of June 1935, smallpox was reported in Mexico as follows: Aguascalientes State, Aguascalientes, 3 cases, 3 deaths; Campeche State, 2 cases; Chihuahua State, 4 cases, 1 death, Chihuahua, 3 cases; Guanajuato State, Leon, 13 cases, 1 death; Hidalgo State, 1 case, 1 death; Jalisco State, 5 cases, 1 death; Mexico State, 1 case, 1 death; Mexico, D. F., 140 cases, 42 deaths, Mexico City, 118 cases, 38 deaths; Morelos State, 1 case; Nuevo Leon State, 12 cases, 5 deaths; Guadalajara, 5 cases, 5 deaths; Oaxaca State, 2 cases; Pueblo State, Pueblo, 6 cases; Queretaro State, 5 cases, 1 death; San Luis Potosi State, San Luis Potosi, 5 cases, 1 death.

During the month of July 1935, smallpox was reported in Mexico as follows: Aguascalientes State, Aguascalientes, 3 cases; Campeche State, 1 case; Guanajuato State, 4 cases, 2 deaths; Leon, 2 cases; Jalisco State, 10 cases, 1 death; Guadalajara, 8 cases, 1 death; Lower California, 3 cases; Mexico State, 1 case, 1 death; Mexico, D. F., 54 cases, 25 deaths; Mexico City, 41 cases, 19 deaths; Pueblo State, Pueblo, 2 cases; San Luis Potosi State, 5 cases, 2 deaths; San Luis Potosi, 3 cases, 2 deaths.

Typhus fever.—During the month of June 1935, typhus fever was reported in Mexico as follows: Aguascalientes State, 1 case, 1 death; Guanajuato State, 4 cases, Leon, 1 case; Mexico, D. F., 98 cases, 45 deaths; Mexico City, 91 cases, 45 deaths; Michoacan State, 1 death; Oaxaca State, 1 case; Pueblo State, Pueblo, 4 cases; Queretaro State, 1 case; San Luis Potosi State, San Luis Potosi, 5 cases; Vera Cruz State, 1 case.

During the month of July 1935, typhus fever was reported in Mexico as follows: Durango State, 1 case; Guanajuato State, 9 cases, 1 death; Leon, 5 cases, 1 death; Hidalgo State, 6 cases; Jalisco State, Guadalajara, 1 case; Mexico State, 2 cases; Mexico, D. F., 178 cases, 83 deaths; Mexico City, 170 cases, 82 deaths; Oaxaca State, 5 cases; Pueblo State, 7 cases, 3 deaths, Pueblo, 5 cases, 3 deaths; San Luis Potosi State, 11 deaths, San Luis Potosi, 1 case.

YUGOSLAVIA

Communicable diseases—August 1935.—During the month of August 1935, certain communicable diseases were reported in Yugoslavia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	148	14	Poliomyelitis	14	1
Cerebrospinal meningitis	5	1	Scarlet fever	266	2
Diphtheria and croup	468	46	Sepsis	11	4
Dysentery	612	63	Tetanus	60	25
Erysipelas	168	13	Typhoid fever	474	33
Measles	14	1	Typhus fever	31	3
Paratyphoid fever	41	1			

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

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for September 27, 1935, pages 1354-1368. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued October 25, 1935, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Plague

Bolivia—Santa Cruz Department—Vallegrande.—During the month of August 1935, four suspected cases of plague were reported at Vallegrande, Santa Cruz Department, Bolivia.

Hawaii Territory—Maui Island—Makawao District—Kahului.—On September 27, 1935, one rat was proved positive for plague about 10 miles from the port of Kahului, Makawao District, Maui Island, Hawaii Territory.

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