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PHYSICAL IMPAIRMENTS AND OCCUPATIONAL CLASS¹

DIFFERENTIAL RATES BASED UPON MEDICAL EXAMINATIONS OF 100,924 NATIVE-BORN, ADULT WHITE INSURED MALES

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Although the association of economic or social status and health has been given detailed consideration in the past, the studies have related primarily to records of sickness or of death. In fact, so far as known to the writers, no information is available in the literature as to whether a corresponding association would be found in the examinations of the physical condition of persons in various economic or broad occupational groups. In the belief that some light could be thrown upon this important question by the large mass of records of medical examinations of insured persons which has been accumulated by the Life Extension Institute in the past eight years, an analysis of over 100,000 of these records was attempted.

For a description of these records and a discussion of their limitations and value as medicostatistical data the reader is referred to the two preceding papers of this series (1) (2), especially the first paper. It is perhaps sufficient to point out here that the material included in this study was taken from the first (as differentiated from later) medical examinations of 100,924 native white² males made for policyholders in more than 40 life-insurance companies by more than 9,000 physicians. These examinations should not be confused with regular insurance medical examinations, made to determine whether a person is eligible for insurance; the records here used were those of health examinations made for policyholders as a part of the welfare service of the insurance companies. It should be pointed out also that the examinations naturally divide themselves into two kinds—

¹ Studies in the Diseases of Adult Life No. 4, from the Division of Research, Milbank Memorial Fund. This phase of the studies was carried out in cooperation with the Office of Industrial Hygiene, United States Public Health Service. The data were made available by the medical department of the Life Extension Institute.

² It is probable that a small number of foreign born were included, since the examination record in some instances failed to specify that the persons examined were native born.

those made in the "head" offices (chiefly in New York City and some in Chicago and Boston) and those made elsewhere (in the "field"). Since the former were conducted under more completely supervised conditions, it seemed best, in general, to keep the data for the two separate. Eighty per cent were classified as "field." An average rate was obtained for the combined data by taking the mean of the "head" and "field" rates, so as not to give excessive weight to the "field" data.

CLASSIFICATION INTO BROAD OCCUPATIONAL GROUPS

Differential impairment rates according to social or occupational class for this population of adult males are made possible by reason of the fact that on the health examination record of the Life Extension Institute an entry is made of the "occupation" of the person examined. These entries were not always made with precision or according to any standard occupational classification, but they are sufficiently definite to indicate the broad occupational or social group into which an individual could be classified. In fact, the statistical code used by the Institute contained 128 occupational designations, some of them quite definite and others of necessity somewhat indefinite. For the purpose of this paper a broad classification of these designations was made, as follows: (A) Agricultural; (B) professional; (C) executives, merchants, builders, etc; (D) salesmen; (E) clerks; (F) skilled trade; and (G) miscellaneous.

In some cases the classification of a specific occupation in these broad groups was quite difficult, but it will be seen from Table 1 that the number of persons in such occupations was relatively small. The table gives the classification of the specific occupations (as originally coded) into the broad groups, with the number of persons in each occupation and each group.

TABLE 1.—*Distribution of males according to occupation*

A. Agricultural workers.....	4,438	C. Executives, merchants, builders, etc....	15,755
B. Professional.....	14,490	Merchants and jobbers.....	8,184
Accountants, auditors.....	2,703	Contractors.....	2,066
Engineers, civil.....	2,272	Manufacturers.....	1,796
Teachers.....	2,065	Brokers, bankers.....	1,432
Lawyers.....	1,515	Officers of corporations.....	1,089
Clergymen, missionaries.....	1,224	Jewelers.....	668
Dentists.....	827	Hotel, restaurant keepers.....	430
Architects.....	782	Others.....	90
Druggists.....	666	D. Salesmen.....	21,326
Physicians, trained nurses.....	404	Salesmen.....	9,850
Artists.....	358	Managers, plant, store.....	7,753
Authors.....	328	Agents, etc.....	3,190
Chemists.....	320	Buyers.....	533
Musicians.....	315	E. Clerks.....	13,642
Government officials.....	237	Bookkeepers, clerks.....	11,814
Undertakers.....	192	Post office employees.....	1,358
Optometrists.....	168	Cashiers, tellers.....	470
Others.....	133		

TABLE 1.—*Distribution of males according to occupation—Continued*

F. Trade, skilled.....	16,714	F. Trade, skilled—Continued.	
Machinists.....	3,409	Woodworkers.....	462
Carpenters.....	1,985	Metal workers.....	407
Tailors.....	1,577	Iron workers.....	390
Printers.....	1,256	Bricklayers.....	304
Electricians.....	1,235	Domestic help.....	283
Plumbers.....	998	Blacksmiths.....	203
Chauffeurs.....	836	Tinsmiths.....	144
Barbers.....	834	Plasterers.....	108
Painters.....	829	Others.....	235
Butchers.....	712	G. Miscellaneous.....	14,560
Cutters.....	507	Total.....	100,924

DIFFERENCES IN THE AGE DISTRIBUTIONS OF THE OCCUPATIONAL CLASSES

Before considering the rates of impairment in the different occupational groups it is desirable to show how far the age distributions of the seven groups are comparable. In the next two tables, therefore, are presented the percentage distribution of the persons considered by age and the actual number in each age group.

TABLE 2.—*Percentage distribution according to age within broad occupational classes of males included in this study*

Age group	A	B	C	D	E	F	
	Agricultural workers	Professional	Executives, merchants, builders, etc.	Managers (plant, store), salesmen, etc.	Clerks	Skilled trade	
AT HEAD OFFICE							
20-24.....	-----	8.1	3.0	9.9	19.8	7.1	
25-29.....	-----	20.7	10.4	19.1	23.6	16.7	
30-34.....	-----	22.0	18.0	20.8	18.5	20.6	
35-39.....	-----	19.1	20.8	18.8	13.5	20.1	
40-44.....	-----	11.6	17.3	13.3	10.1	14.1	
45-49.....	-----	8.5	13.0	8.4	6.8	10.6	
50-54.....	-----	5.7	8.5	5.1	3.4	5.6	
55-59.....	-----	2.5	4.8	2.7	2.0	3.1	
60-64.....	-----	.7	2.3	1.3	1.0	1.4	
65-69.....	-----	.7	1.3	.6	.4	.5	
70+.....	-----	.4	.5	.1	.1	.3	
IN THE FIELD							
20-24.....	-----	5.7	5.0	3.1	5.1	15.2	6.7
25-29.....	-----	10.3	15.6	9.3	14.2	22.1	15.0
30-34.....	-----	17.0	20.8	15.6	19.1	20.1	19.9
35-39.....	-----	17.9	19.1	19.3	20.0	15.1	22.1
40-44.....	-----	15.2	14.9	17.1	15.8	11.0	14.9
45-49.....	-----	12.8	10.2	13.7	11.2	7.2	9.6
50-54.....	-----	9.0	7.3	9.9	7.3	4.7	5.8
55-59.....	-----	5.9	3.8	6.3	4.1	2.5	3.2
60-64.....	-----	3.3	1.8	3.5	2.1	1.4	1.8
65-69.....	-----	1.9	1.0	1.7	.8	.6	.8
70+.....	-----	.9	.4	.6	.4	.2	.3

TABLE 3.—Number of males in each age group in broad occupational classes

Age group	A	B	C	D	E	F
	Agricultural workers	Professional	Executives, merchants, builders, etc.	Managers (plant, store), salesmen, etc.	Clerks	Skilled trade
AT HEAD OFFICE						
20-24	1	164	73	347	387	187
25-29	6	420	249	673	461	437
30-34	9	445	432	732	362	541
35-39	10	387	500	509	263	537
40-44	10	234	416	466	197	370
45-49	13	172	313	297	133	278
50-54	7	116	205	178	67	148
55-59	4	51	116	96	57	80
60-64	6	15	56	44	19	36
65-69	0	14	31	20	7	12
70+	1	8	12	5	2	8
Total	67	2,026	2,403	2,518	1,955	2,624
IN THE FIELD						
20-24	248	621	397	964	1,777	958
25-29	451	1,948	1,188	2,673	2,584	2,183
30-34	746	2,594	1,992	3,584	2,353	2,849
35-39	782	2,380	2,460	3,754	1,768	3,164
40-44	667	1,852	2,187	2,973	1,282	2,142
45-49	562	1,275	1,751	2,096	844	1,377
50-54	392	907	1,282	1,371	547	826
55-59	260	476	500	766	294	456
60-64	144	222	452	394	164	260
65-69	85	124	213	145	65	116
70+	40	65	77	71	21	39
Total	4,377	12,454	12,779	18,791	11,699	14,340

The only striking differences in the age distributions are found in the three business groups (C, D, and E). Of the clerks, about 40 per cent were under 30 years of age, and of the executives only about 13 per cent. On the other hand, about 8 per cent of the clerks were 50 years of age and over, about 13 per cent of the managers and salesmen, and about 20 per cent of the executives. Therefore impairment rates for all ages could not be employed for these three groups without an adjustment for age. The point is of no great consequence, since a study of the impairment curves of the three groups by age showed so few differences that a combination of groups C, D, and E into a single "business" group has been considered feasible for the purpose of this paper. No other differences in the table are great enough to be distinctive in any comparison. It should be noted, however, that the farmer group has a somewhat greater proportion of persons in the older ages, where the prevalence of most impairments is highest.

COMPARISON OF IMPAIRMENT RATES FOR OCCUPATIONAL GROUPS

It is fully realized that no very precise meaning can be attached to a comparison of impairment rates in these various occupational groups for the reason that a clear-cut economic and social differentia-

tion is not possible from the data at hand. However, in the light of the interesting differences found in British mortality data (3) according to social class, even rough differential rates of impairment among broad occupational groups are worth consideration.

The impairment rates in the four occupational groups may be conveniently presented under a series of headings—eyes and ears, teeth, nose and throat, respiratory, heart and pulse, blood vessels, stomach and abdominal, genito-urinary, brain and nervous, miscellaneous, and urinalysis. Under each section will be given a table of rates for each impairment in the group without regard to age (with the omission of a few conditions on account of insufficient numbers), then a table and graph by age for the more important impairments showing apparently significant differences, and finally such discussion of the findings as seems pertinent. The results in all cases are kept distinct for the data obtained at the "head" office and for that obtained in the "field," but in the tables for all ages a column will be included for the total data. This will be, as stated above, the average of the rates of prevalence found at the "head" office and in the "field," except in the case of the agricultural group where, of course, there are rates only for the "field." Owing to small numbers, some combinations of age groups at the beginning and end of life will be necessary.

EYES AND EARS

In addition to corrected and uncorrected defect of vision (less than normal in either eye according to either Snellen or Jaeger tests), the only other item for which numbers justified any comparison by occupational group was diseases of the external eye or eyelid. The prevalence rates for these three items are given in Table 4.

TABLE 4.—*Frequency of certain impairments of the eyes in the four broad occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Defective vision, corrected:					
Agricultural		21.4			938
Professional	34.9	39.2	37.0	707	4,888
Business	26.1	30.7	28.4	2,053	13,301
Skilled trade	18.1	19.5	18.8	475	2,798
Defective vision, uncorrected:					
Agricultural		15.1			659
Professional	28.2	17.3	22.7	571	2,154
Business	32.4	20.3	26.3	2,550	8,762
Skilled trade	39.6	23.8	31.7	1,040	3,408
Diseases of external eye or eyelids:					
Agricultural		.43			19
Professional	1.3	.56	.93	27	70
Business	1.3	.64	.97	101	277
Skilled trade	1.2	.77	.98	31	110

The relatively low rate in the farmer group for diseases of the external eye or eyelid, which are chiefly conjunctivitis and inflamed lids, is of interest. The differences in the case of defective vision are of sufficient importance to justify a comparison by age, which is made in Table 5 and Figure 1.

TABLE 5.—Age prevalence of defective vision in the four broad occupational groups

Corrected and uncorrected vision and occupational group	Age														
	In the field								At head office						
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+		
PER CENT															
Total:															
Agricultural.....	21.0	18.2	23.9	23.2	23.8	44.7	71.4	78.2	58.8	57.3	58.6	63.7	85.4		
Professional.....	40.9	47.7	49.3	53.7	53.8	68.5	79.8	85.4	47.8	49.1	55.8	62.2	81.7		
Business.....	36.4	38.9	42.1	44.1	48.9	64.4	78.7	83.2	41.5	47.4	58.4	63.0	81.7		
Skilled trade.....	39.0	33.5	37.8	34.9	43.1	59.6	73.0	77.6							
Defective vision, corrected:															
Agricultural.....	13.7	9.1	12.5	10.4	11.4	24.6	50.0	52.7							
Professional.....	24.6	30.2	32.6	37.7	36.4	48.2	61.3	68.6	32.0	29.7	35.9	31.2	46.8		
Business.....	19.2	20.6	22.3	24.7	28.8	40.9	55.1	59.8	19.3	21.4	24.2	27.0	39.7		
Skilled trade.....	12.0	12.8	18.3	13.2	17.8	39.0	43.8	47.5	10.4	13.9	18.4	18.9	29.9		
Defective vision, uncorrected:															
Agricultural.....	7.3	9.1	11.4	12.8	12.4	20.1	21.4	25.5							
Professional.....	16.3	17.5	16.7	16.0	17.4	18.3	18.5	19.8	23.8	27.6	22.7	22.5	38.6		
Business.....	17.2	18.3	19.3	19.4	20.1	23.5	23.6	23.4	27.5	27.7	31.6	35.2	42.0		
Skilled trade.....	17.0	20.7	22.5	21.7	25.3	30.6	29.7	30.1	31.1	33.5	40.0	44.1	51.8		
NUMBER															
Defective vision, corrected:															
Agricultural.....	34	41	93	81	76	138	196	279	187	132	139	73	176		
Professional.....	153	599	846	898	674	614	556	558	433	327	344	291	632		
Business.....	604	1,327	1,806	1,478	1,853	1,919	1,751	2,070	66	75	97	70	168		
Skilled trade.....	115	276	437	908	382	399	358	414							
Defective vision, uncorrected:															
Agricultural.....	18	41	85	100	83	113	84	135							
Professional.....	101	340	434	381	323	253	198	174	139	123	88	76	145		
Business.....	539	1,181	1,533	1,509	1,293	1,103	762	809	602	423	450	390	666		
Skilled trade.....	168	446	640	731	642	422	245	262	194	181	211	163	291		

In Figure 1 the curves for all occupations (including the miscellaneous group) are also given, the rates having been published in the second paper in this series (2). The following comments seem justified:

(1) Of most importance is the low rate of defective vision among farmers. In the younger ages, while the other groups have percentages approximating 40, the farmer group shows only 22 or 23. After 50 years of age the differences are not so marked.

(2) No group shows the physiological change (2) around 45 or 50 years of age so clearly as the farmer group, the per cent affected rising from 23 for the age group 40-44 to 71 for the age group 50-54.

(3) In the data for both "head" and "field," the professional group shows the highest percentage of persons with defective vision. The excess, however, is slight after age 40.

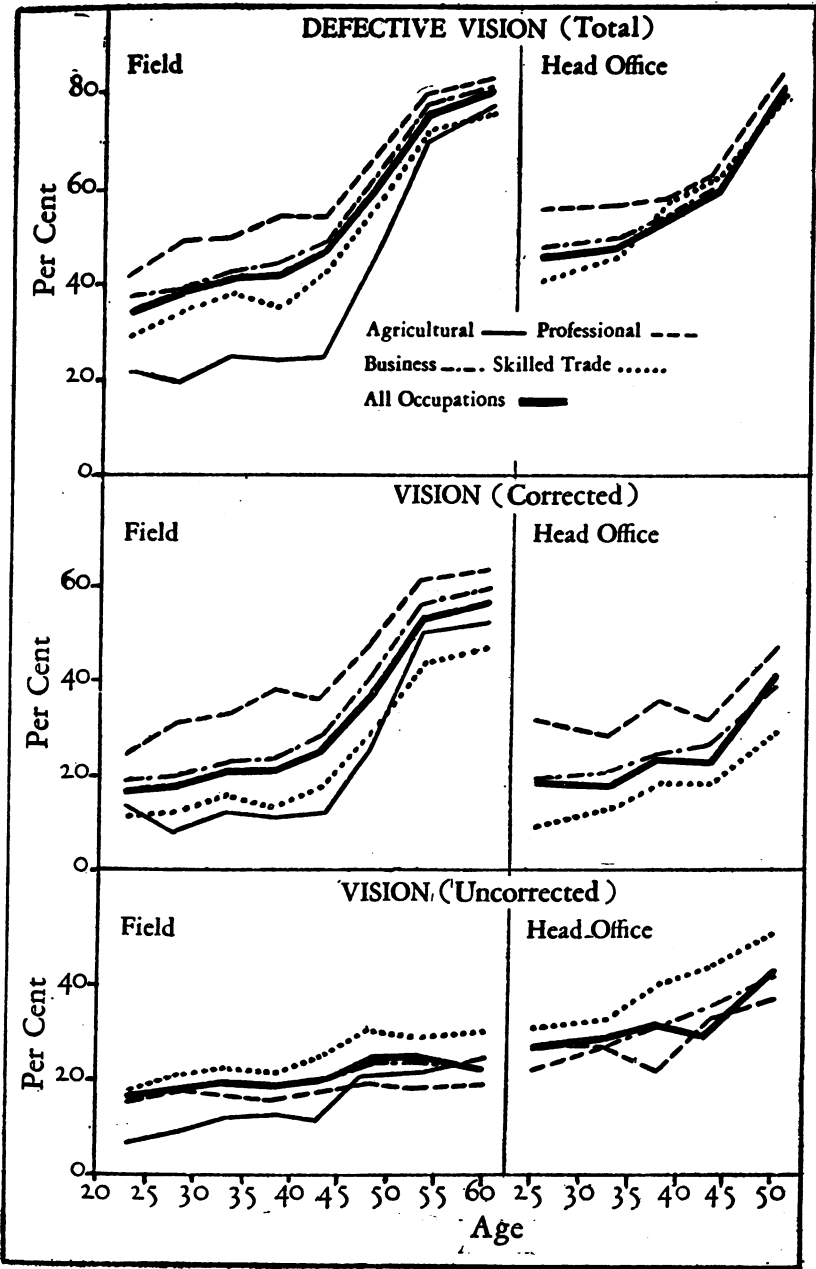


FIGURE 1

(4) The skilled trade group has a considerably lower than average rate for defective vision in the "field" data, but for the "head" office there is little difference.

(5) When we contrast the percentages for corrected and uncorrected vision, we find chiefly differences which would be expected. The professional group has a high rate for corrected and a low rate for uncorrected vision; the skilled trade has a low rate for corrected and a high rate for uncorrected. The farmer group, however, is low for both corrected and uncorrected vision.

(6) The business group presents a picture which is approximately the average for the entire population considered.

(7) The percentage of persons with uncorrected vision does not increase to any great degree with age. This is true of each occupational group.

(8) The age curve of defective vision in all occupational groups manifests the same general characteristics, i. e., a gradual rise up to 45 years, an abrupt increase during the next 10 years, and then a flattening of the curve, with a tendency to become asymptotic. The asymptotic tendency is suggested only by the "field" data, since the curves for the "head" office could not be carried to the older ages because of small numbers. It should be reiterated that the curves are based purely on the *percentage* with defective vision and do not take into account the *severity* of the defect.

Diseases and defects of the ears have been grouped together, and the rates of prevalence for all ages are given in Table 4. "Defective hearing" was taken as any condition less than 10/10 in either ear.³ Audiometer tests were not used. Since the rates for defects and diseases of the ear and defective hearing are not mutually exclusive, it is quite probable that part of the defective hearing was due to wax in the ears, for which condition rates are given separately in the table.

TABLE 6.—Frequency of certain impairments of the ears in the four broad occupational groups

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Defective hearing:					
Agricultural.....		12.3			537
Professional.....	12.8	10.0	11.4	260	1,241
Business.....	13.8	10.0	11.9	1,084	4,339
Skilled trade.....	17.8	12.7	15.2	467	1,816
Wax in ears:					
Agricultural.....		7.1			310
Professional.....	17.5	9.8	13.6	354	1,218
Business.....	16.9	9.7	13.3	1,333	4,194
Skilled trade.....	17.7	10.1	13.9	465	1,449

³ A description as to how this test was conducted is given in the first paper in this series.

TABLE 6.—Frequency of certain impairments of the ears in the four broad occupational groups—Continued

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Perforation of drum:					
Agricultural.....		.37			16
Professional.....	1.1	.75	.92	23	94
Business.....	.94	.64	.79	74	278
Skilled trade.....	1.8	.68	1.1	30	96
Otitis media or discharging ears:					
Agricultural.....		.98			43
Professional.....	.94	.88	.88	19	108
Business.....	.85	.87	.86	67	378
Skilled trade.....	.99	1.1	1.0	26	163

Relatively high rates for ear impairments in the skilled trade group are indicated by nearly all the rates in Table 6 as well as relatively

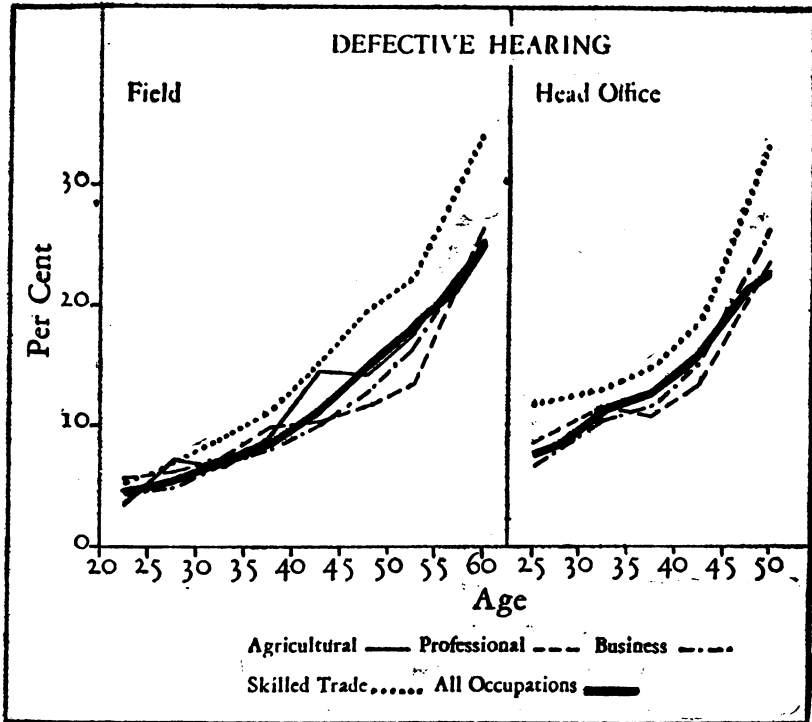


FIGURE 2

low rates for perforation of the drum and wax in ears among farmers. The rates according to age in the various groups are given in Table 7 and Figure 2.

TABLE 7.—Age prevalence of defective hearing in the four occupational groups

Occupational group	Age													
	In the field								At head office					
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+	
	PERCENTAGE													
Agricultural.....	3.6	6.9	7.0	9.1	14.4	13.9	17.4	25.0						
Professional.....	5.5	6.1	7.2	9.4	9.9	11.3	13.5	26.0	8.2	11.5	10.9	13.3	23.4	
Business.....	5.0	5.3	7.0	8.2	10.0	12.6	16.7	25.2	7.0	10.7	11.1	15.1	26.9	
Skilled trade.....	5.4	6.7	8.3	10.4	14.7	18.9	21.8	34.3	11.4	12.8	14.2	17.6	33.3	
	NUMBER													
Agricultural.....	9	31	52	71	96	78	68	132						
Professional.....	34	119	188	223	183	144	122	228	48	51	42	31	88	
Business.....	156	339	532	630	641	590	531	872	154	163	158	163	428	
Skilled trade.....	52	145	236	307	315	280	180	299	71	69	75	65	187	

These rates are more suggestive and warrant, we believe, the following comments:

(1) The only occupational group showing a percentage for defective hearing widely different from that for the total data is the skilled trade. Here the difference is clear-cut in both "head" and "field," and suggests the advisability of an analysis by specific occupations in this group.

(2) There is a tendency for the professional group to have slightly lower rates than the average; but when all ear impairments are grouped together, the relatively low rate for the farmer group is not indicated.

(3) It was not deemed necessary to reproduce curves for wax in the ears, but it may be stated that the rate was considerably lower for the farmer group at different ages. No other marked differences were indicated.

(4) The physiological change dependent on age is evidently characteristic of all the groups.

TEETH

The picture shown by rates for defects of teeth (Table 8) is quite different from that showing impairments of eyes and ears in that dental caries and pyorrhea are considerably more prevalent among farmers than in any other "field" group. These conditions, as well as slightly infected gums and insufficient dentistry, are also relatively frequent in the skilled trade group. As would be expected, low rates are found in the professional group.

TABLE 8.—Frequency of impairments of teeth in the four occupational groups

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Cariou teeth, septic roots:					
Agricultural.....		18.3			800
Professional.....	11.6	10.5	11.0	235	1,303
Business.....	14.6	12.3	13.4	1,147	5,323
Skilled trade.....	18.9	17.3	18.1	496	2,475
Slightly infected gums:					
Agricultural.....		10.2			448
Professional.....	21.7	8.1	14.9	440	1,015
Business.....	24.5	10.5	17.5	1,936	4,533
Skilled trade.....	30.6	13.2	21.9	802	1,886
Pyorrhea, definite:					
Agricultural.....		9.5			414
Professional.....	4.7	4.0	4.3	95	803
Business.....	5.3	5.0	5.1	416	2,152
Skilled trade.....	8.1	7.0	7.5	212	1,005
Missing teeth:					
Agricultural.....		6.0			264
Professional.....	5.3	5.7	5.5	108	712
Business.....	6.9	8.1	6.5	547	2,652
Skilled trade.....	7.2	7.6	7.4	189	1,001
Presence of heavy dentistry (X ray recommended):					
Agricultural.....		31.8			1,304
Professional.....	45.0	35.2	40.4	923	4,351
Business.....	45.7	34.5	40.1	3,001	14,989
Skilled trade.....	41.0	30.3	35.6	1,077	4,340

Pyorrhea (definite), carious teeth (septic roots), and slightly infected gums have been selected for comparison by age. The rates are presented in Table 9 and Figure 3.

TABLE 9.—Age prevalence of certain impairments of the teeth in the four occupational groups

Condition and occupational group	Age														
	In the field								At head office						
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+		
	PERCENTAGE														
Slightly infected gums:															
Agricultural.....	5.2	4.0	7.6	8.8	11.7	13.0	17.4	13.6							
Professional.....	2.9	5.1	6.4	8.9	9.8	10.6	11.5	11.2	19.2	18.9	20.7	29.9	25.0		
Business.....	5.0	7.2	9.4	10.5	11.9	13.3	14.3	14.0	17.3	24.5	27.3	27.4	30.2		
Skilled trade.....	6.3	8.4	12.1	12.4	16.8	18.0	17.4	18.0	20.5	26.4	35.7	36.8	36.9		
Cariou teeth, septic roots:															
Agricultural.....	14.1	15.3	16.5	16.0	18.3	19.8	22.7	23.8							
Professional.....	7.6	8.3	10.8	10.0	11.2	10.9	13.5	12.4	9.6	13.5	12.4	12.8	10.9		
Business.....	9.3	10.2	11.1	12.0	14.0	13.6	14.1	15.8	12.6	12.3	16.8	14.8	17.2		
Skilled trade.....	12.1	14.0	16.5	15.4	19.9	21.6	22.2	22.2	13.1	15.7	18.8	25.4	24.2		
Pyorrhea, definite:															
Agricultural.....	2.0	3.1	5.6	11.0	12.1	12.6	11.7	13.0							
Professional.....	.8	1.5	2.4	4.5	5.5	6.3	5.5	7.8	1.2	4.0	5.9	6.4	8.5		
Business.....	1.1	2.2	3.6	4.7	6.6	7.1	8.0	8.7	3.2	4.1	5.5	6.8	8.1		
Skilled trade.....	2.0	3.5	5.5	6.7	8.6	11.5	12.5	10.9	5.3	6.3	8.9	8.4	11.9		

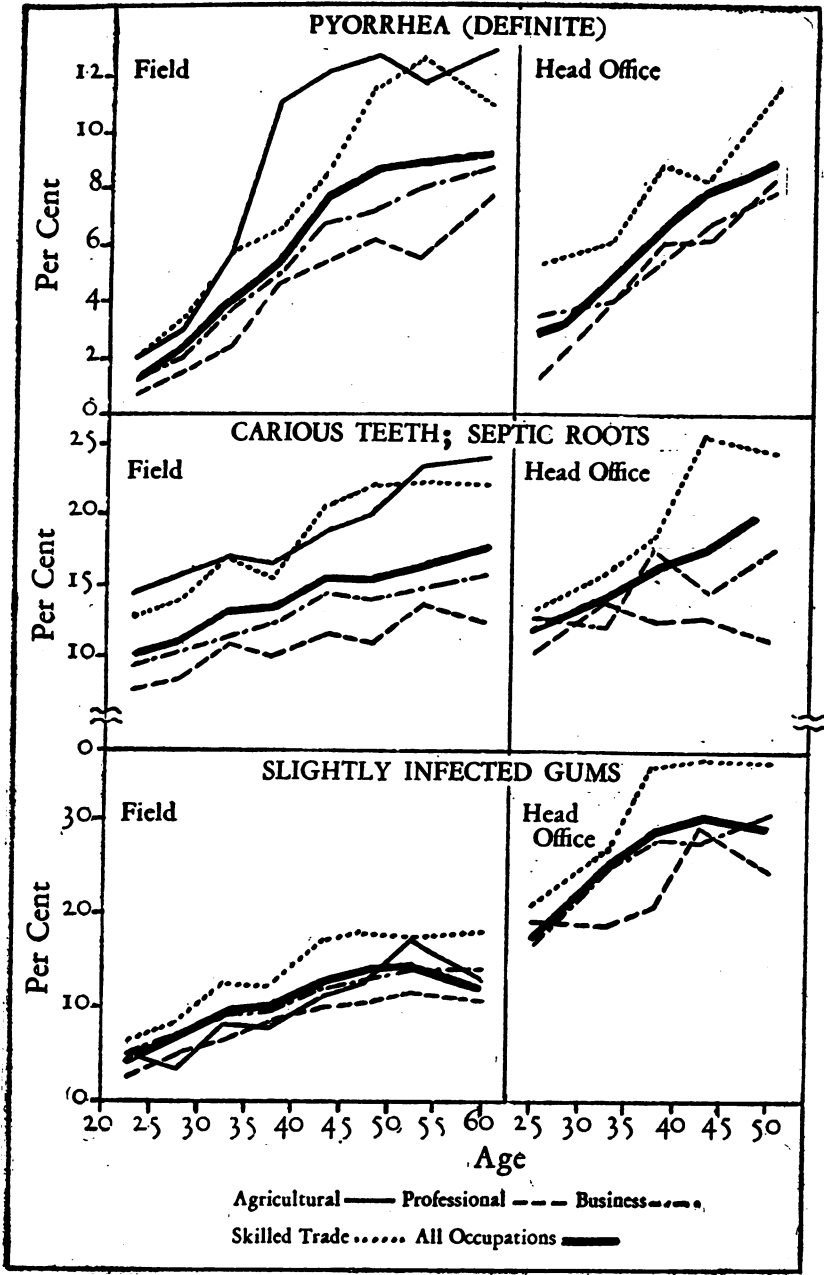


FIGURE 3

TABLE 9.—Age prevalence of certain impairments of the teeth in the four occupational groups—Continued

Condition and occupational group	Age												
	In the field							At head office					
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	50+	20-29	30-34	35-39	40-44	45+
NUMBER													
Slightly infected gums:													
Agricultural.....	13	18	57	69	78	73	68	72	112	84	80	70	94
Professional.....	16	98	167	212	183	135	104	96	378	374	338	296	480
Business.....	156	462	748	846	767	622	454	485	128	143	188	138	207
Skilled trade.....	60	181	345	384	360	248	144	157					
Carious teeth, septic roots:													
Agricultural.....	35	69	123	125	122	111	89	126	56	60	48	30	41
Professional.....	47	162	279	237	208	139	122	109	276	187	239	160	277
Business.....	262	656	881	1,011	804	640	447	546	82	85	99	94	136
Skilled trade.....	116	301	469	434	427	298	183	198					
Pyorrhea, definite:													
Agricultural.....	5	14	42	86	81	71	46	69	7	18	23	15	32
Professional.....	5	30	62	103	102	80	50	68	69	62	78	73	125
Business.....	36	143	283	423	427	334	254	300	33	34	47	31	67
Skilled trade.....	19	76	158	163	194	159	103	95					

The following comment is offered:

(1) Perhaps the most striking feature is the high rate of these impairments among farmers. The percentage with pyorrhea in this group rises rapidly with age and reaches 11 before the fortieth year, at a time of life when none of the other occupational groups have a higher percentage than 7 and the average is little more than 5. After that there is little increase. Carious teeth (septic roots) also show a high percentage for farmers. Since the rates for slightly infected gums were not above the average in the agricultural group, it is possible that the standard of classification by physicians was somewhat different on the average in the case of this occupational group.

(2) The high rates, in both "head" and "field," for skilled trades are probably to be expected. It will be observed that the curves for this occupational group are consistently high for pyorrhea, carious teeth (septic roots) and slightly infected gums—a definite indication of less care of the teeth in this group probably for economic reasons as well as because of poor hygienic habits.

(3) On the whole, the group with the lowest rates for all teeth conditions is the professional. The business group also has rates which are consistently below the average.

(4) The gradual rise with age is found in all of the occupational groups.

NOSE AND THROAT

The examiner was instructed to record all abnormalities and pathological conditions of the nose and throat, but the statistical codes included only conditions more severe than "slight" except where the word "septic" was used. For instance, in the case of enlarged, buried, or cryptic tonsils only conditions marked ++ or +++

regarded as sufficiently menacing to justify treatment or removal, were coded.

Nasopharyngitis (which included oropharyngitis) was regarded as chronic in coding impairments if there was a postnasal discharge; but the distinction between acute and chronic in this, as in other conditions, can not be taken as of much importance.

Allowing for chance variation, the impression from Table 10 can not be avoided that the most striking fact is the relatively low rates for the farmer group. They are the lowest of the four occupational classes for every condition in the table except nose and throat infection. Minor factors which may contribute to this difference are the slightly higher age distribution among farmers, since nose and throat defects decrease somewhat with age, and the possibility that the examinations of this group, largely rural, may have been somewhat less thorough than those of the other three groups. Although these factors may have some influence, there is still a strong presumption that a real difference exists.

TABLE 10.—*Frequency of certain impairments of the nose and throat in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Enlarged, cryptic, diseased, buried tonsils:					
Agricultural.....		20.3			888
Professional.....	62.4	26.5	44.4	1,264	3,303
Business.....	62.5	27.2	44.8	4,925	11,782
Skilled trade.....	63.9	27.3	45.6	1,677	3,916
Deflected septum, slight:					
Agricultural.....		17.5			765
Professional.....	59.6	24.6	42.1	1,208	3,069
Business.....	59.1	24.9	42.0	4,651	10,772
Skilled trade.....	58.8	24.2	41.5	1,543	3,474
Deflected septum, marked:					
Agricultural.....		2.4			104
Professional.....	12.0	3.2	7.6	243	397
Business.....	12.2	4.0	8.1	959	1,741
Skilled trade.....	12.8	3.9	8.3	337	566
Hypertrophic rhinitis (enlarged turbinates):					
Agricultural.....		13.9			609
Professional.....	54.8	20.4	37.6	1,110	2,538
Business.....	55.3	20.5	37.9	4,353	8,849
Skilled trade.....	57.2	20.4	38.8	1,501	2,931
Polypi, growths, ulcers:					
Agricultural.....		.89			39
Professional.....	1.4	1.3	1.3	28	157
Business.....	1.2	1.0	1.1	95	445
Skilled trade.....	2.3	1.2	1.7	60	175
Infection of nasal accessory sinus:					
Agricultural.....		.30			13
Professional.....	.94	.22	.58	19	28
Business.....	.46	.32	.39	36	139
Skilled trade.....	.57	.19	.38	15	27
Frequent colds:					
Agricultural.....		15.6			682
Professional.....	16.9	15.1	16.0	342	1,875
Business.....	16.7	14.8	15.7	1,315	6,392
Skilled trade.....	18.3	16.6	17.4	481	2,378
Nasopharyngitis, chronic:					
Agricultural.....		3.8			166
Professional.....	5.9	5.0	5.4	120	623
Business.....	6.6	4.6	5.6	520	1,988
Skilled trade.....	5.6	4.4	5.0	148	631
Nasopharyngitis, acute:					
Agricultural.....		2.0			89
Professional.....	2.9	3.9	3.2	48	490
Business.....	1.8	3.8	2.8	143	1,628
Skilled trade.....	2.3	4.2	3.2	60	600

Data by age are given for the most important conditions in Table 11 and Figure 4.

TABLE 11.—Age prevalence of certain conditions of nose and throat in four occupational groups

Nature of impairment and occupational group	Age												
	In the field							At head office					
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+
	Percentage												
Enlarged, cryptic, diseased, buried tonsils:													
Agricultural.....	29.0	22.4	24.3	21.5	20.8	16.7	15.6	13.6					
Professional.....	29.5	31.8	29.5	27.7	24.0	22.4	22.8	15.6	62.5	60.3	64.3	60.3	56.9
Business.....	31.1	32.2	36.6	29.2	25.3	22.7	20.6	18.3	62.6	64.9	65.5	63.2	57.4
Skilled trade.....	32.9	32.5	32.5	26.4	24.9	23.1	19.1	14.8	63.5	61.6	67.0	65.1	58.4
Hypertrophic rhinitis:													
Agricultural.....	10.9	14.2	17.8	16.0	11.7	14.1	11.5	11.0					
Professional.....	23.0	23.6	22.0	22.4	18.7	17.3	17.0	12.9	54.8	53.9	58.7	57.7	50.0
Business.....	22.3	23.4	21.9	20.7	19.5	18.5	17.8	16.4	55.8	58.8	54.8	58.4	52.5
Skilled trade.....	24.3	22.7	22.9	19.3	20.8	18.4	16.8	13.2	58.4	62.3	57.7	58.1	53.2
Nasopharyngitis (acute and chronic):													
Agricultural.....	6.0	5.4	6.7	5.9	5.7	5.5	5.3	5.7					
Professional.....	8.8	11.5	9.4	8.4	8.0	8.5	7.7	7.2	8.9	7.2	9.6	9.4	6.6
Business.....	8.9	9.5	9.0	8.8	8.0	7.4	7.1	6.5	8.5	9.3	8.6	8.7	7.2
Skilled trade.....	9.0	8.7	7.3	8.2	9.1	9.3	6.8	6.8	8.0	7.6	9.9	7.9	6.4
	Number												
Enlarged, cryptic, diseased, buried tonsils:													
Agricultural.....	72	101	181	168	139	94	61	72					
Professional.....	183	630	766	659	445	286	207	137	365	295	249	141	214
Business.....	975	2,076	2,423	2,067	1,627	1,064	656	639	1,370	990	932	682	910
Skilled trade.....	315	699	927	1,097	534	318	158	129	396	365	343	245	328
Hypertrophic rhinitis:													
Agricultural.....	27	64	133	125	78	79	45	58					
Professional.....	143	459	570	533	346	220	154	113	320	240	227	135	188
Business.....	700	1,505	1,739	1,483	1,253	870	565	567	1,221	898	780	584	831
Skilled trade.....	233	488	651	777	445	254	135	115	346	337	304	215	299
Nasopharyngitis (acute and chronic):													
Agricultural.....	15	24	50	46	38	31	21	30					
Professional.....	55	225	243	201	148	109	69	63	62	32	37	22	25
Business.....	280	610	713	622	515	349	226	224	186	142	122	94	108
Skilled trade.....	86	188	266	334	195	128	56	55	50	41	53	29	36

The following observations may be made:

(1) A definitely lower rate of enlarged, diseased, buried, or cryptic tonsils, hypertrophic rhinitis, and nasopharyngitis was found among farmers than among other occupational groups.

(2) The percentages of persons found to have these conditions were remarkably similar in the other three occupational groups.

(3) The gradual decline in prevalence as age advances is consistently found in all four occupational groups and for all of the nose and throat conditions appearing in the diagram.

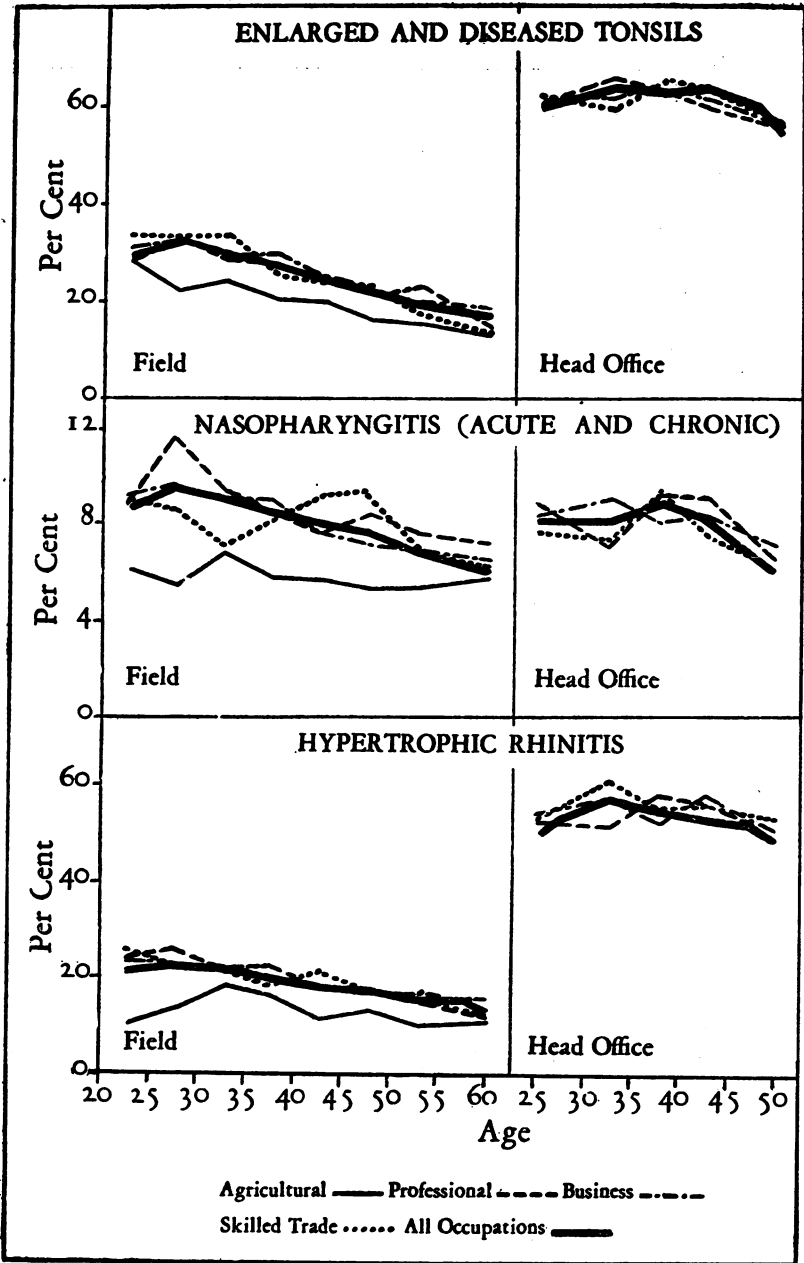


FIGURE 4

RESPIRATORY

For the group of respiratory conditions, the prevalence rates for chronic conditions found on physical examinations were too low to justify any consideration at different ages. Table 12 gives the rates for all ages. It is difficult to draw any conclusions from this table as to any significant differences, but the data are communicated for what they are worth. The occurrence of slightly higher rates for all conditions, except asthma, in the skilled trade group is possibly suggestive and is not inconsistent with other data.

TABLE 12.—*Frequency of certain respiratory impairments in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Abnormal signs in lungs, not suggestive of tuberculosis:					
Agricultural.....		2.9			129
Professional.....	4.1	4.0	4.0	83	492
Business.....	5.7	3.9	4.8	452	1,674
Skilled trade.....	5.9	4.5	5.2	154	640
Tuberculosis (including suspects):					
Agricultural.....		1.1			50
Professional.....	1.6	1.0	1.3	31	125
Business.....	1.4	1.1	1.3	112	475
Skilled trade.....	1.8	1.3	1.5	47	184
Emphysema:					
Agricultural.....		.46			20
Professional.....	.89	.44	.66	18	55
Business.....	.91	.38	.64	72	166
Skilled trade.....	1.3	.42	.86	33	60
Asthma:					
Agricultural.....		.69			30
Professional.....	.30	.49	.39	6	61
Business.....	.33	.32	.32	26	133
Skilled trade.....	.30	.40	.35	8	58

HEART AND PULSE

As was pointed out in our earlier papers, physical impairments were recorded by the examiner without giving a definite diagnosis. Thus a diagnosis of heart conditions, such as mitral regurgitation, is not recorded on the examination form. Instead, information is given as to the location and character of the murmur. A diagnosis for statistical purposes only was arrived at by the staff of the medical department in the Life Extension Institute in coding the records, definite instructions having been formulated as to the interpretation of the murmurs recorded. Table 13 gives the rates of prevalence, all ages, for the various heart and pulse conditions so recorded and interpreted.

TABLE 13.—*Frequency of impairments of heart and pulse in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Rapid pulse, over 90:					
Agricultural.....		2.7			119
Professional.....	11.9	5.5	8.7	242	685
Business.....	11.3	6.0	8.6	890	2,578
Skilled trade.....	12.0	5.4	8.7	314	776
Slow pulse, below 58:					
Agricultural.....		2.1			91
Professional.....	.44	1.1	.77	9	135
Business.....	.66	.84	.75	52	365
Skilled trade.....	.57	.70	.63	15	100
Intermittent pulse, extra systoles:					
Agricultural.....		.57			25
Professional.....	.79	.53	.66	16	66
Business.....	.76	.64	.70	60	277
Skilled trade.....	.57	.51	.54	15	73
Functional murmur or irregularity:					
Agricultural.....		4.0			173
Professional.....	7.6	5.4	6.5	153	669
Business.....	7.0	5.0	6.0	551	2,171
Skilled trade.....	7.3	4.9	6.1	191	705
Enlargement:					
Agricultural.....		2.9			129
Professional.....	1.6	2.5	2.0	33	312
Business.....	2.2	2.3	2.2	175	1,011
Skilled trade.....	2.7	2.7	2.7	72	387
Valvular lesions:					
Agricultural.....		2.1			95
Professional.....	2.4	2.5	2.5	48	320
Business.....	3.0	2.8	2.8	236	1,215
Skilled trade.....	2.9	3.0	3.0	78	429
Myocardial changes:					
Agricultural.....		.23			10
Professional.....	.44	.26	.35	9	33
Business.....	.58	.28	.43	46	123
Skilled trade.....	.84	.28	.56	22	40

Although a remarkable uniformity appears in the rates for the various broad occupational groups, it may be noted that the farmer group has lower rates for valvular diseases and functional murmurs than any other occupational class. It is also indicated that the farmer group has the highest percentage with pulse rates below 58 and the lowest percentage with pulse rates of 90 and more. Without further information any comment on the reasons for such marked differences is purely speculative. The rates for valvular lesions and enlarged heart according to age are given in Table 14 and Figure 5.

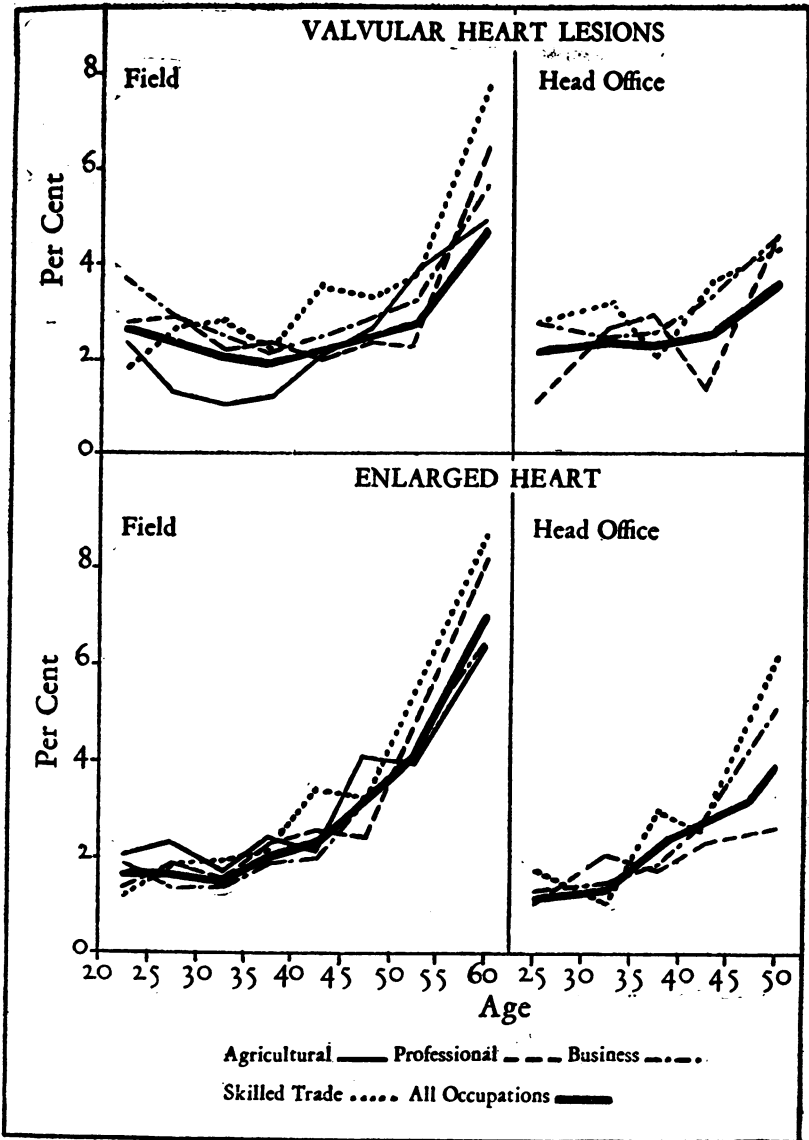


FIGURE 5

TABLE 14.—Age prevalence of valvular lesions and enlarged heart in the four occupational groups

Nature of impairment and occupational group	Age												
	In the field								At head office				
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+
	PERCENTAGE												
Enlarged heart:													
Agricultural.....	2.0	2.2	1.6	2.3	2.1	3.9	3.8	6.2					
Professional.....	1.3	1.7	1.5	2.2	2.3	2.3	4.4	7.8	0.9	1.8	1.6	2.1	2.4
Business.....	1.8	1.4	1.4	1.8	1.9	3.0	3.9	6.3	1.1	1.3	1.6	2.4	4.9
Skilled trade.....	1.2	1.7	1.7	2.0	3.3	3.1	5.2	8.4	1.6	.9	2.7	2.4	6.0
Valvular lesions:													
Agricultural.....	2.4	1.3	1.0	1.1	1.9	2.5	3.6	4.9					
Professional.....	2.7	2.9	2.2	2.2	2.1	2.3	2.2	6.2	1.0	2.4	2.8	1.3	4.5
Business.....	3.8	2.8	2.5	2.1	2.3	2.7	3.1	5.5	2.6	2.3	2.5	3.1	4.5
Skilled trade.....	1.8	2.6	2.6	2.1	3.4	3.2	3.5	7.7	2.6	3.1	1.9	3.3	4.3
	NUMBER												
Enlarged heart:													
Agricultural.....	5	10	12	18	14	22	15	33					
Professional.....	8	33	38	53	43	29	40	68	5	8	6	5	9
Business.....	56	93	114	135	121	141	124	218	24	20	23	26	78
Skilled trade.....	11	36	45	69	70	43	43	73	10	5	14	9	34
Valvular lesions:													
Agricultural.....	6	6	8	10	13	14	14	27					
Professional.....	17	57	62	55	39	29	22	56	8	14	12	4	17
Business.....	123	187	202	174	151	127	98	182	62	38	41	34	79
Skilled trade.....	17	61	80	75	75	47	29	69	18	17	10	13	26

It may be noted that—

(1) Perhaps the most striking general fact brought out in the curves for heart conditions is the remarkable uniformity of the picture, regardless of the occupational group.

(2) Although one can not with assurance conclude that any occupational group has higher or lower rates for heart and pulse conditions, an interesting difference is indicated for the farmer group with respect to the character of the age curve for valvular heart lesions. During the early part of life the rate is relatively low, but later it rises to about the same level as that for other occupational groups. Does this suggest that the rates in the agricultural group more nearly represent the prevalence to be expected as a normal part of the aging process?

(3) In the case of valvular heart lesions, the decrease during the early part of life, as noted in the second paper of this series, is manifestly a characteristic of the group as a whole. In the "field" records the skilled labor group alone fails to show this tendency.⁴

(4) Enlarged heart appears to be found in about the same percentage of persons in all the occupational groups.

(5) The changes in prevalence at different ages of heart and pulse conditions, as shown for the entire population considered (2), is typical of all the broad occupational groups.

⁴ In the "head" office, the age groups 20-24 and 25-29 were necessarily put together, naturally obliterating this tendency.

ARTERIAL THICKENING

Some interesting indications appear with respect to arterial thickening, but they may be considered more advantageously from the

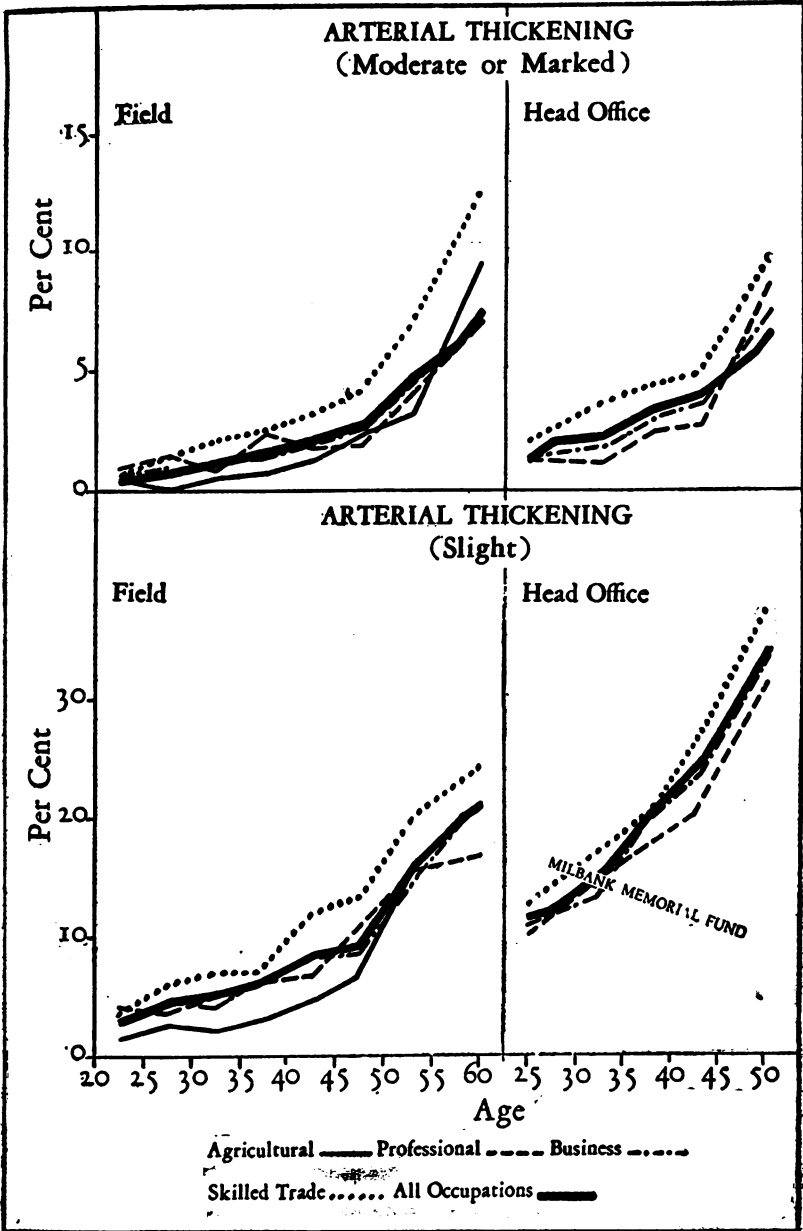


FIGURE 6

point of view of changes in age. Table 15 gives the rates for all ages, and Table 16 and Figure 6 give the data by age.

TABLE 15.—Frequency of impairments of arterial thickening in the four occupational groups

Nature of impairment and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Arterial thickening, slight:					
Agricultural.....		6.5			286
Professional.....	17.0	7.6	12.3	344	949
Business.....	19.2	7.9	13.5	1,512	3,397
Skilled trade.....	21.3	9.4	15.3	560	1,346
Arterial thickening, moderate:					
Agricultural.....		1.8			78
Professional.....	2.9	1.9	2.4	59	237
Business.....	3.0	1.9	2.4	240	839
Skilled trade.....	4.6	2.7	3.6	122	382
Arterial thickening, marked:					
Agricultural.....		.39			17
Professional.....	.15	.14	.14	3	17
Business.....	.23	.21	.22	18	91
Skilled trade.....	.15	.37	.26	4	53

TABLE 16.—Age prevalence of arterial thickening in the four occupational groups

Nature of impairment and occupational group	Age														
	In the field								At head office						
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+		
	PERCENTAGE														
Arterial thickening, slight:															
Agricultural.....	1.6	2.4	2.0	3.1	4.5	6.4	14.8	20.4							
Professional.....	4.4	3.9	5.2	6.3	6.9	10.5	15.0	16.7	9.4	13.9	17.1	19.7	30.6		
Business.....	3.7	4.7	4.8	6.6	7.9	8.8	14.0	20.3	10.5	13.2	18.8	23.5	33.5		
Skilled trade.....	3.7	5.7	6.7	6.9	11.5	12.5	18.5	24.0	11.9	16.3	19.2	25.4	36.1		
Arterial thickening, moderate or marked:															
Agricultural.....	.4		.6	.7	1.2	2.0	2.9	10.0							
Professional.....	.8	1.2	.8	2.1	1.7	1.8	3.6	7.4	1.2	1.1	2.3	2.6	9.3		
Business.....	.5	1.0	1.2	1.4	1.9	2.7	4.2	7.6	1.3	1.6	2.7	3.2	7.8		
Skilled trade.....	.6	1.2	1.8	2.0	3.0	4.2	6.9	12.6	1.8	3.3	4.0	4.6	10.5		
	NUMBER														
Arterial thickening, slight:															
Agricultural.....	4	11	15	24	30	36	58	108							
Professional.....	27	75	134	149	127	134	136	167	55	62	66	46	115		
Business.....	116	304	350	489	508	414	445	703	230	202	268	254	533		
Skilled trade.....	35	123	190	255	247	172	153	209	74	88	101	94	203		
Arterial thickening, moderate or marked:															
Agricultural.....	1		5	6	8	11	11	53							
Professional.....	5	24	22	51	31	23	33	65	7	5	9	6	35		
Business.....	17	63	94	112	123	127	134	204	29	24	33	35	123		
Skilled trade.....	6	27	51	57	65	58	57	110	11	18	21	17	59		

The following comments seem pertinent:

(1) A definitely higher rate is to be noted for the skilled trade group, in both "head" office and "field" data and for both moderate and slight arterial thickening, than for the other three occupational classes.

(2) Farmers, also a group performing hard physical work, on the other hand, seem to have a low rate during the earlier part of adult life; but by 50 years the curve blends with the average.

(3) More important than the differences, perhaps, is the fact that this degenerative change occurs in about the same proportion of persons in the different walks of life shown.

STOMACH AND ABDOMINAL ORGANS

A large group of conditions have been considered together in Table 17.

TABLE 17.—Frequency of stomach and abdominal impairments in the four occupational groups

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Weak inguinal rings:					
Agricultural.....		2.1			94
Professional.....	10.8	3.9	7.3	218	489
Business.....	11.0	4.3	7.6	869	1,851
Skilled trade.....	10.9	4.8	7.8	287	690
Inguinal hernia, no truss:					
Agricultural.....		2.7			120
Professional.....	2.6	1.6	2.1	52	195
Business.....	3.4	1.9	2.6	268	838
Skilled trade.....	3.2	2.4	2.8	84	338
Inguinal hernia, truss:					
Agricultural.....		3.5			153
Professional.....	2.0	2.3	2.1	40	281
Business.....	2.6	2.4	2.5	205	1,048
Skilled trade.....	2.7	2.7	2.7	71	386
Other hernias:					
Agricultural.....		.66			29
Professional.....	.44	.65	.54	9	81
Business.....	.74	.79	.76	58	342
Skilled trade.....	.76	.87	.81	20	125
Tenderness in region of appendix:					
Agricultural.....		4.1			178
Professional.....	2.9	2.8	2.8	59	354
Business.....	2.0	3.0	2.5	158	1,301
Skilled trade.....	2.5	3.1	2.8	66	451
Constipation:					
Agricultural.....		27.2			1,190
Professional.....	33.0	32.9	32.9	668	4,092
Business.....	33.0	32.9	32.9	2,596	14,217
Skilled trade.....	37.7	34.5	36.1	988	4,945
Acid stomach:					
Agricultural.....		11.7			513
Professional.....	10.0	11.1	10.5	203	1,379
Business.....	10.4	10.4	10.4	817	4,809
Skilled trade.....	10.3	10.6	10.4	271	1,517
Gastric disturbances:					
Agricultural.....		8.9			888
Professional.....	8.5	8.0	8.2	173	1,000
Business.....	8.2	7.8	8.0	645	3,871
Skilled trade.....	9.3	7.7	8.5	243	1,100

The suggestive indications are (1) the relatively low rate of constipation in the agricultural group as contrasted with a relatively high rate in skilled trades; (2) the relatively frequent prevalence of tenderness in the region of the appendix in the agricultural group; (3) the relatively low prevalence of weak inguinal rings in the same group. Graphs by age have been prepared for constipation and hernia because of their great frequency. The data relating to tenderness over appendix hardly justify graphic presentation, but it may be stated that the agricultural group has a consistently high rate for this condition when comparison is made by age, especially for the first. Similarly, comparison by age showed that weak inguinal rings were found in a smaller percentage of farmers at nearly every age.

Table 18 and Figure 7 present the data for constipation and hernia.

TABLE 18.—Age prevalence of constipation and hernia in the four occupational groups

Nature of impairment and occupational group	Age												
	In the field							At head office					
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+	20-29	30-34	35-39	40-44	45+
PERCENTAGE													
Hernia:													
Agricultural.....	1.2	3.1	4.0	6.2	5.4	8.4	8.6	17.0	-----	-----	-----	-----	-----
Professional.....	1.7	2.1	3.5	3.9	3.9	6.3	8.4	11.7	1.4	3.4	4.9	7.6	10.9
Business.....	1.6	2.3	2.8	4.0	6.0	7.5	8.8	13.3	2.6	4.8	6.1	8.5	15.4
Skilled trade.....	2.1	3.2	4.3	4.5	6.1	8.5	11.2	17.8	2.6	4.3	6.7	5.7	16.0
Constipation:													
Agricultural.....	19.0	20.6	25.6	27.2	28.2	29.2	31.1	32.5	-----	-----	-----	-----	-----
Professional.....	28.8	30.3	32.6	32.5	35.0	35.9	34.4	32.5	30.7	31.5	36.7	34.2	33.8
Business.....	28.7	31.5	33.2	33.1	34.0	33.5	33.9	33.6	31.1	32.6	31.8	35.6	34.8
Skilled trade.....	28.5	36.4	33.5	32.5	38.0	36.2	33.4	36.7	29.3	44.0	38.7	40.8	37.7
NUMBER													
Hernia:													
Agricultural.....	3	14	30	48	36	47	34	90	-----	-----	-----	-----	-----
Professional.....	11	42	90	92	72	81	66	103	8	15	19	18	41
Business.....	50	151	222	319	388	354	281	461	57	73	87	92	214
Skilled trade.....	20	68	124	145	130	117	92	155	16	23	35	21	83
Constipation:													
Agricultural.....	47	93	191	213	188	164	122	172	-----	-----	-----	-----	-----
Professional.....	179	591	845	774	648	458	312	285	179	140	142	80	127
Business.....	901	2,029	2,635	2,393	2,193	1,571	1,078	1,164	682	497	452	384	553
Skilled trade.....	273	783	954	1,280	814	498	276	320	183	238	204	151	212

The low rate of constipation among farmers, especially in the younger ages, perhaps may be ascribed to their active life, but this reason does not seem to account for the slightly higher than average rate in the skilled trade group. Whether diet or occupational conditions or other reasons are involved, it is of course impossible to say from the data at hand unless definite hazards characteristic of specific occupations are taken into account in a more detailed occupational analysis.

In regard to hernia, some rather interesting indications may be summarized, as follows:

(1) Greater differences in the rates for hernia than for other impairments in the intestinal region might have been anticipated in

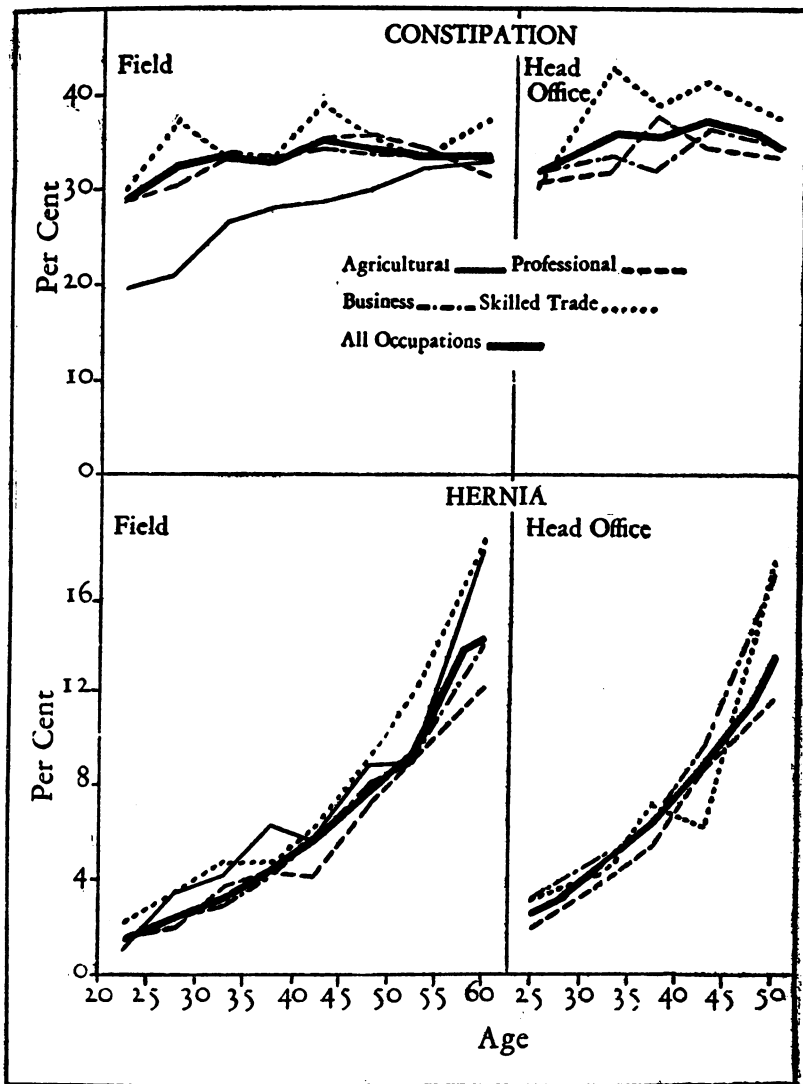


FIGURE 7

view of the fact that the farmer and the skilled trade groups include persons engaged in heavy labor. While these two groups do seem to have the highest rates, the differences are quite slight.

(2) The professional group has the lowest rates; but again the difference is of no great significance.

Thus, for hernia, the resemblances in the curves for different occupational groups are more striking than the differences. How far the population was a selected one can not be ascertained, of course, without knowing the age at which the individuals were insured and to what extent hernia caused exclusion from insurance. At any rate, it is suggested quite definitely by these curves that the increase in the hernia rate with age is associated with the physiological weakening which accompanies the aging process.

VARICOSE VEINS, VARICOCELE, HYDROCELE, HEMORRHOIDS

The prevalence rates for all ages are given in Table 19 for varicose veins, varicocele, hydrocele, and hemorrhoids. No clear differences in the four occupational groups are suggested.

TABLE 19.—*Frequency of varicose veins, etc., in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Varicose veins:					
Agricultural.....		4.1			181
Professional.....	5.1	3.4	4.2	104	421
Business.....	6.8	3.9	5.3	534	1,685
Skilled trade.....	7.4	4.5	5.9	193	641
Varicocele:					
Agricultural.....		6.0			262
Professional.....	9.7	8.9	9.3	197	1,105
Business.....	9.9	8.1	9.0	783	3,510
Skilled trade.....	9.6	8.3	8.9	252	1,193
Hydrocele:					
Agricultural.....		.69			30
Professional.....	.79	.53	.66	16	66
Business.....	.58	.54	.56	46	234
Skilled trade.....	.72	.50	.61	19	72
Hemorrhoids:					
Agricultural.....		10.9			478
Professional.....	15.0	12.5	13.7	303	1,534
Business.....	13.4	12.3	12.8	1,056	5,301
Skilled trade.....	11.9	11.2	11.5	313	1,608

GENITOURINARY IMPAIRMENTS

The only feature of interest in Table 20, giving the rates for enlarged prostate and frequent or painful urination, is the high rate for the latter in the agricultural group. Since 616 cases were recorded, this could hardly be regarded as a matter of chance, and the rate is consistently high for each age group. Obviously no definite statement can be made as to the cause of the difference.

TABLE 20.—*Frequency of genitourinary impairments in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Prostate enlarged, tender:					
Agricultural.....		6.6			289
Professional.....	8.8	5.3	7.0	178	656
Business.....	9.8	5.5	7.6	773	2,378
Skilled trade.....	8.6	4.6	6.6	226	659
Frequent or painful urination (nocturia):					
Agricultural.....		14.1			616
Professional.....	8.1	8.4	8.2	165	1,046
Business.....	7.9	8.5	8.2	619	3,659
Skilled trade.....	8.8	8.3	8.5	232	1,188

BRAIN AND NERVOUS SYSTEM

Rates for defects of the brain and nervous system are given in Table 21. There are no differences of great importance among the rates of the four groups.

TABLE 21.—*Frequency of brain and nervous impairments in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Sluggish, absent, unequal, or irregular reflexes:					
Agricultural.....		3.5			153
Professional.....	3.9	2.8	3.4	79	361
Business.....	4.2	3.1	3.6	332	1,327
Skilled trade.....	4.5	3.5	4.0	118	496
Exaggerated reflexes:					
Agricultural.....		1.8			80
Professional.....	4.2	2.7	3.4	85	338
Business.....	3.9	2.2	3.0	305	970
Skilled trade.....	4.2	2.2	3.2	109	315
Nervousness with increased reflexes:					
Agricultural.....		.57			25
Professional.....	1.8	1.1	1.4	37	126
Business.....	1.8	.84	1.3	139	365
Skilled trade.....	1.4	.61	1.0	38	88
Romberg, positive:					
Agricultural.....		.30			13
Professional.....	.54	.26	.40	11	83
Business.....	.53	.37	.45	42	158
Skilled trade.....	.80	.43	.61	21	61
Nervousness:					
Agricultural.....		4.5			199
Professional.....	8.4	7.6	8.0	170	943
Business.....	7.1	6.9	7.0	659	2,970
Skilled trade.....	7.6	6.5	7.0	199	929

MISCELLANEOUS IMPAIRMENTS

A group of impairments and histories of certain symptoms are given in Table 22. Although some points are of interest, such as the high rate for frequency of backache in the farmer and skilled trade groups, yet no items seemed to be of sufficient importance to warrant a consideration by age.

TABLE 22.—Frequency of miscellaneous impairments in the four occupational groups

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Chronic skin affections:					
Agricultural.....		5.9			258
Professional.....	11.2	10.3	10.7	227	1,284
Business.....	10.6	9.6	10.1	834	4,169
Skilled trade.....	9.6	9.2	9.4	251	1,317
Adenitis (2 or more lymphatic nodes):					
Agricultural.....		1.9			81
Professional.....	2.4	2.8	2.6	49	350
Business.....	5.7	2.8	4.2	448	1,195
Skilled trade.....	3.1	4.0	3.6	82	567
Neuralgia, neuritis:					
Agricultural.....		1.2			54
Professional.....	.89	1.1	.99	18	133
Business.....	.63	.86	.74	50	371
Skilled trade.....	.57	.86	.71	15	124
Mastoids:					
Agricultural.....		.30			13
Professional.....	.49	.42	.46	10	52
Business.....	.44	.34	.39	35	149
Skilled trade.....	.23	.20	.21	6	28
Insomnia:					
Agricultural.....		1.1			48
Professional.....	1.0	1.1	1.0	21	143
Business.....	1.7	1.0	1.3	132	434
Skilled trade.....	2.4	1.4	1.9	62	197
Enlarged thyroid, simple goiter:					
Agricultural.....		1.8			80
Professional.....	.99	2.5	1.7	20	308
Business.....	.91	2.3	1.6	72	1,016
Skilled trade.....	.61	2.4	1.5	16	342
Dizziness:					
Agricultural.....		9.1			399
Professional.....	6.1	7.0	6.5	124	868
Business.....	6.4	6.8	6.6	507	2,942
Skilled trade.....	7.7	7.6	7.6	203	1,096
Backache:					
Agricultural.....		6.2			271
Professional.....	2.5	2.8	2.6	50	346
Business.....	3.7	3.6	3.6	292	1,562
Skilled trade.....	6.5	5.6	6.0	170	808
Headache:					
Agricultural.....		22.0			963
Professional.....	22.2	22.8	22.5	449	2,840
Business.....	22.1	21.1	21.6	1,743	9,132
Skilled trade.....	21.6	19.5	20.5	566	2,799
Use of patent medicine:					
Agricultural.....		7.3			319
Professional.....	7.7	9.3	8.5	157	1,164
Business.....	10.3	9.9	10.1	811	4,278
Skilled trade.....	9.4	10.1	9.7	246	1,447
Habitual use of laxatives:					
Agricultural.....		20.8			911
Professional.....	20.5	24.1	22.3	416	3,003
Business.....	24.6	26.0	25.3	1,938	11,232
Skilled trade.....	27.0	27.5	27.2	709	3,941

RESULTS OF URINALYSES

In general, the results of the routine urinalyses,⁵ which are done for both "field" and "head" office in the Institute's laboratory, do not show marked differences in the four occupational groups. The data are recorded for persons of all ages by occupational groups in Table 23, without further comment, for such interpretation as may be given by the medical reader.

TABLE 23.—*Frequency of certain results of various urinalyses findings in the four occupational groups*

Nature of impairment or disease and occupational group	Per cent of persons examined			Number of persons showing specific impairments	
	At head office	In field	Average	At head office	In field
Albumin, slight trace:					
Agricultural.....		16.4			648
Professional.....	17.4	13.7	15.5	341	1,559
Business.....	19.3	14.5	16.9	1,469	5,753
Skilled trade.....	21.2	15.5	18.3	538	2,020
Albumin, definite trace:					
Agricultural.....		1.8			72
Professional.....	1.7	1.1	1.4	34	120
Business.....	2.1	1.5	1.8	163	585
Skilled trade.....	3.0	1.4	2.2	76	184
Albumin, marked amount:					
Agricultural.....		.43			17
Professional.....	.61	.40	.50	12	46
Business.....	1.2	.45	.82	98	178
Skilled trade.....	1.5	.57	1.0	37	74
Pus:					
Agricultural.....		8.7			344
Professional.....	12.6	9.2	10.9	247	1,055
Business.....	14.4	9.7	12.0	1,100	3,833
Skilled trade.....	15.6	9.9	12.7	396	1,293
Casts, hyaline:					
Agricultural.....		10.1			398
Professional.....	10.9	8.5	9.7	214	969
Business.....	12.7	9.2	10.9	968	3,636
Skilled trade.....	14.7	9.6	12.1	375	1,255
Casts, granular:					
Agricultural.....		6.0			230
Professional.....	8.0	5.0	6.5	156	565
Business.....	9.5	5.3	7.4	720	2,091
Skilled trade.....	11.2	5.7	8.4	285	747
Low specific gravity:					
Agricultural.....		1.8			72
Professional.....	5.7	3.4	4.5	112	383
Business.....	5.5	2.8	4.1	421	1,109
Skilled trade.....	3.7	2.1	2.9	94	273
Sugar, trace:					
Agricultural.....		5.7			224
Professional.....	5.5	5.4	5.4	108	619
Business.....	5.5	5.3	5.4	416	2,121
Skilled trade.....	6.3	5.2	5.7	160	682
Sugar, marked amount (1 per cent or more):					
Agricultural.....		.20			8
Professional.....	.36	.37	.36	7	42
Business.....	.59	.43	.51	45	179
Skilled trade.....	.55	.44	.49	14	57
Blood:					
Agricultural.....		.18			7
Professional.....	.25	.19	.22	5	22
Business.....	.22	.22	.22	17	86
Skilled trade.....	.35	.20	.27	9	26

⁵ Some individuals were not given the test, but the population has been corrected for this difference.

COMPARISON OF RATES OF CERTAIN IMPAIRMENTS FOR OCCUPATIONS WITHIN THE "BUSINESS" GROUP

A combination of executives, merchants, etc., of salesmen, etc., and of clerks into a "business" group was made because no essential differences were found in the impairment rates among these three subgroups. Table 24 is presented to bring out this general fact. It is limited to the more important impairments. Since marked differences exist in the age distributions of these three occupational groups (see p. 1329), no attempt is made to give rates except for specific ages. To save space, the rates for the "field" examinations alone are given. No careful examination of this table is necessary to reveal the fact that in these three occupational groups the rates of prevalence of impairments are closely parallel, except in a few instances of doubtful statistical significance.

TABLE 24.—Age prevalence of certain impairments in the three subdivisions of the business group ("field")

Nature of impairment and subdivision of business group	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+
	PER CENT							
Defective vision, total:								
C. Executives, merchants, etc.....	39.3	38.8	40.4	43.5	48.4	64.5	78.1	65.8
D. Salesmen, etc.....	36.7	37.1	41.5	43.7	48.9	63.1	80.0	83.4
E. Clerks.....	35.6	40.9	44.6	46.0	49.5	67.4	77.1	82.3
Defective hearing:								
C. Executives, merchants, etc.....	3.8	5.6	7.0	8.0	9.4	12.1	16.5	25.7
D. Salesmen, etc.....	5.5	5.6	6.9	8.2	10.4	12.9	16.1	24.9
E. Clerks.....	5.0	4.7	7.0	8.7	9.9	12.8	18.7	24.3
Enlarged, cryptic, diseased, buried tonsils:								
C. Executives, merchants, etc.....	31.7	33.8	32.1	29.7	25.1	23.3	21.2	16.5
D. Salesmen, etc.....	33.9	33.2	30.9	29.2	25.8	23.1	20.1	21.3
E. Clerks.....	29.4	30.4	28.8	28.3	24.3	20.4	20.1	15.8
Nasopharyngitis:								
C. Executives, merchants, etc.....	8.8	8.9	9.1	8.0	7.8	7.2	7.0	6.3
D. Salesmen, etc.....	10.1	9.6	8.9	8.9	8.4	7.3	6.3	6.0
E. Clerks.....	8.3	9.6	9.1	9.5	7.4	8.3	9.3	8.1
Slightly infected gums:								
C. Executives, merchants, etc.....	4.5	8.4	10.6	11.8	13.2	13.6	15.1	13.2
D. Salesmen, etc.....	5.9	7.2	9.2	10.2	11.5	12.8	13.6	14.5
E. Clerks.....	4.6	6.5	8.8	9.3	10.5	13.6	14.1	15.3
Carious teeth, septic roots:								
C. Executives, merchants, etc.....	10.1	10.0	10.8	12.6	14.8	13.5	12.0	14.3
D. Salesmen, etc.....	9.3	10.5	11.0	11.0	13.4	13.1	15.2	16.0
E. Clerks.....	9.1	9.9	11.6	12.1	14.4	15.3	15.9	19.3
Pyorrhea, definite:								
C. Executives, merchants, etc.....	.8	3.0	4.5	4.8	6.0	7.6	7.8	8.5
D. Salesmen, etc.....	1.2	2.0	3.2	4.3	6.3	6.9	8.8	8.7
E. Clerks.....	1.2	2.1	3.4	3.3	6.9	6.8	6.6	9.0
Enlarged heart:								
C. Executives, merchants, etc.....	1.5	1.3	1.1	2.0	1.7	2.7	2.9	5.8
D. Salesmen, etc.....	1.8	1.3	1.4	1.8	1.8	2.7	4.2	5.8
E. Clerks.....	1.9	1.6	1.8	1.5	2.4	4.4	5.3	9.0
Valvular lesions:								
C. Executives, merchants, etc.....	3.4	2.4	2.0	2.1	1.4	2.3	2.8	4.9
D. Salesmen, etc.....	2.8	2.3	2.2	1.9	2.6	2.7	3.4	5.7
E. Clerks.....	4.3	3.6	3.3	2.6	2.9	3.0	3.2	5.9
Arterial thickening, moderate or marked:								
C. Executives, merchants, etc.....	.8	1.5	1.3	1.1	1.4	2.7	3.7	6.8
D. Salesmen, etc.....	.6	.8	1.2	1.5	1.9	2.5	3.6	7.8
E. Clerks.....	.5	.9	1.1	1.3	2.7	3.3	6.9	9.6
Arterial thickening, slight:								
C. Executives, merchants, etc.....	3.3	6.2	4.7	6.8	8.6	9.7	13.9	20.2
D. Salesmen, etc.....	4.6	4.5	5.1	6.8	7.5	8.0	13.2	19.8
E. Clerks.....	3.3	4.2	4.3	5.9	7.7	9.2	16.3	21.9
Hernia:								
C. Executives, merchants, etc.....	1.3	2.2	3.2	4.3	5.7	7.1	9.1	12.3
D. Salesmen, etc.....	1.8	2.4	2.9	3.9	6.1	7.6	8.8	14.7
E. Clerks.....	1.5	2.5	2.4	4.0	6.2	8.2	8.2	12.7

TABLE 24.—Age prevalence of certain impairments in the three subdivisions of the business group ("field")—Continued

Nature of impairment and subdivision of business group	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+
	PER CENT							
Constipation:								
C. Executives, merchants, etc.....	29.0	29.7	32.6	31.0	33.7	32.6	33.0	31.8
D. Salesmen, etc.....	29.2	30.9	31.8	34.1	33.4	33.1	34.8	33.9
E. Clerks.....	28.4	32.9	35.9	34.2	36.2	35.8	33.6	38.2
NUMBER								
Defective vision, total:								
C. Executives, merchants, etc.....	156	461	805	813	1,053	1,130	985	1,014
D. Salesmen, etc.....	353	990	1,488	1,105	1,454	1,323	1,096	1,147
E. Clerks.....	634	1,057	1,048	1,069	634	569	422	448
Defective hearing:								
C. Executives, merchants, etc.....	15	67	139	154	205	211	208	397
D. Salesmen, etc.....	53	150	248	329	309	271	221	343
E. Clerks.....	88	122	165	197	127	108	102	132
Enlarged, cryptic, diseased, buried tonsils:								
C. Executives, merchants, etc.....	126	402	639	500	548	406	267	254
D. Salesmen, etc.....	327	888	1,107	856	768	464	276	293
E. Clerks.....	522	786	677	731	311	172	113	86
Nasopharyngitis:								
C. Executives, merchants, etc.....	35	106	181	167	171	126	89	97
D. Salesmen, etc.....	97	255	318	257	249	153	86	83
E. Clerks.....	148	249	214	198	95	70	51	44
Slightly infected gums:								
C. Executives, merchants, etc.....	18	100	212	165	269	239	191	203
D. Salesmen, etc.....	57	193	330	391	343	268	186	199
E. Clerks.....	81	169	206	290	135	115	77	83
Carious teeth, septic roots:								
C. Executives, merchants, etc.....	40	119	216	214	323	237	151	221
D. Salesmen, etc.....	90	281	393	488	397	274	209	229
E. Clerks.....	162	256	272	309	184	129	87	105
Pyorrhea, definite:								
C. Executives, merchants, etc.....	3	36	89	94	151	133	98	131
D. Salesmen, etc.....	12	53	114	211	187	144	120	120
E. Clerks.....	21	54	80	118	89	57	36	49
Enlarged heart:								
C. Executives, merchants, etc.....	6	16	21	27	37	48	37	89
D. Salesmen, etc.....	17	36	51	63	53	56	58	80
E. Clerks.....	33	41	42	48	31	37	29	49
Valvular lesions:								
C. Executives, merchants, etc.....	13	29	42	48	33	41	34	76
D. Salesmen, etc.....	29	63	82	70	79	60	47	78
E. Clerks.....	81	95	78	56	39	26	17	32
Arterial thickening, moderate or marked:								
C. Executives, merchants, etc.....	3	18	25	23	31	46	47	105
D. Salesmen, etc.....	6	22	43	61	57	53	49	107
E. Clerks.....	8	23	26	28	35	28	38	52
Arterial thickening, slight:								
C. Executives, merchants, etc.....	13	74	94	104	187	169	175	311
D. Salesmen, etc.....	44	121	184	217	222	167	181	273
E. Clerks.....	59	109	102	168	99	78	89	110
Hernia:								
C. Executives, merchants, etc.....	5	25	62	71	125	125	116	190
D. Salesmen, etc.....	18	64	105	143	183	160	120	202
E. Clerks.....	27	62	55	105	80	69	45	69
Constipation:								
C. Executives, merchants, etc.....	115	353	649	604	737	570	417	490
D. Salesmen, etc.....	281	825	1,141	1,027	992	699	477	466
E. Clerks.....	505	851	845	762	464	302	184	208

COMPARISON WITH MORTALITY DATA

Space does not permit an adequate comparison here with mortality and morbidity data. The data heretofore available have been carefully summarized by Collins (3) in a recent publication on the relation of economic status and health. Special reference, however, may be made to the Registrar General's (England and Wales) Occupational Supplement for 1921-1923 (4) (5) which gives differential death rates from important causes according to social

groups. In Table 25 the English comparative mortality figures⁶ are shown for four groups which are roughly comparable to the four used in the present study, namely, farmers; upper and middle (corresponding roughly to professional); intermediate; and skilled trade. The business group is no doubt made up of persons from both upper and middle and intermediate groups. Only the important causes of death are included.

TABLE 25.—Standardized mortality (comparative mortality figures) of males 20–65 years of age in England and Wales, 1921–1923: Farmers, upper and middle, intermediate, and skilled trade, by cause

Cause of death	Farmers	Upper and middle (Social Class I)	Intermediate (Social Class II)	Skilled trade (Social Class III)
All causes	674	812	942	951
Influenza	734	835	937	934
Tuberculosis (all forms)	462	508	855	978
Respiratory tuberculosis	414	489	844	977
Syphilis, aneurysm, general paralysis of insane, etc.	262	727	911	963
Cancer (all sites)	724	798	920	990
Diabetes	1,311	1,246	1,451	918
Cerebral hemorrhage, etc.	717	884	1,029	996
Diseases of circulatory system	666	980	1,012	930
Diseases of the heart	684	820	998	931
Valvular diseases of heart	705	569	902	964
Other heart diseases	663	1,062	1,091	899
Diseases of respiratory system	486	634	759	918
Bronchitis	230	256	548	937
Pneumonia	592	828	841	895
Diseases of digestive system	985	1,274	1,225	884
Peptic ulcer	880	905	968	968
Appendicitis	1,629	1,697	1,427	888
Cirrhosis of liver	781	1,625	1,865	656
Chronic nephritis	722	994	1,128	968
Suicide	1,235	1,156	1,276	905
Accident	751	809	700	949

(Registrar General's Decennial Supplement, England and Wales, 1921, Part II. Occupational mortality, fertility, and infant mortality, p. cxxiii.)

Since Table 25 does not give data for the lower social classes, for which no comparable information is available from the physical examinations, the contrast in the impairment rates according to social class appears much less than that shown by mortality data for a larger range of social classes in England. But, even if we had impairment rates and mortality rates resulting from these impairments for strictly comparable social groups, it is reasonable to expect that, on the whole, differential death rates would exhibit wider variations according to social class than differential impairment rates. This, for the reason that the wealthier and more intelligent class would take greater advantage of medical and other facilities for correcting or mitigating the effects of impairments after they manifest themselves in sickness or by other definite symptoms.

It is obvious, of course, that no specific comparisons of the English report and our study can be made. The general indications undoubtedly are similar. It may be noted that the relatively low rate among

⁶ That is, the standardized rates by social class are obtained for each disease for the ages 20–65 and divided by the corresponding rate for all occupied and retired.

farmers for respiratory impairments (which are all of the upper respiratory tract) is consistent with the English mortality from diseases of the respiratory system in the farmer group. Although the impairment rates for heart diseases are not widely different in the broad occupational groups, the farmers show the lowest rate and the skilled trade group the highest. In the mortality data it will be found that the farmers also have the lowest rates, and the intermediate and skilled trade groups are highest. The same tendencies are found in the rates of hardening of the arteries in the Life Extension data. The comparative mortality figures were not given in the British volume for this disease alone, but examination of the rates by age showed that the mortality among farmers was relatively low for this condition. The professional group, however, did not have as low mortality rates as the intermediate and skilled trade classes.

No other disease groups, for which the rates are not approximately the same for each occupational group, seem sufficiently comparable to be discussed.

SUMMARY

By way of summary, it seems desirable to present a bird's-eye view of what has been given in detail in the tables and graphs. This has been attempted in a final table in purely qualitative terms. The impairments whose rates differ rather widely among the broad occupational groups are listed on a chart in which each group heads two columns, one marked "high," for the impairments in which that group has rates above average, and one marked "low," for the impairments in which that group has rates below average.

Only the outstanding differences are considered, since it would be confusing to include instances which are barely significant statistically or where the differences are of no practical importance. The "head" office and "field" data are not considered separately, but the consistency of the results in the two divisions has been taken into account.

Although actual rates or differences have not been shown, (M) has been used to indicate that the difference is marked, (S) that it is slight, and a question mark (?) that the authors could not be sure that the difference was statistically significant, but felt that the condition was of sufficient interest to be mentioned.

It is possible from this table to see rather clearly what the broad differences are. For most conditions, the agricultural group would seem to have rates definitely below the average for all examined, but there are important exceptions, notably for teeth, stomach and abdominal conditions, and the genitourinary system. The rates are low for diseases of the eye and ear, nose and throat, heart and pulse, blood vessels, and many miscellaneous conditions.

TABLE 27.—Summary of rates of impairment in broad occupational groups as to whether higher or lower than average

[S=slight difference; M=marked difference; (?) indicates that it is doubtful whether difference is significant]

	Agricultural		Professional		Business		Skilled trade	
	High	Low	High	Low	High	Low	High	Low
Eye and ear.		Defective vision—Corrected (M). Uncorrected. Diseases of external eye (?). Perforation of eardrum (?). Wax in ears.	Defective vision—Corrected.	Defective vision—Uncorrected. Defective hearing (S).			Defective vision—Uncorrected (M). Defective hearing (M) (ranks highest in most of group).	Defective vision—Corrected.
Teeth.	Carious, septic (M). Pyorrhea, definite (M).			Carious, septic (M). Slightly infected gums. Pyorrhea, definite (M). Insufficient dentistry (S).		Carious (S). Pyorrhea, definite (S).	Carious, septic (M). Slightly infected gums. Pyorrhea, definite. Insufficient dentistry.	
Nose and throat.		Deflected septum. Enlarged and diseased tonsils (M). Nasopharyngitis (M). Hypertrophic rhinitis (M).					Frequent colds (S).	
Respiratory.	Asthma (?).						Bronchitis.	
Heart and pulse.	Slow pulse, percent with.	Functional murmur. Valvular (S). Rapid pulse, percent with.				(Tendency to rank lowest in this group.)	Valvular (S). Enlarged (S).	
Arterial thickening.		Arterial thickening (S).		Arterial thickening (S).			Arterial thickening (M).	

Stomach and abdominal.	Gastric disorders. Tenderness gall bladder region (M). Tenderness appendix region. Hernia (S).	Constipation (M). Weak inguinal rings. Hemorrhoids (S). Habitual use of laxatives.	Hernia (S).		Constipation. Headaches. Use of laxatives (S).
Genitourinary.	Enlarged prostate. Frequent urination (M).		(Tendency to rank lowest in this group)		
Brain and nervous.	Neurasthenia.	Nervousness. Exaggerated reflexes.	Nervousness.		
Miscellaneous.	Dizziness. Backache.	Aderitis. Chronic skin. Use of patent medicines. Enlarged thyroid. Varicocele.	Chronic skin. Mastoids.	Backache.	Backache. Insomnia. Use of patent medicines. Varicose veins. Mastoids (?).
Urinalyses.	Albumin.	Low specific gravity, per cent with (tendency for sugar, pus, blood to be low).	Low specific gravity, per cent with.	(Tendency for sugar, pus, blood, casts to be low.)	Albumin (tendency for sugar, pus, blood, casts to be high).

The professional group conforms more nearly to the average for the entire population considered. Few conditions are found to have excessive rates; but on the other hand, there are not very many with particularly low rates.

The business group approximates the average for the entire population considered in nearly every respect.

The skilled trade group stands out distinctly from the others in a number of respects. Its rates of impairments are excessively high for eye and ear, teeth, heart and pulse, and many miscellaneous conditions. The desirability of a study of the rates of impairments in the specific occupations making up this group is suggested.

Again, it should be emphasized that one could not expect in this study to find very marked differences, since the lower social levels are but slightly represented in the data.

ACKNOWLEDGMENTS

The original data, prepared up to the stage for tabulation, were made available to the Milbank Memorial Fund and the United States Public Health Service by the Life Extension Institute. Personal acknowledgment, however, is due to Dr. Eugene Lyman Fisk, medical director of the institute, for his valuable counsel, and Miss Elizabeth W. McKee, statistician, and the staff in general for their constant cooperation and frequent assistance on many details.

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ACUTE RESPONSE OF GUINEA PIGS TO VAPORS OF SOME NEW COMMERCIAL ORGANIC COMPOUNDS

V. VINYL CHLORIDE¹

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This report on the acute response of guinea pigs to vinyl chloride gas is the fifth of a series of similar reports which deal with studies pertinent to evaluating the hazards involved in exposure to some chemical products which have recently reached, or promise to reach, important domestic and industrial use. The first report of the series dealt with ethylene dichloride,³ the second with ethyl benzene vapor,⁴ the third with "Cellosolve" (ethylene glycol monoethyl ether),⁵ and the fourth with ethylene oxide.⁶

Vinyl chloride is used at present only in the synthesis of organic compounds, principally resins.

The investigation described herein was undertaken at the request of the Carbide & Carbon Chemicals Corporation, and the work was conducted jointly by that corporation and the United States Bureau of Mines at the Pittsburgh Experiment Station of the Bureau of Mines.

SCOPE OF WORK

The scope of the work included a study of the toxicity of vinyl chloride and the physiological response to its vapors as determined by exposure of guinea pigs. Only acute effects as produced by a single exposure were studied. The experiments were planned to give information relative to the concentrations and periods of exposure which produce but slight response, moderate response, and serious response.

¹ This report represents work done under cooperative agreement between the Bureau of Mines, Department of Commerce, and the Carbide & Carbon Chemicals Corporation. Published by permission of the Director, U. S. Bureau of Mines.

² Assistant surgeon, United States Public Health Service, detailed to the Bureau of Mines.

³ Sayers, R. R., Yant, W. P., Waite, C. P., and Patty, F. A.: Acute response of guinea pigs to vapors of some new commercial organic compounds. I. Ethylene dichloride. *Pub. Health Rep.*, vol. 45, No. 5, Jan. 31, 1930, pp. 225-239. (Reprint No. 1349.)

⁴ Yant, W. P., Schrenk, H. H., Waite, C. P., and Patty, F. A.: Acute response of guinea pigs to vapors of some new commercial organic compounds. II. Ethyl benzene. *Pub. Health Rep.*, vol. 45, No. 22, May 30, 1930, pp. 1241-1250. (Reprint No. 1379.)

⁵ Waite, C. P., Patty, F. A., and Yant, W. P.: Acute response of guinea pigs to vapors of some new commercial organic compounds. III. "Cellosolve." *Pub. Health Rep.*, vol. 45, No. 26, June 27, 1930, pp. 1459-1466. (Reprint No. 1389.)

⁶ Waite, C. P., Patty, F. A., and Yant, W. P.: Acute response of guinea pigs to vapors of some new commercial organic compounds. IV. Ethylene oxide. *Pub. Health Rep.*, vol. 45, No. 32, Aug. 8, 1930, [pp. 1832-1843. (Reprint No. 1401.)

DESCRIPTION OF MATERIAL USED FOR TESTS

Vinyl chloride (CH_2CHCl) is a colorless gas at room temperatures (boiling point, -13.9°C). The gas has a pleasant ethereal odor and is slightly soluble in water. Its limits of inflammability are 4.0 to 21.7 per cent by volume in air.⁷

The vinyl chloride used in experiments described in this report was a commercial product having the following plant specifications: Boiling range, 95 per cent or more below -10°C . at 760 mm.; acetaldehyde, not more than 0.5 per cent; residue, not more than 0.5 per cent.

TEST APPARATUS

The test apparatus was the same as that described in a previous report dealing with ethylene oxide.⁶

COMPUTATION AND ANALYSIS OF GAS-AIR MIXTURES

The vinyl chloride-air mixtures were created by adjusting calibrated flowmeters (Venturi type) to give the desired proportions of gas and air. The vinyl chloride content was then checked by analysis.

The apparatus used was the same as that used for determining ethylene dichloride in air.⁵ Briefly, the method was to subject the vinyl chloride to combustion with oxygen (explosion method using electrolytic gas to "energize" the combustion), and absorption of the products of combustion. For mixtures containing insufficient oxygen for complete combustion, a known amount of additional air or pure oxygen was mixed with the sample before adding the electrolytic gas. A minimum amount of stopcock grease was used in the apparatus to reduce error through solubility of the gas. For the same reason rubber tubing was not used except for making joints of glass tubing, caution being taken to have the ends butt together.

TEST PROCEDURE, DESCRIPTION AND CARE OF ANIMALS

The test procedure, and the animals and their care were the same as described in the published report dealing with ethylene dichloride.⁵

RESULTS OF TESTS

The detailed test data are too voluminous to be presented in this report and only summarized results pertinent to symptoms, gross pathology, and fatality are given. Specimens of tissue were taken for microscopic examination, a report of which will be made later.

⁵ See previous footnote 5.

⁶ See previous footnote 6.

⁷ Jones, G. W., U. S. Bureau of Mines, unpublished data.

SYMPTOMS OF ANIMALS

Control animals.—No symptoms were exhibited by the 18 control guinea pigs used in these tests or by the stock animals from which all of the test animals were taken. Also, no deaths occurred.

Exposed animals.—Table 1 gives the symptoms shown by the animals exposed to vapors of vinyl chloride and also the average period of exposure required to produce these symptoms by various concentrations of vapor in air. The reader should note that the figures in parentheses indicate that the particular symptom did not occur in the maximum period of test as given.

The highest concentration of vinyl chloride in air used in the exposures (40 per cent) exerted an almost immediate narcotic effect on the animals. Within one-fourth minute the animals fell to their sides in an apparent unconscious or narcose state, with convulsive twitchings of the trunk and extremities and jerky rapid respirations. The pigs remained in this state until death or termination of the test.

TABLE 1.—Symptoms produced in guinea pigs during exposure to vapors of vinyl chloride

Type of symptoms	Concentration of vapor and period of exposure producing symptoms ¹						
	40	15 to 25	10	5	2.5	1.0	0.5
Dropping to sides; incomplete narcosis; nervous phenomena; irregular twitching of extremities.....	¼	1	2	½ (360)	½ (480)	½ (480)	½ (480)
Unsteadiness on feet; motor ataxia.....	½ (10)	½ (29)	½ (360)	2	5	½ (480)	½ (480)
Apparent unconsciousness; deep narcosis; no twitching of extremities; quiet.....	½ (10)	16-20	60	50	90	½ (480)	½ (480)
Jerky, rapid respiration.....	¼-½	2	(²)	240	½ (480)	½ (480)	½ (480)
Slow, shallow respiration.....	½ (10)	20	120-360	360	360-480	½ (480)	½ (480)
Respirations ceased.....	10-20	18-55	½ (360)	½ (360)	½ (480)	½ (480)	½ (480)

¹ Concentrations of vapor in per cent by volume; time in minutes.

² Not observed during maximum exposure period as given in parentheses.

³ Not determined.

Concentrations of 10 to 25 per cent caused the animals to fall on their sides with convulsions and with jerky, rapid respirations in 1 to 2 minutes. Following this the pigs lapsed into a state of apparently deep narcosis in which the convulsive twitchings and all movements ceased, the pigs being quiet and relaxed. This occurred within 16 to 20 minutes at concentrations of 15 to 25 per cent and within 60 minutes at concentrations of 10 per cent. Slow, shallow respirations occurred with 20 minutes' exposure to 15 to 25 per cent and with 120 to 360 minutes' exposure to 10 per cent. The pigs remained in this state until death or termination of the exposure.

Concentrations of 5 and 2.5 per cent did not produce the initial symptom of "dropping to their sides and unconsciousness with convulsive twitching of the extremities." These concentrations produced first an unsteadiness in the animals, a staggering on attempt-

ing to move about, with signs of motor ataxia. This occurred within 2 to 5 minutes, and lasted 50 to 90 minutes, at the end of which time the pigs fell on their sides in an apparent profound narcosis, being entirely relaxed with no convulsions or movements of any kind. The respirations were increased in rate and amplitude, becoming

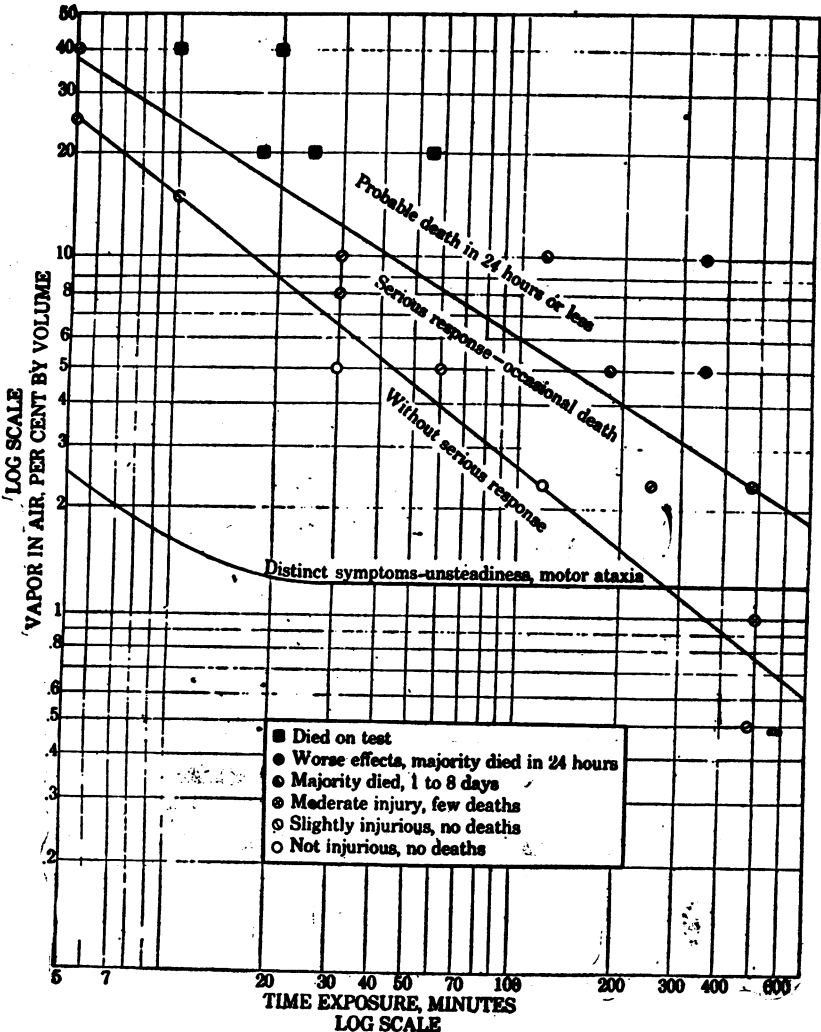


FIGURE 1.—Acute effects of exposure of guinea pigs to vinyl chloride vapor in air

rapid and jerky in character at the end of 240 minutes' exposure to 5 per cent, and slowed and became shallower at the end of 360 minutes, remaining in the latter condition until death or termination of the exposure.

Concentrations of 0.5 and 1.0 per cent did not produce any symptoms.

The general symptom of narcosis was manifested in three degrees, increasing in severity with increasing concentrations of vinyl chloride: (1) Unsteadiness, staggering, and motor ataxia; (2) incomplete narcosis in which convulsions affecting the trunk and extremities persist; (3) a state of profound or deep narcosis in which the animals are quiet, on their sides, relaxed, and without movement.

Observation showed that animals after being removed from the exposure chamber recovered from the most profound narcosis within 12 minutes.

No signs of eye or nasal irritation were observed.

SYMPTOMS EXPERIENCED BY MEN

Two of the experimenters were exposed to 2.5 per cent vinyl chloride in air for a period of approximately three minutes. They reported that the gas had a fairly pleasant odor. They soon began to feel dizzy and disoriented as to space and size of surrounding objects, and complained of a burning sensation in the soles of the feet. They immediately recovered on leaving the chamber and complained only of a slight headache, which lasted about 30 minutes.

GROSS PATHOLOGY

Control animals.—A total of 18 control animals were killed for autopsy. No gross pathology resembling that found in the exposed animals was found. Also no deaths occurred among the control animals.

Exposed animals.—The gross pathological changes found in the animals that died during exposure (see fig. 1 for conditions of exposure causing death on test) were intense congestion and edema of the lungs and a hyperemia of the kidneys and liver. The lungs were light pink in color; the cut section was uniformly light red, and bled freely. A frothy exudate was present in the large bronchi, and squeezing of the lung tissue covered the cut surface with a frothy, bloody fluid. The kidneys and liver were deep red to purple in color and the cut sections were moist and dripped blood.

The animals that died within 1 to 8 days following exposure showed a congestion and edema of the lungs, with a swelling and hyperemia of the kidneys. The findings in animals of these same groups which were killed for autopsy immediately after exposure showed a hyperemia and edema of the lungs, with a congestion of the liver and kidneys. Animals that were killed for autopsy 4 days following exposure still showed a hyperemia with areas of congestion throughout the lungs, whereas those killed for autopsy 8 days following exposure showed atelectatic and emphysematous patches throughout the lungs.

The findings in those animals that were killed immediately after exposure to conditions that did not cause death, but which caused

a mild degree of pathological change, were principally congestion and slight edema of the lungs, and hyperemia of the liver. The findings in the lungs were not as severe as noted in the exposures previously described. These changes cleared up in most of the animals within 8 days after exposure.

A clouding and thickening of the cortex of the kidneys was noted in those animals killed immediately after exposure to 25 per cent for 5 minutes and 5 per cent for 1 hour. This change was not noted in members of those groups killed 4 days and 8 days later.

No significant gross pathological changes were found in animals exposed to 15 per cent for 10 minutes, 5 per cent for 30 minutes, and 2.5 per cent for 2 hours.

DISCUSSION OF PATHOLOGY

Vinyl chloride is irritating to the lungs. Congestion and edema of the lungs are the most constant and prominent observations for exposure to conditions which caused death during or following exposure. Accompanying the lung changes was a passive congestion of the liver and kidneys.

The signs of lung irritation which were found immediately after exposure to conditions which did not cause death, practically disappeared within 8 days. A clouding and thickening of the cortex of the kidney was noted immediately after exposure to 25 per cent for 5 minutes and 5 per cent for 1 hour. These kidney changes were not present in animals of the same groups after 4 days.

FATALITY AND SUMMARY OF PHYSIOLOGICAL RESPONSE

A summary of the fatality and response of guinea pigs exposed to various concentrations of vinyl chloride in air is shown graphically in Figure 1, and given in conventional degrees of response in Table 2. The results of each experiment are designated by a symbol which represents one of six different degrees of severity. With the exception of concentrations causing death during exposure for which the results obtained for individual animals are given, the selected symbol describes the results obtained for at least one-half the individual animals, and in most cases the results are for the majority of a group (at least three and usually six animals) exposed to a given condition.

It will be noted from the legend on Figure 1 that the six degrees of response are—

1. Died on test.
2. Majority died within 24 hours.
3. Majority died, 1 to 8 days.
4. Moderate injury, few deaths.
5. Slightly injurious, no deaths.
6. Not injurious, no deaths.

In addition to representing the response of each group by symbols, the latter have been separated into four general fields or zones of probable response, namely,

1. Probable death, 24 hours or less.
2. Serious response, occasional death.
3. Without serious response.
4. Distinct symptoms.

Table 2 gives the concentrations which produce the degrees of response generally reported in the literature dealing with noxious gases. These data may be compared with toxicological data for other compounds. ^{3 4 5 6 8 9 10 11}

TABLE 2.—*Acute effects of exposure of guinea pigs to vinyl chloride in air*

Effects of exposure after various periods of time	Concentration, per cent by volume
1. Kills in a very short time.....	20 to 40
2. Serious symptoms in a very short time.....	10
3. Moderate symptoms in a very short time.....	2.5 to 5
4. Dangerous to life in 30 to 60 minutes.....	10
5. Marked symptoms in 30 to 60 minutes.....	5
6. Maximum amount for 60 minutes without serious disturbances leading to death.....	5 to 7
7. Maximum amount for 60 minutes without marked symptoms.....	1.0 to 1.5
8. Maximum amount for several hours without serious disturbances.....	0.5
9. Maximum amount for several hours with but slight or no symptoms.....	1.0

CAUSE OF DEATH DURING AND FOLLOWING EXPOSURE

The animals exposed to 20 to 40 per cent vinyl chloride entered a state of profound narcosis which terminated in death. Recovery was rapid and without fatality following exposure for periods less than those causing death during exposure. This indicated that the degree of lung irritation acquired in these relatively short periods was insufficient to cause death. With concentrations in the range of 5 to 10 per cent the period between a profound but nonfatal narcose state and death was much longer, and permits considerable lung irritation to take place. Also, there was a probable action of vinyl chloride or products of its decomposition on the liver and kidneys. With 2.5 per cent, profound narcosis was present after 90 minutes and irritation of the lungs occurred after several hours, but death was exceptional.

^{3 4 5 6} See previous footnotes 3, 4, 5, 6.

⁷ Cotton, R. T., and Young, H. D.: The use of carbon dioxide to increase the insecticidal efficiency of fumigants. Proc. Entomological Soc. of Washington, vol. 31 (1929), pp. 97-102.

⁸ Sayers, R. R., Yant, W. P., Thomas, B. G. II., and Berger, L. B.: Physiological response attending exposure to vapors of methyl bromide, methyl chloride, ethyl bromide, and ethyl chloride. Pub. Health Bul. No. 185 (1929), 56 pp.

¹⁰ International Critical Tables, first edition (1927), vol. 2, p. 318. Also see errata sheet, vol. 2.

¹¹ Henderson, Yandell, and Haggard, Howard W.: Noxious gases. American Chemical Society Monograph No. 35, 1927. Chemical Catalogue Co., New York.

HEALTH HAZARDS FROM VINYL CHLORIDE

With regard to symptoms and pathology, as well as the effecting concentrations, the response of guinea pigs to vinyl chloride appears to be similar to their response to ethyl chloride.⁸ In equal concentrations and for single exposures, vinyl chloride is less harmful than gasoline, benzene, chloroform, and carbon tetrachloride.

The comparatively harmless response to concentrations of vinyl chloride that will maintain a narcose state, together with its rather pleasant odor, suggests a possible use for producing surgical anaesthesia. This could be produced quickly by high concentrations and maintained with lower concentrations. Much additional work is necessary, however, to ascertain the practicability of its use.

Vinyl chloride does not possess adequate warning properties of the odor or irritation type. With concentrations of 5 per cent or less, however, it gives warning by producing symptoms of dizziness and disorientation in advance of harm. With higher concentrations the narcotic action is very rapid and persons would have little time to heed the warning symptoms before helplessness would ensue.

Vinyl chloride boils at less than ordinary room temperatures. As a rule, it is contained in cylinders under pressure. This is conducive to escape of the gas; on the other hand, the high concentrations required to produce physiological harm minimize the danger from leakage. There is, in fact, more danger from explosion than from harm to health from exposure.

ACKNOWLEDGMENTS

The writers desire to give acknowledgment to J. G. Davidson, manager of chemical sales for the corporation mentioned, and E. W. Reid, senior fellow of this firm's fellowship at the Mellon Institute, Pittsburgh, Pa., for sponsoring the investigation, to R. R. Sayers, chief surgeon, Bureau of Mines, for suggestions and advice, and to H. F. Brubach, laboratory assistant, Bureau of Mines, for assistance in performing the experimental work.

SUMMARY AND CONCLUSIONS

The acute physiological response of guinea pigs to air containing vinyl chloride was determined. The concentrations of vapor and periods of exposure ranged from those which produced death to those which caused no apparent effect after several hours' exposure. The symptoms, gross pathology, and fatality are given with a discussion of potential hazards.

1. The symptoms are principally those of narcosis. They range from unsteadiness and motor ataxia to incomplete and, finally, com-

⁸ See previous footnote 8.

plete narcosis. The respirations vary from a rapid, jerky type accompanying the beginning of narcosis to a later, slow, shallow type.

2. The principal gross pathological findings were congestion and edema of the lungs, with hyperemia of the kidneys and liver.

3. Exposure to 20 to 40 per cent kills guinea pigs in a very short time; 10 per cent is dangerous to their lives after 30 to 60 minutes' exposure; and 0.5 per cent is the maximum allowable amount for several hours without acute disturbances of a serious nature.

4. With regard to relative toxicity (concentrations causing acute harm), vinyl chloride is less harmful than carbon tetrachloride and chloroform, and is similar to ethyl chloride.

5. The danger from explosion exceeds the health hazard from exposure.

6. Vinyl chloride does not possess adequate warning properties of the odor or irritation type. It gives warning, however, by producing symptoms of dizziness and disorientation in advance of harm, except when present in exceedingly high concentrations which would cause almost immediate helplessness and unconsciousness.

7. The narcotic action of vinyl chloride and its comparatively low toxicity suggest its possible use for surgical anaesthesia.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for June and First Six Months of 1930

The accompanying tables are taken from the Statistical Bulletin for July, 1930, issued by the Metropolitan Life Insurance Co. They present the mortality record of the industrial insurance department of the company for June, 1930, as compared with the preceding month and with the corresponding month of last year, and also give the rates, by white and colored policyholders, for the first six months of the years 1928, 1929, and 1930. Death rates are given for the principal causes of death, and are based on a strength of approximately 19,000,000 insured persons.

It should be remembered that these rates apply to a more or less selected group of persons. In recent years the general death rate for this group has been approximately 73 per cent of the rate for the registration area of the United States.

JUNE, 1930

The death rate for June among these persons was 8.3 per 1,000, the same as for June of last year, and the lowest rate for the month in the mortality records of the company.

As compared with June of last year, improvement is noted for diphtheria, influenza, tuberculosis, pneumonia, accidents, and homi-

cides, while higher mortality rates are recorded for heart disease, chronic nephritis, and suicides; and June was the sixth successive month of 1930 to record a higher death rate for automobile fatalities than the corresponding month of last year.

Death rates (annual basis) per 100,000 for principal causes of death, June, 1930

[Industrial Department, Metropolitan Life Insurance Co.]

Cause of death	Rate per 100,000 lives exposed ¹				
	June, 1930	May, 1930	June, 1929	Cumulative, January-June	
				1930	1929
Total, all causes.....	832.5	870.2	834.5	924.4	1,051.2
Typhoid fever.....	1.9	1.2	2.4	1.8	1.7
Measles.....	5.5	6.0	4.9	4.7	4.6
Scarlet fever.....	2.1	2.6	2.2	3.4	3.5
Whooping cough.....	3.9	4.4	4.8	4.6	6.5
Diphtheria.....	3.6	5.7	7.6	7.1	9.7
Influenza.....	7.9	13.9	10.1	21.2	73.5
Tuberculosis (all forms).....	82.8	84.5	88.7	85.6	95.0
Tuberculosis of respiratory system.....	71.9	73.5	77.4	74.2	84.3
Cancer.....	76.1	73.0	75.1	76.1	77.9
Diabetes mellitus.....	15.6	18.3	14.1	19.6	21.0
Cerebral hemorrhage.....	57.6	59.5	51.1	62.1	62.4
Organic diseases of heart.....	139.6	143.5	133.0	156.5	166.2
Pneumonia (all forms).....	58.4	89.1	62.5	101.6	126.5
Other respiratory diseases.....	11.8	12.0	11.4	12.5	14.5
Diarrhea and enteritis.....	15.9	11.3	16.7	12.5	14.4
Bright's disease (chronic nephritis).....	69.9	67.5	61.4	71.2	75.6
Puerperal state.....	12.0	11.5	11.4	12.9	14.4
Suicides.....	9.0	10.1	8.2	9.6	9.0
Homicides.....	4.9	5.9	6.3	6.2	6.4
Other external causes (excluding suicides and homicides).....	61.9	56.3	65.4	57.3	59.8
Traumatism by automobiles.....	20.1	19.0	19.6	18.2	17.2
All other causes.....	191.3	193.9	197.2	198.6	208.7

¹ All figures in this table include insured infants under 1 year of age. The rates for 1930 are subject to slight correction, as they are based on provisional estimates of lives exposed to risk.

² Rate not comparable with that for 1930.

FIRST SIX MONTHS OF 1930

With regard to health conditions in this large group of insured persons for the first half of 1930, as reflected in the mortality rates, the Bulletin states—

A new record for low mortality for the first half of any year has been registered for the winter and spring seasons of 1930. This applies to Canada as well as to the United States. In the latter, the white population has enjoyed better health than during the corresponding period of any previous year; and the death rate of the colored people has never been so low—with a single exception. The improvement has probably extended to all ages of the population—although this can not be stated unreservedly at this writing. It is certain, nevertheless, that the chief scourges of childhood are taking a smaller death toll than ever before; that tuberculosis, which causes death chiefly in early adult and middle life, is recording a death rate far below the previous minimum; and that the mortality rates from several diseases, which are important factors in later life, have shown noteworthy declines in 1930.

As in 1929, a large reduction in the tuberculosis death rate to a new minimum bids fair to be the outstanding public-health fact of the year. The figure for

the first half of 1930 was 85.6 deaths per 100,000 policyholders. This marks a reduction of almost 10 per cent in a single year from the previous minimum, 95 per 100,000 in 1929. Both white and colored policyholders have shared in the decline, with the former showing the greater drop in the death rate.

Death rates (annual basis) per 100,000 for principal causes of death, first six months of 1928, 1929, and 1930

[Industrial Department, Metropolitan Life Insurance Co.]

Cause of death	Death rates per 100,000 persons exposed ¹					
	White			Colored		
	January-June, 1930	January-June, 1929	January-June, 1928	January-June, 1930	January-June, 1929	January-June, 1928
All causes of death.....	838.6	952.2	898.5	1,514.3	1,731.9	1,616.9
Typhoid fever.....	1.1	1.4	1.7	2.5	3.5	2.7
Measles.....	5.0	5.0	8.7	2.6	2.0	8.1
Scarlet fever.....	3.7	3.8	4.0	1.0	1.1	1.7
Whooping cough.....	4.6	5.9	5.8	4.5	10.3	8.8
Diphtheria.....	7.7	10.2	12.3	3.3	6.6	6.2
Influenza.....	17.0	64.6	28.5	49.7	134.4	62.0
Meningococcus meningitis.....	3.7	5.5	2.2	11.7	9.7	2.9
Tuberculosis (all forms).....	67.1	75.0	76.3	212.5	232.7	242.1
Tuberculosis of respiratory system.....	58.0	66.5	66.9	185.5	207.0	212.0
Tuberculosis of the meninges, etc.....	4.1	3.9	4.4	6.5	4.9	8.3
Other forms of tuberculosis.....	5.1	4.6	5.0	20.5	20.8	22.0
Cancer.....	76.5	77.8	76.1	72.8	78.7	77.2
Diabetes.....	19.3	20.7	18.9	21.2	23.3	21.4
Alcoholism.....	2.9	3.2	2.8	4.8	5.7	5.3
Cerebral hemorrhage; apoplexy.....	53.7	² 55.5	² 54.4	120.1	² 109.9	² 104.2
Organic diseases of the heart.....	142.0	151.5	141.1	256.5	267.5	239.3
Total respiratory diseases.....	104.0	127.1	121.2	184.2	236.6	243.4
Bronchitis.....	3.9	4.5	4.9	4.8	6.2	7.2
Broncho-pneumonia.....	38.2	48.6	45.2	51.7	71.7	81.8
Pneumonia (lobar and undefined).....	53.7	64.8	62.2	116.7	144.6	140.9
Other diseases of respiratory system.....	8.2	9.1	8.9	10.9	14.2	13.4
Diarrhea and enteritis.....	12.4	14.2	15.9	12.8	15.6	17.4
Under 2 years.....	9.7	11.4	12.9	7.0	9.3	12.1
2 years and over.....	2.7	2.8	2.9	5.8	6.4	5.4
Acute nephritis.....	3.4	8.9	4.2	14.3	13.8	13.0
Chronic nephritis.....	62.4	67.2	67.9	131.6	133.2	136.0
Total puerperal state.....	12.2	13.2	13.7	18.0	22.9	21.0
Total external causes.....	68.9	69.9	67.1	102.1	110.9	104.8
Suicides.....	10.0	9.3	8.8	6.8	6.7	6.3
Homicides.....	3.2	2.9	2.8	27.0	30.3	30.5
Accidental and unspecified violence.....	55.7	57.7	55.5	68.4	73.9	68.1
Automobile accidents.....	18.3	17.3	15.3	17.0	16.2	16.6
All other and ill-defined causes of death.....	171.1	176.7	175.7	288.0	313.4	299.4

¹ All figures in this table include insured infants under one year of age. The figures for 1930 are subject to slight correction, as they are based on provisional estimates of lives exposed to risk.

² Rate not comparable with that for 1930.

The improvement in the diphtheria mortality rate is also an outstanding item in the health record of 1930, to date, and is second in importance to the splendid record for tuberculosis. The diphtheria death rate has dropped approximately 27 per cent in a single year. Unless unexpected epidemic prevalence of this disease is encountered at some time during the latter half of the year, 1930 will not only register a new minimum death rate for diphtheria, but will mark the largest year-to-year drop ever recorded.

Still another favorable item in the 1930 health report is the record for diseases related to childbearing, which have every prospect of recording a new minimum death rate this year.

The absence of any widespread prevalence of influenza has resulted in about the normal winter and spring death rate for that disease. This is in marked

contrast to what happened in 1929, when a major influenza epidemic exacted a large death toll during the winter. The drop in influenza mortality has been reflected in a considerable decline for pneumonia. The decreases recorded this year for heart disease and chronic nephritis are also due, in part, to the lower prevalence of influenza which, when epidemic, always hastens the deaths of many persons who suffer from chronic diseases.

The decline in the cancer death rate has persisted throughout the half year. If this improvement should be maintained throughout 1930, the first break since 1924 in the upward course of the cancer mortality rate will result.

The diabetes death rate (19.6 per 100,000) may be compared with 21 for the like period of 1929. There is a fair prospect that the upward course of the mortality from this disease will be checked this year, after rising continuously for five years.

The mortality from automobile accidents is higher than ever before at this time of the year. The estimated loss of life in the United States from this cause in 1929 was 31,400, which will probably be exceeded this year.

COURT DECISION RELATING TO PUBLIC HEALTH

Retail seller of soda-water beverages, holding State license, not required to procure municipal license.—(Wisconsin Supreme Court; *Janke v. City of Milwaukee et al.*, 231 N. W. 261; decided June 11, 1930.) The plaintiff was the proprietor of a drug store where he sold soda-water beverages at retail to be consumed on the premises. He held a State license to manufacture and deal in soda-water beverages. An ordinance of Milwaukee prohibited the sale and manufacture, without a license from the city, of nonintoxicating liquors to be consumed upon the premises. The enforcement of this ordinance was sought to be enjoined by the plaintiff.

Chapter 96 of the 1929 laws provided that no person, firm, or corporation, possessing a State license such as held by plaintiff, should be required to procure a municipal license under the State prohibition act then in force. The prohibition act gave municipal corporations the power to license those who manufactured and dealt in nonintoxicating liquor. Chapter 129 of the 1929 laws repealed the prohibition law but gave to municipalities exactly the same power to license manufacturers and vendors of nonintoxicating liquor that was conferred by the prohibition act. In a prior case,¹ the supreme court had decided that the passage of chapter 129 did not evidence a legislative intent to change the exemption contained in chapter 96 and held that a municipal license was not required of a company which was engaged in the manufacture, bottling, and sale of soda-water beverages at wholesale and which held a State license therefor. The only material difference between the facts in such previous case and in the instant case was that in the prior case the plaintiff company manufactured and sold at wholesale beverages which were not consumed on its premises, while in the present case the plaintiff manufactured and sold at retail beverages to be consumed on his premises.

¹ See Public Health Reports, Feb. 28, 1930, p. 446.

Under the law no one was permitted to "engage in the business of manufacturing or bottling any soda-water beverages or of selling such beverage" without first obtaining a State license. The supreme court said that the italicized words clearly included all vendors of such beverages, whether they sold at retail or at wholesale, and regardless of the place of consumption, and held that the exemption from procuring a municipal license was applicable to the plaintiff and others similarly situated who were licensed to manufacture and deal in soda-water beverages, whether they sold at wholesale or retail, for consumption on or off their premises, to the same extent as it was held in the prior case mentioned to exempt those who manufactured and sold at wholesale.

DEATHS DURING WEEK ENDED AUGUST 2, 1930

Summary of information received by telegraph from industrial insurance companies for the week ended August 2, 1930, and corresponding week of 1929. (From the Weekly Health Index issued by the Bureau of the Census, Department of Commerce)

	Week ended August 2, 1930	Corresponding week, 1929
Policies in force.....	75, 961, 722	74, 565, 536
Number of death claims.....	13, 785	11, 706
Death claims per 1,000 policies in force, annual rate.....	9. 5	8. 2

Deaths¹ from all causes in certain large cities of the United States during the week ended August 2, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon midyear population estimates derived from the 1930 census. Cities whose population was found to be less than was indicated by estimates heretofore used will therefore appear as having a higher death rate than usual, even though there may have been no material increase in the actual number of deaths.]

City	Week ended Aug. 2, 1930				Corresponding week, 1929		Death rate ¹ for first 31 weeks	
	Total deaths	Death rate ²	Deaths under 1 year	Infant mortality rate ^{3,4}	Death rate ¹	Deaths under 1 year	1930	1929
Total (78 cities).....	7, 236	10. 9	647	52	10. 7	705	12. 6	13. 5
Akron.....	31	6. 4	3	27	6. 6	6	8. 1	9. 9
Albany ⁵	28	11. 4	4	87	18. 6	4	15. 3	17. 0
Atlanta.....	59	11. 5	7	74	9. 5	11	16. 8	16. 7
White.....	28		3	95		8		
Colored.....	31	(?)	4	63	(?)	3	(?)	(?)
Baltimore ⁶	245	15. 9	23	78	13. 0	25	14. 7	15. 6
White.....	179		14	60		23		
Colored.....	66	(?)	9	146	(?)	2	(?)	(?)
Birmingham.....	69	13. 9	14	131	14. 1	13	14. 5	17. 2
White.....	27		10	154		6		
Colored.....	42	(?)	4	95	(?)	7	(?)	(?)
Boston.....	162	10. 8	10	28	12. 2	22	14. 8	16. 3
Bridgeport.....	20	7. 1	1	17	8. 2	2	11. 9	13. 0
Buffalo.....	120	10. 9	12	53	11. 2	14	13. 5	14. 8
Cambridge.....	21	9. 6	0	0	7. 8	1	12. 4	13. 6
Camden.....	32	14. 2	5	91	13. 8	2	14. 5	15. 4
Canton.....	23	11. 3	2	50	7. 5	1	10. 6	12. 3
Chicago ⁶	631	9. 7	54	48	10. 0	59	10. 9	12. 0
Cincinnati.....	144	16. 7	11	65	14. 4	16	16. 2	18. 0

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended¹ August 2, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929—Continued

City	Week ended Aug. 2, 1930				Corresponding week, 1929		Death rate ² for first 31 weeks	
	Total deaths	Death rate ²	Deaths under 1 year	Infant mortality rate ^{3, 4}	Death rate ²	Deaths under 1 year	1930	1929
Cleveland.....	148	8.5	12	36	13.2	15	11.7	13.5
Columbus.....	85	15.3	9	88	11.8	4	16.9	15.8
Dallas ⁴	71	14.1	5	5	8.8	7	12.1	12.4
White.....	52	(?)	5	0	(?)	7	(?)	(?)
Colored.....	19	(?)	0	0	(?)	0	(?)	(?)
Dayton.....	49	12.7	4	59	11.4	6	10.6	12.1
Denver.....	70	12.7	10	104	13.0	6	14.8	15.5
Des Moines.....	33	12.0	2	35	7.7	0	12.3	12.2
Detroit.....	231	7.6	22	34	10.0	36	9.9	11.9
Duluth.....	12	6.2	0	0	8.8	1	11.5	12.0
El Paso ⁴	29	14.8	6	6	17.6	9	18.5	21.5
Erie.....	20	9.0	0	0	8.2	1	11.5	13.1
Fall River ⁴	20	9.1	1	23	11.4	2	12.9	15.3
Flint.....	27	8.9	5	58	7.2	7	9.5	11.3
Fort Worth ⁴	37	10.7	5	5	8.2	5	11.6	13.4
White.....	33	(?)	4	4	(?)	5	(?)	(?)
Colored.....	6	(?)	1	1	(?)	0	(?)	(?)
Grand Rapids.....	27	8.3	2	30	8.8	3	10.9	10.5
Houston ⁴	45	8.0	5	5	11.1	6	12.7	13.3
White.....	30	(?)	3	3	(?)	5	(?)	(?)
Colored.....	15	(?)	2	2	(?)	1	(?)	(?)
Indianapolis.....	91	13.0	8	60	12.7	13	14.9	15.3
White.....	77	(?)	5	43	(?)	10	(?)	(?)
Colored.....	14	(?)	3	161	(?)	3	(?)	(?)
Jersey City.....	57	9.4	5	43	10.4	9	12.0	13.5
Kansas City, Kans.....	18	7.7	1	24	12.9	3	11.4	14.2
White.....	10	(?)	0	27	(?)	2	(?)	(?)
Colored.....	8	(?)	1	0	(?)	1	(?)	(?)
Kansas City, Mo.....	102	13.5	10	78	12.2	8	13.9	14.7
Knoxville.....	28	13.7	3	70	16.6	8	14.4	14.3
White.....	25	(?)	2	52	(?)	5	(?)	(?)
Colored.....	3	(?)	1	247	(?)	3	(?)	(?)
Los Angeles.....	235	9.8	18	55	8.6	23	11.4	11.8
Louisville.....	120	20.3	8	70	8.5	8	14.0	15.7
White.....	102	(?)	7	69	(?)	6	(?)	(?)
Colored.....	18	(?)	1	72	(?)	2	(?)	(?)
Lowell ⁴	23	12.0	1	24	5.7	1	14.3	15.5
Lynn.....	22	11.2	2	51	7.7	3	11.2	12.1
Memphis.....	100	20.6	12	143	15.3	7	18.3	19.9
White.....	46	(?)	7	129	(?)	4	(?)	(?)
Colored.....	54	(?)	5	169	(?)	3	(?)	(?)
Milwaukee.....	99	9.0	10	50	9.7	14	10.3	11.8
Minneapolis.....	89	10.0	6	39	9.1	3	10.9	11.6
Nashville.....	55	19.5	10	155	18.5	9	17.8	20.0
White.....	34	(?)	6	123	(?)	4	(?)	(?)
Colored.....	21	(?)	4	253	(?)	5	(?)	(?)
New Bedford ⁴	14	6.5	2	51	9.7	2	11.7	13.6
New Haven.....	32	10.3	1	19	14.1	3	13.7	14.0
New Orleans.....	123	14.0	16	93	14.8	12	18.3	18.5
White.....	73	(?)	13	115	(?)	9	(?)	(?)
Colored.....	50	(?)	3	50	(?)	3	(?)	(?)
New York.....	1,225	9.1	99	42	0.4	119	11.4	12.2
Bronx Borough.....	180	7.3	9	21	6.9	16	8.3	8.9
Brooklyn Borough.....	379	7.6	39	41	8.3	41	10.3	11.0
Manhattan Borough.....	494	13.9	45	74	13.5	48	17.2	17.8
Queens Borough.....	128	6.1	3	87	7.2	12	7.5	8.0
Richmond Borough.....	44	14.5	3	58	12.2	2	15.0	16.6
Newark, N. J.....	82	9.6	7	37	11.2	2	12.7	13.7
Oakland.....	52	9.5	4	48	11.0	3	11.2	11.8
Oklahoma City.....	35	9.9	7	137	10.1	3	10.8	11.2
Omaha.....	68	16.5	10	114	14.7	5	14.3	14.5
Paterson.....	27	10.2	2	85	11.0	1	12.8	14.5
Philadelphia.....	494	13.1	60	89	9.9	19	13.1	14.0
Pittsburgh.....	162	12.6	22	81	10.8	16	14.5	15.8
Portland, Oreg.....	57	9.9	0	0	11.6	5	12.9	13.4
Providence.....	46	9.5	2	18	10.4	5	14.0	15.7
Richmond.....	60	14.2	3	44	14.0	9	15.6	17.5
White.....	32	(?)	1	22	(?)	4	(?)	(?)
Colored.....	18	(?)	2	87	(?)	5	(?)	(?)

Footnotes at end of table.

Deaths¹ from all causes in certain large cities of the United States during the week ended August 2, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929—Continued

City	Week ended Aug. 2, 1930				Corresponding week, 1929		Death rate ² for first 31 weeks	
	Total deaths	Death rate ³	Deaths under 1 year	Infant mortality rate ^{3,4}	Death rate ³	Deaths under 1 year	1930	1929
Rochester.....	64	10.2	5	44	9.5	2	12.2	13.2
St. Louis.....	224	14.2	10	32	15.0	16	15.0	15.7
St. Paul.....	41	7.9	1	10	6.0	2	10.6	11.1
Salt Lake City ⁴	28	10.4	2	31	14.7	2	13.1	13.9
San Antonio ⁴	55	11.2	11	-----	13.5	8	16.2	15.5
San Diego.....	32	11.2	0	0	8.4	3	14.7	16.3
San Francisco.....	160	13.3	6	41	9.9	4	13.6	13.7
Schenectady.....	18	9.8	2	62	6.6	2	11.8	13.2
Seattle.....	61	8.7	3	30	11.0	7	11.2	11.5
Somerville.....	18	9.0	2	65	7.1	3	10.4	9.9
Spokane.....	19	8.6	0	0	15.0	3	12.8	13.7
Springfield, Mass.....	29	10.1	1	16	7.4	2	12.8	13.4
Syracuse.....	46	11.5	4	50	9.4	3	12.3	13.9
Tacoma.....	26	12.7	2	51	9.3	3	12.8	12.3
Toledo.....	67	12.0	4	37	9.6	4	13.2	14.3
Trenton.....	57	24.2	3	56	14.1	3	17.4	18.1
Utica.....	28	14.2	2	57	13.8	1	15.6	16.5
Washington, D. C.....	146	15.6	14	81	15.2	15	15.8	16.4
White.....	86	-----	7	60	-----	7	-----	-----
Colored.....	60	(⁷)	7	124	(⁷)	8	(⁷)	(⁷)
Waterbury.....	15	7.7	0	0	7.8	1	10.3	10.2
Wilmington, Del. ⁵	21	10.4	2	45	17.3	5	15.0	14.8
Worcester.....	36	9.5	4	52	8.8	6	13.5	13.5
Yonkers.....	21	8.1	0	0	7.9	3	8.3	9.5
Youngstown.....	33	10.1	6	94	9.9	4	10.5	12.8

¹ Deaths of nonresidents are included. Stillbirths are excluded.

² These rates represent annual rates per 1,000 population, as estimated for 1930 and 1929 by the arithmetical method.

³ Deaths under 1 year of age per 1,000 live births.

⁴ Cities left blank are not in the registration area for births.

⁵ Data for 73 cities.

⁶ Deaths for week ended Friday.

⁷ For the cities for which deaths are shown by color the colored population in 1920 constituted the following per cents of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans. 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Richmond 32, and Washington, D. C., 25.

⁸ Population Apr. 1, 1930; decreased 1920 to 1930; no estimate made.

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 August 9, 1930, and August 10, 1929

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 9, 1930, and August 10, 1929

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929
New England States:								
Maine.....	4	2	1		4	10	1	0
New Hampshire.....						23	0	0
Vermont.....	1	2			3	1	0	0
Massachusetts.....	35	48			56	49	3	5
Rhode Island.....	5	2			6		0	0
Connecticut.....	5	16			8	11	0	2
Middle Atlantic States:								
New York.....	56	121	13	16	230	123	21	19
New Jersey.....	31	39	1	2	109	25	5	7
Pennsylvania.....	48	80			166	123	4	7
East North Central States:								
Ohio.....	12	41	3	8	9	48	8	8
Indiana.....	13	5			6	8	4	1
Illinois.....	64	112	1	5	25	122	6	11
Michigan.....	36	58	1		71	58	6	19
Wisconsin.....	11	31	4	14	79	117	2	3
West North Central States:								
Minnesota.....	10	13			9	17	2	1
Iowa.....	3	5			1	9	2	1
Missouri.....	17	15	1	1	17		6	8
North Dakota.....		2			1	17	0	0
South Dakota.....	7	7				2	2	0
Nebraska.....	7	1			8	30	0	1
Kansas.....	1	9			14	28	1	1
South Atlantic States:								
Delaware.....	2	1					0	0
Maryland ¹	3	4			3	6	0	0
District of Columbia.....	3	6		1	5		0	0
Virginia.....								
West Virginia.....	7	8		2	21	5	0	4
North Carolina.....	33	51			2	1	2	0
South Carolina.....	19	23	38	126	4		0	0
Georgia.....	4	12	3	17	12	3	0	0
Florida.....	1	18	1	1	6		0	2

¹ New York City only.

² Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 9, 1930, and August 10, 1929—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929
East South Central States:								
Kentucky.....	9	6			10		2	0
Tennessee.....	8	8	1		10	1	3	0
Alabama.....	9	21	4	6	24	6	4	0
Mississippi.....	5	15					1	
West South Central States:								
Arkansas.....	1	4	6			1	0	0
Louisiana.....	5	17	5	4	7	3	1	2
Oklahoma ¹	5	13	4	15	1	3	1	0
Texas.....	22	33		6	21	6	1	0
Mountain States:								
Montana.....		4			4	33	0	1
Idaho.....					8	1	0	0
Wyoming.....		1			2		0	2
Colorado.....	3	6			11	3	1	0
New Mexico.....	6	2			1		0	0
Arizona.....	2				9		2	3
Utah ¹			4	1	6	1	0	1
Pacific States:								
Washington.....	12	6	3	1	20	14	1	0
Oregon.....	6	5	7	1	16	20	0	1
California.....	41	32	6	8	84	17	2	5

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929
New England States:								
Maine.....	3	0	13	2	0	0	2	2
New Hampshire.....	1	1	1	4	0	0	2	0
Vermont.....	0	0	1	0	0	8	0	0
Massachusetts.....	23	1	48	44	0	0	5	10
Rhode Island.....	0	2	3	6	0	0	0	2
Connecticut.....	0	2	8	16	0	0	0	0
Middle Atlantic States:								
New York.....	25	25	51	66	0	1	27	45
New Jersey.....	1	1	23	24	0	0	8	7
Pennsylvania.....	8	8	52	76	0	2	37	46
East North Central States:								
Ohio.....	14	4	33	41	11	15	33	30
Indiana.....	2	0	10	27	53	18	13	3
Illinois.....	11	1	51	91	19	15	32	29
Michigan.....	0	7	53	84	17	30	18	8
Wisconsin.....	1	1	19	18	6	13	4	3
West North Central States:								
Minnesota.....	15	0	15	36	4	0	6	3
Iowa.....	1	0	8	6	19	8	2	5
Missouri.....	9	2	16	12	12	2	18	17
North Dakota.....	2	0	1	2	0	7	1	3
South Dakota.....	1	0	1	1	14	6	1	0
Nebraska.....	1	0	4	12	12	8	6	2
Kansas.....	23	0	11	21	11	9	17	27
South Atlantic States:								
Delaware.....	0	0	1	0	0	0	4	5
Maryland ¹	0	0	7	19	0	0	60	17
District of Columbia.....	0	1	1	3	0	0	2	1
Virginia.....	2	21			1			
West Virginia.....	1	2	8	12	1	2	30	15
North Carolina.....	4	11	19	37	3	7	66	44
South Carolina.....	3	2	4	10	0	0	69	72
Georgia.....	1	0	13	16	0	0	58	25
Florida.....	0	0	1	1	0	0	1	9

¹ Week ended Friday.¹ Figures for 1930 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 9, 1930, and August 10, 1929—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929	Week ended Aug. 9, 1930	Week ended Aug. 10, 1929
East South Central States:								
Kentucky.....	0	0	5	27	10	0	79	37
Tennessee.....	0	6	11	7	1	1	77	76
Alabama.....	0	2	16	15	0	0	32	30
Mississippi.....	3	1	2	8	1	0	34	39
West South Central States:								
Arkansas.....	6	0	1	7	4	0	26	29
Louisiana.....	27	0	6	3	0	0	40	29
Oklahoma ¹	9	2	6	16	22	6	70	70
Texas.....	2	0	22	18	12	13	35	24
Mountain States:								
Montana.....	0	0	6	5	1	3	2	3
Idaho.....	0	0	3	1	0	11	0	1
Wyoming.....	0	0	1	2	0	3	0	2
Colorado.....	0	0	5	0	0	0	6	0
New Mexico.....	0	0	0	4	1	2	3	11
Arizona.....	0	0	2	1	0	2	1	0
Utah ¹	0	0	3	8	0	0	1	1
Pacific States:								
Washington.....	1	1	13	5	22	0	4	2
Oregon.....	0	1	1	4	3	7	10	8
California.....	56	4	34	76	15	31	25	17

¹ Week ended Friday.² Figures for 1930 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Menin- gococ- menin- gitis	Diph- theria	Influen- za	Malaria	Measles	Pel- lagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>June, 1930</i>										
Georgia.....	9	13	29	401	416	140	0	41	8	100
Kansas.....	5	43	6	4	839	1	1	123	298	29
Mississippi.....	8	27	408	7,078	231	2,124	3	13	12	189
New Hampshire.....		3					1	18		
Texas.....	3	51	64	1,081		2	7	56		61
<i>July, 1930</i>										
Arizona.....	7	2			161		6	7	5	37
Arkansas.....	1	9	25	418	19	148	20	10	21	154
Connecticut.....	10	34	3	1	70		5	43	0	7
Indiana.....	15	34	5	4	148		21	122	275	32
Maine.....	1	21	2	2	63		0	57	0	2
Michigan.....	38	207	3	21	797		3	331	148	31
North Dakota.....	2	6			25		1	22	38	6
Wyoming.....		2	1		51		0	14	13	1

**Cases of Certain Communicable Diseases Reported for the Month of April, 1930,
by State Health Officers**

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para typhoid fever	Whoop- ing cough
Maine.....	181	3	199	321	152	0	83	10	113
New Hampshire.....		5			77	0		2	
Vermont.....	85	4	381	29	45	18	13	2	18
Massachusetts.....	857	284	5,751	809	1,206	0	583	20	1,315
Rhode Island.....	71	36	21	1	142	0	58	1	127
Connecticut.....	459	57	172	146	420	0	171	5	181
New York.....	2,657	581	7,671	3,029	2,368	35	1,934	69	1,601
New Jersey.....	959	462	5,864		1,030	0	517	13	430
Pennsylvania.....	2,751	512	6,409	1,876	2,090	5	712	47	1,158
Ohio.....	1,962	194	3,521	837	1,462	746	867	54	713
Indiana.....	298	83	399	38	749	690	142	10	163
Illinois.....	1,325	605	3,306	1,130	2,224	656	941	28	765
Michigan.....	1,001	284	8,024	944	1,417	303	509	14	590
Wisconsin.....	1,227	57	2,988	840	795	70	189	6	817
Minnesota.....	515	52	1,137		522	18	210	8	207
Iowa.....	296	30	1,847	150	331	469	38	2	72
Missouri.....	415	138	756	298	653	436	230	24	181
North Dakota.....	52	20	103	202	118	83	25	3	46
South Dakota.....	127	16	488	41	84	299	14	1	99
Nebraska.....	215	71	1,916	113	350	0	30	1	131
Kansas.....	466	32	3,386	617	512	398	147	10	343
Delaware.....	35	10	59	2	38	0	14	2	17
Maryland.....	861	76	257	132	548	0	243	13	150
District of Columbia.....	111	51	86	132	90	0	96	1	28
Virginia.....	785	81	3,757		172	48	174	28	1,177
West Virginia.....	209	42	506		158	142	42	45	233
North Carolina.....	1,067	118	175		164	86		15	1,342
South Carolina.....	338	97	203	193	22	14	165	31	553
Georgia.....	163	30	905	251	86	5	73	18	199
Florida.....	396	30	1,957	699	32	0	45	9	70
Kentucky ¹									
Tennessee.....	150	30	1,141	102	264	48	150	44	148
Alabama.....	254	53	691	69	47	27	350	13	209
Mississippi.....	984	42	789	998	47	123	333	68	1,709
Arkansas.....	118	19	345	92	41	39	134	26	189
Louisiana.....	158	105	443	16	82	50	149	58	38
Oklahoma ²	68	34	1,153	15	108	427	35	18	124
Texas ¹									
Montana.....	50	13	90	262	152	58	21	6	36
Idaho.....	40	4	310	70	33	26	8	5	21
Wyoming.....	38	4	179	77	16	34		0	14
Colorado ⁴									
New Mexico.....	175	84	280	288	64	27	64	10	11
Arizona.....	81	19	268	183	61	94	160	9	37
Nevada.....	8		38	19		36	7	0	19
Washington.....	464	33	2,081	513	156	362	160	8	510
Oregon.....	156	25	402	192	109	101	87	12	208
California.....	2,739	276	11,707	4,128	780	497	1,149	60	1,200

¹ Pulmonary.² Reports received weekly.³ Exclusive of Oklahoma City and Tulsa.⁴ Report not received at time of going to press.

Case Rates per 1,000 Population (Annual Basis) for the Month of April, 1930

State	Chick- en pox	Diph- theria	Meas- les	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- typhoid fever	Whoop- ing cough
Maine.....	2.76	0.05	3.03	4.89	2.31	0.00	1.26	0.15	1.72
New Hampshire.....		.13			2.05			.05	
Vermont.....	2.93	.14	13.15	1.00	1.55	.62	.45	.07	.62
Massachusetts.....	2.38	.79	15.95	2.24	3.35	.00	1.62	.06	3.65
Rhode Island.....	1.17	.59	.35	.02	2.33	.00	.95	.02	2.09
Connecticut.....	3.23	.40	1.21	1.03	2.96	.00	1.20	.04	1.27
New York.....	2.74	.60	7.91	3.12	2.44	.04	1.99	.07	1.65
New Jersey.....	2.94	1.42	18.00		3.16	.00	1.59	.04	1.32
Pennsylvania.....	3.31	.62	7.72	2.26	2.50	.01	.86	.06	1.39
Ohio.....	3.38	.33	6.07	1.44	2.52	1.29	1.49	.09	1.23
Indiana.....	1.12	.31	1.50	.14	2.82	2.60	.54	.04	.61
Illinois.....	2.12	.97	5.30	1.81	3.56	1.65	1.51	.04	1.23
Michigan.....	2.77	.72	20.36	2.40	3.60	.77	1.29	.04	1.50
Wisconsin.....	4.94	.23	12.03	3.33	3.20	.28	.76	.02	3.29
Minnesota.....	2.24	.23	4.95		2.27	.06	.91	.03	.90
Iowa.....	1.47	.15	9.23	.75	1.65	2.34	.19	.01	.36
Missouri.....	1.42	.47	2.59	1.02	2.24	1.49	.79	.08	.62
North Dakota.....	.99	.38	1.95	3.83	2.24	1.57	.47	.06	.87
South Dakota.....	2.15	.27	8.25	.69	1.42	5.05	.24	.02	1.67
Nebraska.....	1.83	.60	16.28	.96	2.97	.00	.25	.01	1.11
Kansas.....	3.07	.21	22.28	4.06	3.37	2.62	.97	.07	2.26
Delaware.....	1.73	.49	2.92	.10	1.88	.00	1.69	.10	.84
Maryland.....	6.33	.56	1.89	.97	4.03	.00	1.79	.10	1.10
District of Columbia.....	2.32	1.07	1.80	2.76	1.88	.00	2.01	.02	.50
Virginia.....	3.63	.37	17.36		.79	.22	.80	.13	5.44
West Virginia.....	1.43	.29	3.46		1.08	.97	.29	.31	1.59
North Carolina.....	4.30	.48	.71		.66	.35		.06	5.41
South Carolina.....	2.16	.62	1.30	1.23	.14	.09	1.06	.20	3.64
Georgia.....	.61	.11	3.37	.93	.32	.02	.27	.07	.74
Florida.....	3.20	.24	15.80	5.64	.26	.00	.36	.07	.57
Kentucky ¹									
Tennessee.....	.72	.14	5.47	.49	1.27	.23	.72	.21	.71
Alabama.....	1.18	.25	3.21	.32	.22	.13	1.62	.06	.97
Mississippi.....	6.69	.29	5.36	6.78	.32	.84	2.26	.46	11.61
Arkansas.....	.72	.12	2.11	.56	.25	.24	1.21	.16	1.16
Louisiana.....	.97	.64	2.72	.10	.50	.31	1.91	.36	.23
Oklahoma ²38	.19	6.36	.08	.60	2.36	.19	.10	.68
Texas ³									
Montana.....	1.11	.29	1.99	5.81	3.37	1.29	.47	.13	.80
Idaho.....	.85	.09	6.62	1.49	.70	.55	.17	.11	.45
Wyoming.....	1.79	.19	3.41	3.62	.75	1.60		.00	.66
Colorado ⁴									
New Mexico.....	5.27	1.02	8.43	8.67	1.63	.81	1.63	.30	.33
Arizona.....	1.96	.46	6.47	4.42	1.47	2.27	3.62	.22	.89
Nevada.....	.13		.60	.30		.57	.11	.00	.30
Washington.....	3.45	.25	15.47	3.81	1.16	2.69	1.19	.06	3.79
Oregon.....	2.05	.33	5.28	2.52	1.43	1.33	1.14	.16	2.73
California.....	6.94	.70	29.67	10.46	1.98	1.26	2.91	.15	3.04

¹ Pulmonary.² Reports received weekly.³ Exclusive of Oklahoma City and Tulsa.⁴ Report not received at time of going to press.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 95 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,370,000. The estimated population of the 89 cities reporting deaths is more than 29,860,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended August 2, 1930, and August 3, 1929

	1930	1929	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	560	910	-----
95 cities.....	239	399	440
Measles:			
45 States.....	1,513	1,376	-----
95 cities.....	415	292	-----
Meningococcus meningitis:			
46 States.....	98	147	-----
95 cities.....	40	68	-----
Poliomyelitis:			
47 States.....	224	65	-----
Scarlet fever:			
46 States.....	748	921	-----
95 cities.....	235	238	269
Smallpox:			
46 States.....	260	313	-----
95 cities.....	21	35	19
Typhoid fever:			
46 States.....	933	875	-----
95 cities.....	110	116	140
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	315	326	-----
Smallpox:			
89 cities.....	0	0	-----

City reports for week ended August 2, 1930

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1921 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	1	0	0	0	0	0	2	1
New Hampshire:								
Concord.....	0	0	0	0	0	0	0	0
Manchester.....	0	0	0	0	0	0	0	0
Nashua.....	0	0	0	0	0	2	0	0
Vermont:								
Barre.....	0	0	0	0	0	0	0	0
Burlington.....	0	0	0	0	0	2	0	0
Massachusetts:								
Boston.....	10	21	9	1	0	29	6	10
Fall River.....	0	2	2	0	0	3	1	3
Springfield.....	1	1	0	0	0	1	1	1
Worcester.....	2	2	1	0	0	9	0	0
Rhode Island:								
Pawtucket.....	0	0	0	0	0	0	0	1
Providence.....	1	3	2	0	0	2	1	0
Connecticut:								
Bridgeport.....	0	2	0	0	0	0	0	1
Hartford.....	0	2	1	0	0	0	0	0
New Haven.....	4	0	0	0	0	0	0	0

City reports for week ended August 2, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC								
New York:								
Buffalo.....	3	8	10	0	0	2	3	9
New York.....	22	110	39	2	1	109	18	70
Rochester.....	3	2	3	0	0	2	1	2
Syracuse.....	4	2	1	0	0	9	1	0
New Jersey:								
Camden.....	1	3	1	0	0	7	0	1
Newark.....	0	7	9	2	0	7	1	5
Trenton.....	1	1	0	0	0	0	0	7
Pennsylvania:								
Philadelphia.....	6	30	2	0	0	29	12	25
Pittsburgh.....	3	12	8	0	0	26	2	9
Reading.....	1	1	1	0	0	0	1	1
Scranton.....	1	2	0	0	0	1	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	0	3	1	0	0	7	1	4
Cleveland.....	23	17	4	0	0	4	13	12
Columbus.....	6	2	1	1	1	4	0	1
Toledo.....	8	4	2	1	1	2	2	2
Indiana:								
Fort Wayne.....		1						
Indianapolis.....	3	2	0	0	0	3	2	9
South Bend.....	1	0	2	0	0	0	0	2
Terre Haute.....	0	0	0	0	0	0	0	2
Illinois:								
Chicago.....	20	56	46	1	1	4	31	25
Springfield.....	0	1	0	0	0	2	0	0
Michigan:								
Detroit.....	8	25	19	1	0	15	8	11
Flint.....	3	2	0	0	0	3	0	0
Grand Rapids.....	0	1	1	0	0	1	0	1
Wisconsin:								
Kenosha.....	6	0	0	0	0	1	0	0
Madison.....	1	0	0	0	0	0	0	0
Milwaukee.....	12	7	3	0	0	8	7	2
Racine.....	1	1	0	0	0	2	0	0
Superior.....	0	1	0	0	0	0	1	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	0	0	0	0	0	0	0	1
Minneapolis.....	4	9	4	0	0	0	2	3
St. Paul.....	7	5	0	0	0	1	0	2
Iowa:								
Davenport.....	0	0	1	0	0	0	0	0
Des Moines.....	0	1	0	0	0	0	0	0
Sioux City.....	0	0	0	0	0	0	0	0
Waterloo.....	0	0	0	0	0	0	0	0
Missouri:								
Kansas City.....	2	2	2	0	0	2	0	4
St. Joseph.....	1	1	1	0	0	0	0	1
St. Louis.....	4	15	7	0	0	13	4	0
North Dakota:								
Fargo.....	0	0	0	0	0	0	5	0
Grand Forks.....	0	0	0	0	0	0	0	0
South Dakota:								
Aberdeen.....	0	0	0	0	0	2	0	0
Sioux Falls.....	0	0	0	0	0	0	0	0
Nebraska:								
Omaha.....	0	2	4	0	0	2	2	3
Kansas:								
Topeka.....	3	0	0	1	0	0	5	1
Wichita.....	0	1	0	0	0	2	0	1
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	0	1	0	0	0	0	0	0
Maryland:								
Baltimore.....	2	10	4	1	0	3	5	10
Cumberland.....	0	0	0	0	0	1	0	0
Frederick.....	0	0	0	0	0	0	0	0
District of Columbia:								
Washington.....	5	5	4	1	1	20	0	7
Virginia:								
Lynchburg.....	1	0	0	0	0	1	2	0
Norfolk.....	0	0	0	0	0	0	0	2
Richmond.....	0	2	5	0	0	1	0	1
Roanoke.....	0	0	3	0	0	0	0	0

City reports for week ended August 2, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—continued								
West Virginia:								
Charleston.....	0	0	0	0	0	0	0	2
Wheeling.....	1	1	1	0	0	0	1	1
North Carolina:								
Raleigh.....	0	1	0	0	0	0	0	0
Wilmington.....	0	0	0	0	0	0	0	0
Winston-Salem.....	0	1	2	2	0	0	1	0
South Carolina:								
Charleston.....	0	0	0	0	0	0	0	2
Columbia.....	0	0	0	0	0	0	1	4
Georgia:								
Atlanta.....	0	2	0	0	1	2	0	4
Brunswick.....	0	0	0	0	0	0	1	0
Savannah.....	0	1	0	2	0	1	1	1
Florida:								
Miami.....	0	1	0	0	0	0	1	0
St. Petersburg.....	0	0	0	0	0	0	0	0
Tampa.....	0	0	1	0	1	1	0	1
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	0	0	0	0	0
Tennessee:								
Memphis.....	0	2	0	0	0	0	0	3
Nashville.....	0	2	0	0	0	4	0	2
Alabama:								
Birmingham.....	0	1	0	1	0	2	0	2
Mobile.....	0	0	1	0	0	0	0	1
Montgomery.....	0	0	0	0	0	0	0	0
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0	0	0	0	0	0
Little Rock.....	0	0	0	0	0	0	0	0
Louisiana:								
New Orleans.....	0	5	4	1	0	2	0	9
Shreveport.....	0	0	0	0	0	0	1	0
Oklahoma:								
Tulsa.....	0	0	0	0	0	0	0	0
Texas:								
Dallas.....	0	3	4	0	1	0	0	0
Fort Worth.....	0	1	0	0	0	0	0	2
Galveston.....	0	0	0	0	0	0	0	2
Houston.....	0	2	2	0	0	0	0	3
San Antonio.....	0	1	0	0	0	0	1	7
MOUNTAIN								
Montana:								
Billings.....	0	0	0	0	0	0	0	0
Great Falls.....	0	0	0	0	0	2	0	0
Helena.....	1	0	1	0	0	0	0	0
Missoula.....	1	0	0	0	0	0	0	0
Idaho:								
Boise.....	0	0	0	0	0	2	0	1
Colorado:								
Denver.....	1	6	3	0	0	6	0	4
Pueblo.....	0	0	0	0	0	5	2	1
New Mexico:								
Albuquerque.....	1	0	1	0	0	0	0	0
Arizona:								
Phoenix.....	0	0	0	0	0	0	0	1
Utah:								
Salt Lake City.....	6	2	0	0	0	3	2	1
Nevada:								
Reno.....	0	0	0	0	0	0	0	0
PACIFIC								
Washington:								
Seattle.....	6	1	1	0	0	11	12	0
Spokane.....	5	1	0	0	0	5	0	0
Tacoma.....	0	2	4	0	0	6	1	1
Oregon:								
Portland.....	3	5	0	0	0	5	2	1
Salem.....	0	0	1	0	0	0	0	0
California:								
Los Angeles.....	3	25	15	4	0	24	13	10
Sacramento.....	0	2	0	1	1	3	3	1
San Francisco.....	0	8	0	0	0	0	0	0

City reports for week ended August 2, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	4	1	1	0	0	0	0	0	4	12	
Minneapolis.....	12	6	0	0	0	2	0	1	2	89	
St. Paul.....	6	1	1	0	0	3	1	1	10	43	
Iowa:											
Davenport.....	0	0	0	7	-----	-----	0	0	0	-----	
Des Moines.....	2	1	0	7	-----	-----	0	0	0	33	
Sioux City.....	0	0	0	-----	-----	-----	0	0	-----	-----	
Waterloo.....	0	1	0	1	-----	-----	0	0	5	-----	
Missouri:											
Kansas City.....	2	6	0	1	0	7	3	2	0	114	
St. Joseph.....	0	0	0	0	0	0	0	0	2	29	
St. Louis.....	7	8	0	2	0	8	5	3	0	224	
North Dakota:											
Fargo.....	1	0	0	0	0	0	0	0	0	-----	
Grand Forks.....	0	1	1	1	-----	-----	0	0	0	-----	
South Dakota:											
Aberdeen.....	0	0	0	2	-----	-----	0	0	3	-----	
Sioux Falls.....	1	0	0	0	-----	-----	0	0	0	9	
Nebraska:											
Omaha.....	1	1	0	1	0	3	0	5	0	68	
Kansas:											
Topeka.....	1	1	-----	0	0	0	1	0	0	16	
Wichita.....	1	0	1	1	0	0	1	0	1	22	
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	0	0	0	0	0	1	0	3	3	21	
Maryland:											
Baltimore.....	5	4	0	0	0	15	8	4	0	245	
Cumberland.....	0	0	0	0	0	0	0	2	0	9	
Frederick.....	0	0	0	0	0	0	0	0	0	3	
District of Columbia:											
Washington.....	4	2	0	0	0	7	3	6	1	146	
Virginia:											
Lynchburg.....	0	0	0	0	0	0	1	0	0	13	
Norfolk.....	0	2	0	0	0	2	1	0	0	1	
Richmond.....	2	5	0	2	0	4	1	0	0	45	
Roanoke.....	1	0	1	0	0	2	0	0	0	21	
West Virginia:											
Charleston.....	0	0	0	0	0	2	1	2	0	24	
Wheeling.....	1	0	0	0	0	0	0	1	2	18	
North Carolina:											
Raleigh.....	0	1	0	0	0	0	1	0	0	2	
Wilmington.....	0	1	0	0	0	0	0	0	0	10	
Winston-Salem.....	1	1	0	0	0	0	1	0	0	5	
South Carolina:											
Charleston.....	0	0	0	0	0	4	1	1	1	35	
Columbia.....	0	0	0	0	0	0	1	0	0	2	
Georgia:											
Atlanta.....	2	7	0	0	0	5	3	1	0	50	
Brunswick.....	0	0	0	0	0	1	0	1	0	2	
Savannah.....	0	0	0	0	0	4	1	3	0	27	
Florida:											
Miami.....	0	0	0	0	0	3	0	0	0	24	
St. Petersburg.....	0	0	0	0	0	0	0	0	0	7	
Tampa.....	0	1	0	0	0	1	0	0	1	15	

*Nonresidents.

City reports for week ended August 2, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	0	0	0	0	0	0	0	1	0	0	19
Tennessee:											
Memphis.....	0	0	0	0	0	7	8	10	1	0	100
Nashville.....	0	1	0	0	0	5	6	3	0	0	55
Alabama:											
Birmingham.....	2	0	0	0	0	4	5	4	1	0	69
Mobile.....	0	0	0	0	0	3	1	0	0	0	17
Montgomery.....	0	0	0	0			2	0		1	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	1	0	0			0	1		3	
Little Rock.....	0	0	0	0	0	1	1	0	0	0	
Louisiana:											
New Orleans.....	3	7	0	0	0	13	5	7	0	1	123
Shreveport.....	0	0	0	0	0	4	2	0	2	0	42
Oklahoma:											
Tulsa.....	0	1	0	0			2	3		2	
Texas:											
Dallas.....	2	4	1	0	0	3	3	1	1	1	71
Fort Worth.....	1	0	0	0	0	3	2	0	0	0	33
Galveston.....	0	0	0	0	0	1	0	0	0	0	17
Houston.....	1	2	0	2	0	4	2	3	1	0	45
San Antonio.....	0	1	0	2	0	5	1	0	0	0	55
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	7
Great Falls.....	0	2	0	0	0	0	0	0	0	2	14
Helena.....	0	0	0	0	0	1	0	0	0	5	3
Missoula.....	0	0	0	0	0	0	0	0	0	0	11
Idaho:											
Boise.....	0	0	0	0	0	1	0	0	0	0	8
Colorado:											
Denver.....	3	3	0	0	0	9	1	1	0	34	72
Pueblo.....	0	1	0	0	0	0	0	1	0	0	9
New Mexico:											
Albuquerque.....	0	0	0	0	0	3	0	2	0	0	7
Arizona:											
Phoenix.....	0	0	0	0	0	1	0	0	1	0	9
Utah:											
Salt Lake City.....	1	0	1	0	0	3	1	1	0	22	28
Nevada:											
Reno.....	0	1	0	0	0	0	0	0	0	1	2
PACIFIC											
Washington:											
Seattle.....	2	3	1	0			1	1		15	
Spokane.....	1	0	1	2			0	0		2	
Tacoma.....	1	6	1	3	0	1	1	0	0	6	26
Oregon:											
Portland.....	2	1	4	1	0	3	0	2	0	6	57
Salem.....	0	0	0	0	0	0	0	0	0	0	
California:											
Los Angeles.....	10	4	3	1	0	22	3	5	1	27	235
Sacramento.....	1	1	0	0	0	0	1	1	0	2	29
San Francisco.....	5		1				2				

City reports for week ended August 2, 1930—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston.....	0	0	1	0	0	0	1	8	0
Worcester.....	0	1	0	0	0	0	1	0	0
Connecticut:									
Providence.....	0	0	1	0	0	0	1	1	0
Bridgeport.....	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York.....	8	3	1	4	0	0	13	0	0
Rochester.....	0	0	0	0	0	0	0	1	0
Syracuse.....	0	0	0	0	0	0	1	7	0
New Jersey:									
Newark.....	2	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	4	2	1	0	1	0	0	3	0
Pittsburgh.....	0	1	0	0	0	0	0	2	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	1	0	0	0	0	0	0	0	0
Cleveland.....	0	0	0	0	0	0	0	1	0
Columbus.....	0	0	1	1	0	0	0	0	0
Indiana:									
Indianapolis.....	1	1	0	0	0	0	0	0	0
Terre Haute.....	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago.....	4	0	1	0	1	0	2	0	0
Michigan:									
Detroit.....	2	2	0	0	1	0	1	0	0
Flint.....	1	0	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	2	0	0	0	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis.....	1	0	0	0	0	0	0	0	0
St. Paul.....	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City.....	4	1	0	0	0	0	0	2	0
St. Louis.....	1	0	1	0	0	0	1	1	0
South Dakota:									
Aberdeen.....	1	0	0	0	0	0	0	0	0
Kansas:									
Wichita.....	0	0	0	0	0	0	0	4	1
SOUTH ATLANTIC¹									
Delaware:									
Wilmington.....	0	0	0	0	0	0	0	1	0
Maryland:									
Baltimore.....	0	0	1	1	0	0	0	1	0
District of Columbia:									
Washington ¹	0	0	0	0	1	1	0	0	0
Virginia:									
Norfolk.....	3	0	0	0	0	0	0	2	0
Richmond.....	0	1	0	0	0	0	0	0	0
North Carolina:									
Raleigh.....	0	0	0	0	4	0	0	0	0
Winston-Salem.....	0	0	0	0	20	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	0	0	0	0
Georgia:									
Atlanta.....	0	0	0	0	2	2	0	1	0
Savannah ¹	0	0	1	0	1	2	0	0	0

¹ Typhus fever, 9 cases and 1 death; 2 cases and 1 death at Washington, D. C., 4 cases at Savannah, Ga., 1 case at Tampa, Fla., 1 case at Mobile, Ala., and 1 case at Houston, Tex.

City reports for week ended August 2, 1930—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST SOUTH CENTRAL									
Tennessee:									
Memphis.....	2	2	0	0	0	0	0	0	0
Nashville.....	0	2	0	0	0	0	0	0	0
Alabama: ¹									
Birmingham.....	0	0	0	0	2	0	0	2	0
Montgomery.....	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans.....	3	3	0	0	2	2	0	3	0
Shreveport.....	0	0	0	0	0	3	0	1	0
Texas:									
Dallas.....	0	0	0	0	2	1	0	0	0
Fort Worth.....	0	0	0	0	0	2	0	0	0
Galveston.....	0	0	0	0	0	1	0	1	0
Houston ¹	0	0	0	0	0	1	0	2	0
San Antonio.....	0	0	0	0	0	0	0	2	0
MOUNTAIN									
Colorado:									
Pueblo.....	0	0	0	1	0	0	0	0	0
PACIFIC									
Washington:									
Spokane.....	0	0	0	0	0	0	0	1	0
California:									
Los Angeles.....	2	0	0	0	3	0	1	22	2

¹ Typhus fever, 9 cases and 1 death: 2 cases and 1 death at Washington, D. C., 4 cases at Savannah, Ga, 1 case at Tampa, Fla., 1 case at Mobile, Ala., and 1 case at Houston, Tex.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended August 2, 1930, compared with those for a like period ended August 3, 1929. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have an estimated aggregate population of more than 32,000,000. The 91 cities reporting deaths have more than 30,500,000 estimated population.

Summary of weekly reports from cities, June 29 to August 2, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929¹

DIPHTHERIA CASE RATES

	Week ended—									
	July 5, 1930	July 6, 1929	July 12, 1930	July 13, 1929	July 19, 1930	July 20, 1929	July 26, 1930	July 27, 1929	Aug. 2, 1930	Aug. 3, 1929
98 cities.....	59	89	59	88	² 49	73	³ 30	68	⁴ 40	67
New England.....	51	70	38	79	33.	83	22	58	33	54
Middle Atlantic.....	59	101	52	99	48	76	35	75	35	67
East North Central.....	91	128	87	119	66	105	⁵ 50	103	⁶ 49	99
West North Central.....	36	77	66	69	38	54	⁷ 38	21	⁸ 35	25
South Atlantic.....	24	34	29	43	⁹ 43	30	¹⁰ 39	28	37	47
East South Central.....	40	27	27	41	13	27	27	27	7	34
West South Central.....	52	72	64	84	¹¹ 38	69	34	99	37	95
Mountain.....	9	26	26	26	69	17	69	9	34	9
Pacific.....	38	43	61	41	38	41	33	31	¹² 65	46

MEASLES CASE RATES

98 cities.....	276	195	257	150	¹ 151	98	² 110	69	³ 69	49
New England.....	498	209	421	186	235	146	175	101	97	97
Middle Atlantic.....	339	76	322	51	205	47	182	27	91	35
East North Central.....	170	474	155	351	71	210	⁴ 60	149	⁵ 34	84
West North Central.....	137	114	127	104	57	52	⁷ 73	68	⁸ 39	38
South Atlantic.....	165	73	130	49	⁹ 114	43	¹⁰ 52	17	55	11
East South Central.....	142	27	202	14	47	7	61	7	40	7
West South Central.....	26	69	19	61	¹¹ 11	4	7	27	11	8
Mountain.....	712	148	566	104	240	61	172	70	154	26
Pacific.....	527	138	562	152	361	109	191	77	¹² 159	43

SCARLET FEVER CASE RATES

98 cities.....	77	88	72	83	¹ 54	64	² 50	59	³ 39	40
New England.....	66	90	66	83	60	56	66	56	55	63
Middle Atlantic.....	57	46	51	41	.37	35	36	19	22	24
East North Central.....	116	173	115	160	87	103	⁴ 77	110	⁵ 50	62
West North Central.....	102	38	83	79	42	54	⁷ 31	77	⁸ 49	35
South Atlantic.....	57	60	62	64	⁹ 45	69	¹⁰ 37	60	40	28
East South Central.....	13	55	47	48	20	55	54	27	7	34
West South Central.....	49	23	37	42	¹¹ 23	72	49	57	56	38
Mountain.....	163	44	86	35	77	78	26	26	60	9
Pacific.....	45	135	50	89	57	65	45	65	¹² 46	48

SMALLPOX CASE RATES

98 cities.....	7	15	7	8	¹ 6	13	² 7	8	³ 3	7
New England.....	0	0	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	5	41	9	19	10	32	⁴ 8	16	⁵ 2	13
West North Central.....	13	13	9	15	13	21	⁷ 22	21	⁸ 12	6
South Atlantic.....	2	2	0	2	⁹ 4	2	¹⁰ 2	0	4	0
East South Central.....	20	21	20	7	0	7	20	7	0	7
West South Central.....	0	11	7	15	¹¹ 8	0	4	8	15	4
Mountain.....	51	35	9	35	17	44	17	9	0	26
Pacific.....	38	24	43	10	21	34	26	22	¹² 20	34

¹ The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1930, and 1929, respectively.

² Columbia, S. C., and Fort Smith, Ark., not included.

³ South Bend, Ind., Kansas City, Mo., Columbia, S. C., and Atlanta, Ga., not included.

⁴ Fort Wayne, Ind., Sioux City, Iowa, and San Francisco, Calif., not included.

⁵ South Bend, Ind., not included.

⁶ Fort Wayne, Ind., not included.

⁷ Kansas City, Mo., not included.

⁸ Sioux City, Iowa, not included.

⁹ Columbia, S. C., not included.

¹⁰ Columbia, S. C., and Atlanta, Ga., not included.

¹¹ Fort Smith, Ark., not included.

¹² San Francisco, Calif., not included.

Summary of weekly reports from cities, June 29 to August 2, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	July 5, 1930	July 6, 1929	July 12, 1930	July 13, 1929	July 19, 1930	July 20, 1929	July 26, 1930	July 27, 1929	Aug. 2, 1930	Aug. 3, 1929
98 cities.....	10	10	16	14	¹ 15	18	¹ 18	18	⁴ 18	19
New England.....	7	4	4	4	9	9	7	29	7	11
Middle Atlantic.....	6	6	10	7	4	10	7	7	5	11
East North Central.....	1	4	6	7	9	8	⁴ 13	8	⁴ 12	10
West North Central.....	8	13	9	10	23	19	⁷ 56	13	⁸ 23	33
South Atlantic.....	26	32	55	7	⁹ 37	32	¹⁰ 35	37	48	22
East South Central.....	94	48	94	157	67	144	74	103	121	150
West South Central.....	49	8	37	84	¹¹ 61	57	17	69	45	53
Mountain.....	0	17	0	9	26	52	17	44	26	9
Pacific.....	5	7	17	2	19	5	12	7	¹² 23	19

INFLUENZA DEATH RATES

91 cities.....	4	2	4	3	⁹ 3	3	³ 3	3	¹² 1	3
New England.....	2	0	0	2	0	0	0	2	0	0
Middle Atlantic.....	4	3	4	2	3	2	1	2	0	2
East North Central.....	2	1	3	3	2	3	⁵ 3	4	⁶ 1	4
West North Central.....	0	0	6	0	0	3	⁷ 4	3	0	0
South Atlantic.....	5	2	2	4	⁹ 0	6	¹⁰ 4	4	5	4
East South Central.....	7	15	15	7	0	0	0	0	0	15
West South Central.....	15	4	8	4	11	20	11	4	0	8
Mountain.....	0	0	0	26	9	0	0	9	0	9
Pacific.....	9	0	3	0	6	3	3	0	¹² 5	0

PNEUMONIA DEATH RATES

91 cities.....	55	63	54	55	⁹ 44	55	³ 56	49	¹² 54	54
New England.....	29	49	40	29	35	70	40	31	38	43
Middle Atlantic.....	58	67	57	62	56	65	72	57	62	61
East North Central.....	41	56	38	50	32	40	⁵ 37	38	⁶ 44	47
West North Central.....	62	63	74	51	38	36	⁷ 42	51	47	39
South Atlantic.....	55	69	55	58	⁹ 47	54	¹⁰ 76	60	60	51
East South Central.....	162	75	81	30	59	52	103	52	59	75
West South Central.....	84	109	84	82	50	27	77	86	61	78
Mountain.....	60	61	103	44	51	96	77	61	60	61
Pacific.....	64	31	61	53	18	63	9	25	¹² 57	60

¹ Columbia, S. C., and Fort Smith, Ark., not included.

² South Bend, Ind., Kansas City, Mo., Columbia, S. C., and Atlanta, Ga., not included.

⁴ Fort Wayne, Ind., Sioux City, Iowa, and San Francisco, Calif., not included.

⁵ South Bend, Ind., not included.

⁶ Fort Wayne, Ind., not included.

⁷ Kansas City, Mo., not included.

⁸ Sioux City, Iowa, not included.

⁹ Columbia, S. C., not included.

¹⁰ Columbia, S. C., and Atlanta, Ga., not included.

¹¹ Fort Smith, Ark., not included.

¹² San Francisco, Calif., not included.

¹³ Fort Wayne, Ind., and San Francisco, Calif., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended August 2, 1930.—The Bureau of Pensions and National Health reports cases of certain communicable diseases in Canada for the week ended August 2, 1930, as follows:

Province	Cerebro-spinal fever	Influenza	Pollomy-elitis	Smallpox	Typhoid fever
Prince Edward Island ¹					1
Nova Scotia.....		1			28
New Brunswick.....					10
Quebec.....	1				28
Ontario.....	3	3	3	3	10
Manitoba ¹					
Saskatchewan ¹					
Alberta.....			2	1	
British Columbia.....			2	1	5
Total	4	4	12	10	44

¹ No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended August 2, 1930.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended August 2, 1930, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Puerperal septicemia.....	1
Chicken pox.....	10	Scarlet fever.....	31
Diphtheria.....	19	Tuberculosis.....	63
Influenza.....	1	Typhoid fever.....	28
Measles.....	6	Whooping cough.....	26
Mumps.....	3		

CUBA

Habana—Communicable diseases—July, 1930.—During the month of July, 1930, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	3		Paratyphoid fever.....	1	1
Diphtheria.....	8		Scarlet fever.....	10	
Leprosy.....	1		Tuberculosis.....	44	8
Malaria.....	19		Typhoid fever.....	20	2
Measles.....	1				

FRANCE

Alsace-Lorraine—Poliomyelitis.—A report dated July 24, 1930, states that poliomyelitis was prevalent in the Department of Bas-Rhin, Alsace-Lorraine. The disease first appeared during the latter part of June. During the 10 days ended June 30, 1930, 23 cases were reported, and from July 1 to 23, 280 cases were reported in the Department of Bas-Rhin and in the city of Strasbourg. Out of 561 communes only 53 were reported to be affected, the average being about 1 case per 1,000 inhabitants.

Fourteen cases were reported in the Department of Haut-Rhin and 27 in the Moselle. These latter cases were centralized for the most part in and about Metz.

ITALY

Communicable diseases—Four weeks ended April 13, 1930.—During the four weeks ended April 13, 1930, certain communicable diseases were reported in Italy as follows:

Disease	Mar. 17-23		Mar. 24-30		Mar. 31-Apr. 6		Apr. 7-13	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax.....	17	14	7	7	8	8	10	8
Cerebrospinal meningitis.....	14	12	11	8	13	13	11	10
Chicken pox.....	474	146	417	125	334	131	463	141
Diphtheria and croup.....	599	318	648	337	454	208	516	294
Dysentery.....	3	3	3	1	3	3	3	2
Lethargic encephalitis.....	3	3	3	3	1	1	3	3
Measles.....	3, 269	399	3, 631	429	3, 033	439	3, 580	455
Poliomyelitis.....	4	4	5	5	2	2	3	3
Scarlet fever.....	357	126	396	146	270	109	323	136
Typhoid fever.....	217	139	219	138	201	134	242	148

JAMAICA

Communicable diseases—Four weeks ended July 19, 1930.—During the four weeks ended July 19, 1930, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the Island of Jamaica outside of Kingston, as follows:

Disease	Cases		Disease	Cases	
	Kingston	Other localities		Kingston	Other localities
Cerebrospinal meningitis.....	1	2	Poliomyelitis.....	1	-----
Chicken pox.....	1	9	Puerperal fever.....	-----	5
Erysipelas.....	1	1	Tuberculosis.....	33	70
Leprosy.....	2	2	Typhoid fever.....	20	71
Lethargic encephalitis.....	-----	1			

PANAMA CANAL ZONE

Communicable diseases—June, 1930.—During the month of June, 1930, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	28	-----	Mumps.....	1	-----
Diphtheria.....	7	-----	Pneumonia.....	-----	24
Dysentery (amebic).....	-----	1	Tuberculosis.....	-----	29
Dysentery (bacillary).....	1	1	Typhoid fever.....	2	-----
Malaria.....	427	1	Whooping cough.....	12	-----
Measles.....	18	-----			

Place	January, 1930	February, 1930	March, 1930	April, 1930	May, 1930	June, 1930
British East Africa (see also table above):						
Kenya.....	34	69	85	16	171	75
Uganda.....	184	109	90			
Ecuador: Guayaquil.....	155	4	2	0		
Plague-infected rats.....	2	2	2	0		
Ecuador (outside of Guayaquil).....	4	4	2	0		
Greece (see also table above).....	2					
Indo-China (see also table above).....	4					
Madagascar (see also table above).....	2					
Ambostrra Province.....	10	30	27	1		1
Antsirabe Province.....	282			4		11
Itasy Province.....	128	49	25	14	1	
Miarinarivo Province.....	111	41	20	12	19	
	26	22	38	46	19	
	25	22	36	45	19	
	31	31	4	4		
	31	25	14	1	5	
		25	14	1	5	
Place						
Madagascar (see also table above)—Con.						
Moramanga Province.....	C	D	D	D	D	D
Tamatave Province.....	D	D	D	D	D	D
Tananarive Province.....	D	D	D	D	D	D
Senegal:						
Baol ¹	88	110	52	39	15	
	83	107	52	38	14	
Dakar ¹			18	24	13	2
			8	12	11	2
Louga ¹				2	52	53
				2	62	117
Thiès ¹				33	54	60
				10	27	21
Tivaouane ¹	3	2	3	12	21	52
	1	1	11	9	8	35
			8	71	135	43
				38	69	28

¹ Incomplete reports.

Place	Decem-ber, 1929	Jan-uary, 1930	Feb-ruary, 1930	March, 1930	April, 1930	May, 1930	Place	Decem-ber, 1929	Jan-uary, 1930	Feb-ruary, 1930	March, 1930	April, 1930	May, 1930
British East Africa (see also table above):													
Kenya.....	C 168	12	12	175	174	78	Mexico: Durango (see also table above) . . .	D 4	12	6	5	4	4
Uganda.....	C 184	109	99	69	69	203	Morocco.....	C 84	20	74	10	15	15
Chosen.....	C 155	99	4	5	1	70	Nigeria (see also table above).....	C 203					
France.....	C 9	9	23	8	1	3	Persia.....	C 883	215	114	3	16	16
							Turkey.....	C 457	66	42			

TYPHUS FEVER

Place	Jan. 12- Feb. 8, 1930	Feb. 9- Mar. 8, 1930	Mar. 9- Apr. 5, 1930	Apr. 6- May 3, 1930	Week ended—													
					May, 1930						June, 1930							
					10	17	24	31	7	14	21	28	5	12	19	26		
Algeria:																		
Algiers.....					8													
Constantine Department.....	3	4	6	6	15													
Oran.....	4	5	11	11														
Arabiá: Aden.....	2			1	1													
Bolivia: La Paz, 1																		
Brazil: Porto Alegre.....																		
Bulgaria.....																		
Sofia.....																		
Chile:																		
Talcahuano.....																		
Valparaiso.....	1																	
China:																		
Manchuria—Harbin.....																		
Shanghai.....																		
Tientsin.....	1																	

1 12 deaths from typhus fever were reported in La Paz, Bolivia, from Jan. 1 to May 31, 1930.

