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ISOLATION OF COCCIDIOIDES FROM SOIL AND RODENTS[1]

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The assumption that coccidioides exists in man's environment, independently and without necessary relation to human cases of coccidioidomycosis, has always seemed necessary in explaining the peculiar epidemiology of the disease. Even in areas where the disease is so common that most of the residents are sensitized to coccidioidin and probably have at some time been infected, coccidioidomycosis apparently is never transmitted directly from one individual to another. The parasitic growth phase of *Coccidioides immitis* in tissues is infectious when experimentally introduced into animals, but apparently is not effective in the natural direct transmission of the disease. When the fungus is isolated from tissues and placed on a nonliving substratum it grows as a mold and produces enormous numbers of spores which are both infectious and easily disseminated. Accidental laboratory infections and the experimental infection of guinea pigs show that inhalation of these spores from the saprophytic growth phase of the fungus produces coccidioidomycosis. An early acute respiratory episode which characterizes primary coccidioidomycosis and occurs also in many cases of progressive coccidioidomycosis points toward the respiratory system as the probable portal of entry in most cases of the disease.

Epidemiological studies (*1*) and the known exposure to dust in particular cases (*2*) have led investigators to conclude that the spores of the fungus are present in some windblown dust and that therefore the fungus was probably growing in the soil from which the dust originated. It is, in fact, generally assumed that the fungus grows in the soil following rains and that during dry weather the spores mature and are disseminated. This conception seems to accord with known epidemiological features of the disease, but it has never been

[1] From the Division of Infectious Diseases, National Institute of Health.

fully substantiated and there are reasons for doubting its correctness. Actual isolation of coccidioides from soil has been reported only twice. Stewart and Meyer (*3*) reported isolation from soil collected near the bunkhouse of a ranch where there were 4 cases of coccidioidal granuloma. This soil may have been heavily contaminated by pus or sputum from these infected men. Smith and Baker (*4*) have isolated it from a site in San Benito County, California, but have not yet reported the details of this isolation.

During the summer of 1941 coccidioides was isolated from 5 of 150 soil samples collected in the desert near the village of San Carlos, Arizona (*5*). The results of this study will be reported in more detail in a later paper. The investigation was undertaken with the cooperation of Dr. J. D. Aronson and following Aronson's demonstration (*6*) that a very high percentage of Indian school children on the San Carlos Indian Reservation were sensitized to coccidioidin. The prevalence of positive coccidioidin reactions indicated a probable extension of the endemic areas of coccidioidomycosis to this region. Supporting the evidence from skin tests, reports were obtained of illnesses occurring in the past which, when examined in retrospect, probably were cases of primary coccidioidomycosis. Laboratory proof in these cases is lacking and cannot now be obtained. No human case of the disease has yet been definitely established in the San Carlos area.

From information obtained during the attempts to isolate coccidioides from San Carlos soil it became increasingly apparent that the conception of coccidioides as a soil-inhabiting fungus must be revised. Coccidioides is a rapidly growing fungus and should be relatively easy to isolate from soil if it were growing freely as a saprophyte in this substratum. Experiences of investigators have shown that it is, on the contrary, very difficult to isolate from this source. Further, on theoretical grounds, it seems improbable that a fungus which is so virulent for man and animals should have a natural habitat as a saprophyte in the soil.

A search for an animal reservoir seemed indicated. It is known that coccidioidomycosis occurs sporadically in cattle, sheep, and dogs, but it is probably an accidental infection in these animals as in man. There is no reason to believe that these species represent natural reservoirs of the disease. The prevalence of small rodents on the desert suggested that if a natural infection existed in these animals they might constitute an extremely important factor in the unusual distribution and epidemiology of the disease. The susceptibility of deer mice had been previously demonstrated by experimental infection in this laboratory (*5*).

A new approach was therefore made and when studies were resumed at San Carlos 105 wild rodents were trapped in a preliminary search for infected animals. Deer mice (*Peromyscus*), pocket mice (*Perog-*

nathus), grasshopper mice (*Onychomys*), kangaroo rats (*Dipodomys*), pack rats (*Neotoma*), and a ground squirrel (*Citellus*) were caught and examined. Fungi were found upon direct examination or by culture in 25 animals, distributed among 6 species of rodents, viz, *Peromyscus eremicus*, *Perognathus baileyi*, *P. penicillatus*, *P. intermedius*, *Dipodomys merriami*, and *Citellus harrisii*. Species of the genus *Perognathus* appear to be especially important hosts of the fungus. Among 26 specimens of this genus, 21, or 80 percent, had fungus infections. The fungi from at least three of these animals are strains of coccidioides. The other strains isolated and the tissues preserved for pathological examination are still being studied and will be discussed in a later paper.

In the San Carlos area coccidioides has now been isolated from soil and from rodents, but has not yet been isolated from a human case of the disease. Small rodents appear to constitute an important natural reservoir of coccidioides. This may explain, on the one hand, the presence of the spores of the fungus in wind-blown soil contaminated by infected animals, and, on the other hand, the difficulty of isolating the fungus from soil in which it has a highly localized and spotty distribution.

ACKNOWLEDGMENTS

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STUDIES ON THE DURATION OF DISABLING SICKNESS

III. Duration of Disability From Sickness and Nonindustrial Injuries Among the Male Employees of an Oil Refining Company with Particular Reference to the Older Worker, 1933–39, Inclusive[1]

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INTRODUCTION

The first paper of the series (*1*) presented material on the duration of disabling sickness and nonindustrial injuries causing absence from work for 8 calendar days or longer among the male and female memberships of 25 industrial sick benefit organizations with waiting periods and maximum benefit periods of varying length; the second paper (*2*) dealt with the duration of disability lasting one calendar day or longer among the male employees of a public utility company with no waiting period and a maximum benefit period of 52 weeks.

The present paper, the third of the series, based on the recorded disability experience of male workers of an oil refining company,[2] gives two basic duration tables specific for the age groups under 50 years of age and 50 years of age and over, and for the four broad cause groups, nonindustrial injuries, respiratory diseases, digestive diseases, and nonrespiratory-nondigestive diseases. The experience of the older worker is further investigated by means of the ratios of the corresponding rates for the two age groups.

The males in the record are principally white and the analysis covers the 7 years, 1933–39. The supporting data are drawn from the records of the sick benefit organization connected with the company; a brief review of the rules governing the organization will be found in reference *3*. Only recorded absences of 8 calendar days or longer are considered, the duration of the absence in days being the number of days for which benefits were paid.

With respect to notification, verification, and certification of disability it may be noted that the organization requires that an absence be reported immediately and that satisfactory evidence of disability for work be furnished the company physician. According to the medical department of the company, the company physician, at each of the refineries, follows lost-time cases closely, making a consistent effort, among other things, to satisfy himself and the company medical department as to diagnoses.

Summary of basic data.—During the 7-year period a total of 67,745 male-years of membership yielded 8,700 absences of 8 days or longer on account of sickness and nonindustrial injuries, and 287,885 days of

[1] From the Division of Industrial Hygiene, National Institute of Health. For earlier papers in this series see references *1* and *2*.

[2] For an earlier report using data from the same source, see reference *3*.

disability. The average annual number of absences per 1,000 males was 128.4, and the average annual number of days lost per male was 4.250. Of the 8,700 absences 6,080, yielding 172,110 days of disability, were among males under 50 years of age, and 2,612 absences, resulting in 115,493 days lost, were among males 50 years of age and over. No age was reported for 8 absences accounting for 282 days.

Since an age distribution of the male employees is available as of January 1, 1938, it is possible to apply the proportions of that distribution to the membership for the 7-year period and to obtain the approximate number of person-years of membership for each of the two age groups. According to the given distribution, 76.9 percent of the males were under 50 years of age while 23.1 percent fell in the older age group. These percentages correspond to 52,096 and 15,649 person-years of membership for the younger and older groups, respectively. With the use of these membership figures, it is found that the frequency and disability rates among males under 50 are 116.7 absences per 1,000 males and 3.304 days lost per male; for the older group the corresponding rates are 166.9 and 7.380.

The percentage distribution of the number of absences and the number of days of disability by broad cause and age groups are shown in the following table:

Age group	All sickness and non-industrial injuries		Non industrial injuries	Respiratory diseases	Digestive diseases	Nonrespiratory-non-digestive diseases
	Number	Percent	Percent			
	Absences					
All ages [1]	8,700	100.0	9.9	44.8	13.6	31.7
Under 50 years	6,080	100.0	10.4	47.3	14.2	28.1
50 years and over	2,612	100.0	9.0	39.1	11.9	40.0
	Calendar days of disability					
All ages [1]	287,885	100.0	11.1	28.0	14.9	46.0
Under 50 years	172,110	100.0	12.0	31.8	17.8	38.4
50 years and over	115,493	100.0	9.8	22.3	10.4	57.5

[1] Contains a negligible number of absences of unknown age.

With respect to all ages it will be observed that while the respiratory diseases contribute almost one-half of the absences they account for less than one-third of the days lost; on the other hand, the nonrespiratory-nondigestive diseases account for less than one-third of the absences but are responsible for almost one-half of the days lost. The corresponding relationships for the age groups are also notable. While the relationships shown by the two percentage distributions

for the males under 50 years of age are more or less similar to the corresponding ones for all ages, the distributions for the age group 50 years and over show a shifting from the respiratory to the nonrespiratory-nondigestive group. Thus while the age group under 50 shows about 50 percent more absences from respiratory diseases than from nonrespiratory-nondigestive diseases, each of these disease groups accounting for about one-third of the total days lost, the age group 50 and over, on the other hand, shows approximately equal percentages of absences from the two disease groups but with days of disability for the nonrespiratory-nondigestive diseases amounting to about 2.5 times those from the respiratory diseases.

AVERAGE ANNUAL NUMBER OF ABSENCES PER 1,000 MALES OF SICKNESS AND NONINDUSTRIAL INJURIES DISABLING FOR A SPECIFIED NUMBER OF DAYS *t* OR MORE

Unlike a table showing the frequency of absences of a specific duration, say *t* days, the basic table (table 1) of this section presents the frequency of absences of *t* days or longer for values of *t* from 8 through 365 days. Thus each absence of *t* days in length contributes to one or more of the various frequencies for all sickness and nonindustrial injuries or a particular cause group, the number of the frequencies to which a contribution is made depending upon the duration of the absence. Thus the absence of 8 days' duration contributes only to the frequency of 8-day or longer absences while an absence of 10 days' duration contributes to three frequencies, namely, the frequency of absences lasting 8 days or longer, 9 days or longer, and 10 days or longer. In general as the *t* becomes larger the number of absences becomes smaller. When a particular set of absence durations is presented graphically with respect to the frequency of absences lasting *t* days or longer for various values of *t*, the initial plotted value will be determined by the total number of absences. Thus this frequency will be the maximum one and for this reason no curves of this type may have an upward slope. Should all of the absences be of the same length the graph of the frequencies would be a line parallel to the *t* axis. Should there be a relatively large number of long durations the graph would be a slowly decreasing curve; on the other hand a relatively large number of short absences would be reflected in a curve decreasing less slowly. It is pertinent to state in this connection that in the event two sickness experiences show equal frequencies of disabilities regardless of duration, graphs such as those described would be particularly useful in showing pictorially any possible differences in the two experiences with respect to duration of disability.

All ages.—The average annual number of absences per 1,000 males of sickness and nonindustrial injuries disabling for a specified number of days, *t* or more, is shown by broad cause group in table 1.

It is of interest to compare the rates for all ages with the rates shown in a similar table in the first paper of the series for males covered by 25 industrial sick benefit organizations (*1*). The frequency of absences lasting 8 calendar days or longer is consistently higher for each cause group in the present experience. The rates for all sickness and nonindustrial injuries, nonindustrial injuries, respiratory diseases and nonrespiratory diseases (a summation of digestive and non-

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TABLE 1.—*Annual number of absences per 1,000 males, by broad age and cause groups, of sickness and nonindustrial injuries disabling for a specified number of days, t or more, experience of male employees of an oil refining company, absences lasting 8 calendar days or longer and ending during 1933–39, inclusive*

t days	All sickness and nonindustrial injuries			Nonindustrial injuries			Respiratory diseases			Digestive diseases			Nonrespiratory-nondigestive diseases [1]			t days
	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	
	Annual number of absences per 1,000 males disabling for t days or more															
8	128.4	116.7	166.9	12.8	12.1	15.0	57.5	55.2	65.2	17.4	16.6	19.9	40.7	32.8	66.8	8
9	115.8	104.4	153.4	11.9	11.3	13.9	49.4	46.9	57.8	16.7	15.9	18.9	37.8	30.3	62.8	9
10	106.5	95.2	143.5	11.4	10.7	13.4	43.3	40.7	51.8	16.0	15.4	17.8	35.8	28.4	60.5	10
11	97.3	86.5	132.9	10.7	10.1	12.7	37.6	35.1	45.9	15.3	14.8	16.8	33.7	26.5	57.5	11
12	89.0	78.4	123.7	10.3	9.7	12.3	32.3	29.6	41.0	14.6	14.1	15.9	31.8	25.0	54.5	12
13	81.6	71.5	114.7	9.9	9.3	11.6	27.9	25.5	36.0	13.9	13.5	15.1	29.9	23.2	52.0	13
14	75.4	65.3	108.8	9.3	8.7	11.4	24.3	21.8	32.6	13.5	13.1	14.6	28.3	21.7	50.2	14
15	67.1	56.9	100.7	8.5	7.8	10.7	19.5	16.8	28.6	12.9	12.6	13.9	26.2	19.7	47.5	15
16	63.0	53.1	95.2	8.3	7.6	10.3	17.3	14.7	25.6	12.6	12.3	13.4	24.8	18.5	45.9	16
17	60.4	50.7	92.3	8.0	7.4	10.0	16.1	13.5	24.6	12.3	12.0	13.0	24.0	17.8	44.7	17
18	57.4	48.0	88.3	7.7	7.1	9.8	14.4	11.9	22.4	12.0	11.8	12.5	23.3	17.2	43.6	18
19	54.7	45.6	84.6	7.5	6.9	9.5	13.2	10.9	20.6	11.8	11.5	12.4	22.2	16.3	42.1	19
20	52.4	43.7	80.8	7.3	6.7	9.2	12.1	9.9	19.3	11.6	11.4	12.1	21.4	15.7	40.2	20
21	50.3	41.9	78.0	7.1	6.5	9.0	11.3	9.2	18.2	11.3	11.1	11.8	20.6	15.1	39.0	21
22	47.0	38.8	74.3	6.7	6.1	8.7	10.0	8.0	17.0	10.9	10.7	11.4	19.4	14.0	37.2	22
23	45.3	37.3	71.3	6.4	5.8	8.5	9.4	7.4	15.9	10.7	10.5	11.1	18.8	13.6	35.8	23
24	44.1	36.2	69.9	6.2	5.6	8.3	9.0	7.0	15.4	10.6	10.5	10.9	18.3	13.1	35.3	24
25	42.8	35.1	68.3	6.1	5.5	8.1	8.5	6.5	14.9	10.4	10.3	10.8	17.8	12.8	34.5	25
26	41.5	34.0	66.3	6.0	5.3	8.0	8.0	6.2	14.4	10.3	10.1	10.6	17.2	12.4	33.3	26
27	40.0	32.6	64.3	5.8	5.1	8.0	7.5	5.7	13.4	10.0	9.9	10.3	16.7	11.9	32.6	27
28	38.6	31.6	61.5	5.7	5.0	7.8	6.9	5.3	12.5	9.8	9.7	9.9	16.2	11.6	31.3	28
35	30.9	24.5	51.9	4.6	4.1	6.6	4.9	3.6	9.3	8.0	7.7	9.0	13.3	9.1	27.0	35
42	24.7	19.2	42.9	3.6	3.1	5.1	3.8	2.8	7.0	5.9	5.5	7.2	11.4	7.8	23.6	42
49	19.6	14.6	36.0	2.8	2.4	4.4	3.0	2.2	5.6	3.8	3.3	5.2	10.0	6.7	20.8	49
56	15.9	11.3	31.2	2.2	1.7	4.1	2.4	1.8	4.1	2.7	2.3	4.0	8.6	5.5	19.0	56
63	12.9	8.8	26.5	1.6	1.2	3.1	2.0	1.6	3.4	1.8	1.4	3.1	7.5	4.6	16.9	63
70	11.2	7.4	24.0	1.3	.8	2.8	1.8	1.4	3.0	1.3	1.1	2.3	6.8	4.1	15.9	70
77	9.8	6.3	21.2	1.0	.6	2.0	1.7	1.3	2.9	.9	.8	1.5	6.2	3.6	14.8	77
84	8.5	5.4	19.0	.8	.6	1.7	1.4	1.1	2.5	.8	.6	1.3	5.5	3.1	13.5	84
91	7.9	4.9	17.6	.7	.5	1.5	1.4	1.0	2.3	.7	.6	1.2	5.1	2.8	12.6	91
182	3.5	2.0	8.4	.3	.1	.8	.8	.7	1.1	.1	.1	.2	2.3	1.1	6.3	182
273	2.3	1.2	6.0	.1	.1	.4	.5	.4	.7	.1	0	.1	1.6	.7	4.8	273
364	1.6	.9	4.0	.1	[3]0	.2	.4	.4	.6	[3]0	0	.1	1.1	.5	3.1	364
365	1.5	.8	3.7	.1	[3]0	.1	.4	.3	.6	[3]0	0	.1	1.0	.5	2.9	365

See footnotes at end of table.

TABLE 1.—*Annual number of absences per 1,000 males, by broad age and cause groups, of sickness and nonindustrial injuries disabling for a specified number of days, t or more, experience of male employees of an oil refining company, absences lasting 8 calendar days or longer and ending during 1933–39, inclusive*—Continued

t days	All sickness and nonindustrial injuries			Nonindustrial injuries			Respiratory diseases			Digestive diseases			Nonrespiratory-nondigestive diseases [1]			t days
	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	
	Number of absences disabling for t days or more															
8	8,700	6,080	2,612	865	629	235	3,897	2,874	1,021	1,180	866	311	2,758	1,711	1,045	8
9	7,844	5,437	2,400	804	586	217	3,351	2,444	905	1,129	830	296	2,560	1,577	982	9
10	7,214	4,962	2,245	770	560	209	2,934	2,121	811	1,084	803	278	2,426	1,478	947	10
11	6,594	4,508	2,079	727	527	199	2,547	1,827	718	1,037	772	262	2,283	1,382	900	11
12	6,028	4,086	1,935	698	505	192	2,185	1,542	641	990	738	249	2,155	1,301	853	12
13	5,525	3,723	1,795	669	486	182	1,891	1,326	563	943	704	236	2,022	1,207	814	13
14	5,112	3,402	1,703	632	453	178	1,648	1,135	511	917	685	229	1,915	1,129	785	14
15	4,547	2,964	1,576	577	409	168	1,321	872	447	877	656	218	1,772	1,028	743	15
16	4,266	2,769	1,490	559	397	161	1,170	767	401	854	641	210	1,683	964	718	16
17	4,092	2,641	1,444	542	384	157	1,090	703	385	833	627	203	1,627	927	699	17
18	3,892	2,503	1,382	524	370	153	974	622	350	814	615	196	1,580	896	683	18
19	3,709	2,378	1,324	512	362	149	892	567	323	799	602	194	1,506	847	658	19
20	3,546	2,275	1,265	495	350	144	819	516	302	784	591	190	1,448	818	629	20
21	3,407	2,182	1,220	482	340	141	763	479	284	765	577	185	1,397	786	610	21
22	3,187	2,019	1,163	452	315	136	682	415	267	739	558	178	1,314	731	582	22
23	3,066	1,945	1,116	434	300	133	637	388	249	725	549	173	1,270	708	561	23
24	2,986	1,887	1,094	423	292	130	608	367	241	718	545	170	1,237	683	553	24
25	2,902	1,829	1,069	414	286	127	574	341	233	707	536	169	1,207	666	540	25
26	2,812	1,770	1,038	405	278	126	545	320	225	695	527	166	1,167	645	521	26
27	2,711	1,701	1,006	393	267	125	507	298	209	680	516	162	1,131	620	510	27
28	2,612	1,645	963	386	263	122	470	274	196	662	505	155	1,094	603	490	28
35	2,090	1,275	812	314	211	103	333	187	146	544	402	140	899	475	423	35
42	1,674	1,001	671	243	164	79	255	145	110	401	287	112	775	405	370	42
49	1,327	762	563	193	124	69	205	118	87	254	171	81	675	349	326	49
56	1,076	588	488	151	87	64	161	96	65	181	117	62	585	288	297	56
63	874	458	415	109	60	49	135	81	54	124	75	48	506	242	264	63
70	762	385	376	87	43	44	122	75	47	92	55	36	461	212	249	70
77	662	329	332	65	34	31	113	68	45	65	40	24	419	187	232	77
84	577	279	297	56	30	26	97	57	40	53	32	20	371	160	211	84
91	532	256	276	50	27	23	91	54	37	48	29	19	343	146	197	91
182	235	104	131	18	6	12	51	34	17	9	5	4	157	59	98	182
273	155	61	94	9	3	6	34	23	11	3	1	2	109	34	75	273
364	109	46	63	5	1	4	30	20	10	1	0	1	73	25	48	364
365	101	43	58	3	1	2	28	18	10	1	0	1	69	24	45	365

[1] Includes a negligible number of absences of ill-defined or unknown diagnosis.
[2] Includes a negligible number of absences of unknown age.
[3] Less than 0.05 absence per 1,000.

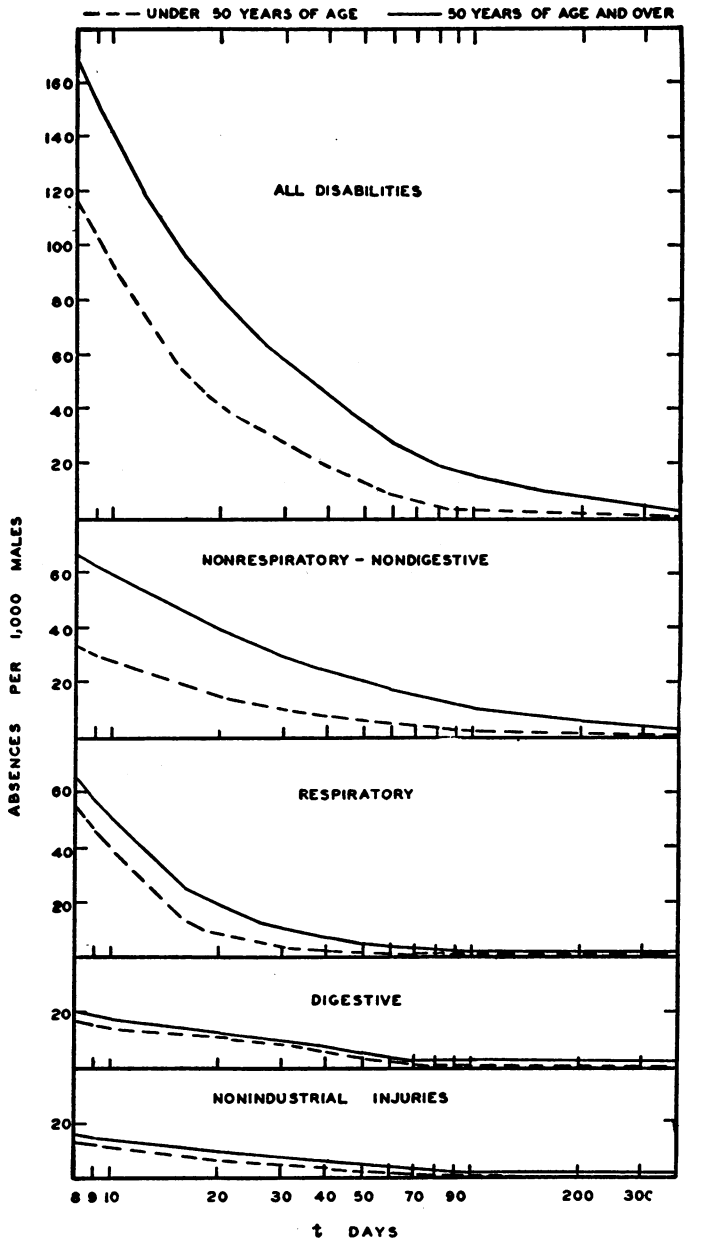

FIGURE 1.—Annual number of absences per 1,000 males of sickness and nonindustrial injuries disabling for a specified number of days, t or more, for ages under 50 years and 50 years and over, experience of male employees of an oil refining company, absences lasting 8 calendar days or longer and ending during 1933–39, inclusive. (Logarithmic horizontal scale.)

respiratory-nondigestive diseases) in the present instance are 128.4, 12.8, 57.5, and 58.1, respectively. Corresponding rates in the earlier study are 92.9, 9.7, 38.2, and 45.0, respectively. The excesses may be accounted for in part by the fact that the majority of the 25 organizations had a waiting period of 7 days, whereas there was no waiting period or only a 3-day waiting period for the oil refinery workers.

As t increases, however, the frequencies in the present experience decrease somewhat more rapidly than do the corresponding rates for the 25 industrial sick benefit organizations. It is possible to find for each cause group a t for which the frequencies of the 2 groups of workers are approximately equal, and after which the rates for the oil refinery workers are lower than the corresponding ones of the earlier study. Thus when t is 49 days, the average annual frequency of all sickness and nonindustrial injuries among the present group is 19.6 per 1,000 while the rate for the other group is 19.2. Corresponding t's for nonindustrial injuries, respiratory and nonrespiratory diseases are 77, 18, and 56, respectively. However, the frequency of absences lasting 364 days or longer for each cause group is approximately the same for the two groups of workers.

Frequencies by broad age group.—The pertinent data by broad age group are also shown in table 1 and are presented graphically in figure 1. It will be observed that for all causes of disability and for each cause group, as t varies from 8 through 365, the rate for male workers 50 years of age and over is consistently higher than the corresponding rate for males under 50 years of age. This difference in frequency is most marked for the nonrespiratory-nondigestive diseases and is least for the nonindustrial injuries and digestive diseases, respectively.

The most rapid decrease in rate for each age group is shown for the respiratory diseases where the initial frequency is approximately halved for the younger and older groups on the thirteenth and fourteenth days, respectively. Corresponding values for the other cause groups are: nonrespiratory-nondigestive diseases, the nineteenth and twenty-sixth days; nonindustrial injuries, the twenty-second day and fifth week; and digestive diseases, the fifth week and twenty-eighth day.

In comparing the frequencies of the two age groups it is of interest to note the value of t necessary in each cause group for the frequency among the workers 50 years of age and over to approximate the corresponding frequency of 8-day or longer absences among the younger group. Since in figure 1 the horizontal axis is, in reality, an axis of waiting periods,[3] this is equivalent to asking what waiting period would be necessary for the frequency of absences among the older

[3] The range of values is limited to those from 8 through 365.

group to be approximately equal to the frequency among the younger workers with a fixed waiting period of 7 days. For all sickness and nonindustrial injuries this relationship would exist if absences of only 13-days' duration or longer were included for the older males. Similar values of t for nonindustrial injuries, digestive, and respiratory diseases are 12, 11, and 9, respectively. For nonrespiratory-nondigestive diseases, however, it would be necessary to have t equal to 27 or to include only absences lasting 27 days or longer if the frequency rates for the two age groups are to be equal.

AVERAGE ANNUAL NUMBER OF DAYS OF DISABILITY PER MALE FROM ALL DISABILITIES CONTRIBUTING t DAYS OR LESS

Table 2 is derivable from the data presented in table 1. Instead of determining disability rates corresponding to absences of a specific length, say t days, the disability rate for a particular value of t is determined by the sum of all t days or less that can be possibly contributed by all absences. Thus the average annual number of days lost per male when t is 8 is determined by contributions in days from all disabilities, the size of each contribution being not more than 8 days. When t is 9 the disability rate is larger since the 9th day of disability is contributed by all disabilities lasting more than 8 days. It is evident that the disability rates when plotted against t can never be on a decreasing curve or on a straight line parallel to the t axis. If absences were of the same length the disability rates would lie on a straight line with an upward slope. Thus if there were 10 absences of the same length (greater than 8 days) each successive t would add 10 days to the number of days yielded by the t immediately preceding.

All ages.—Table 2 presents the pertinent data by broad cause group for all ages and for the two broad age groups. The days of disability do not include those arising from absences of less than 8 days' duration nor from absences which terminated in death before the eighth day of disability. The rates are somewhat higher than the rates found for males in the first paper of the series, the days of disability for the 4 cause groups of that experience being 3.894, 0.396, 1.114, and 2.384 when t is 364, while corresponding rates in the present instance are 4.250, 0.473, 1.189, and 2.588, respectively.

The greatest increase in time lost as t varies from 8 through 365 days is shown for the nonrespiratory-nondigestive group of diseases, the disability rate when t is 365 being exactly 6 times the rate when t is 8.

Disability rates by broad age group.—The pertinent data for the two broad age groups are shown graphically in figure 2. It will be observed that for each cause group the rates for the older workers are consistently higher than the corresponding rates for the younger workers. In this graphic presentation the horizontal axis may be considered an axis of maximum benefit periods,[4] the value of the rate for a given t

[4] The range of values is limited to those from 8 through 365.

TABLE 2.—*Annual number of days of disability per male, by broad age and cause groups, resulting from all disabilities contributing t days or less, experience of male employees of an oil refining company, absences lasting 8 calendar days or longer due to sickness and nonindustrial injuries, and ending during 1933–39, inclusive*

t days	All sickness and nonindustrial injuries			Nonindustrial injuries			Respiratory diseases			Digestive diseases			Nonrespiratory-nondigestive diseases [1]			t days
	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	All ages [2]	Under 50 years	50 years and over	
	Annual number of days of disability per male resulting from all disabilities contributing t days or less															
8	1.027	.934	1.335	.102	.097	.120	.460	.441	.522	.139	.133	.159	.326	.263	.534	8
9	1.143	1.038	1.489	.114	.108	.134	.509	.488	.580	.156	.149	.178	.364	.293	.597	9
10	1.250	1.133	1.632	.126	.119	.147	.553	.529	.632	.172	.164	.196	.399	.321	.657	10
11	1.347	1.220	1.765	.136	.129	.160	.591	.564	.678	.187	.179	.212	.433	.348	.715	11
12	1.436	1.298	1.889	.146	.138	.172	.623	.594	.719	.202	.193	.228	.465	.373	.770	12
13	1.518	1.370	2.003	.156	.148	.184	.651	.619	.754	.216	.207	.243	.495	.396	.822	13
14	1.593	1.435	2.112	.166	.156	.195	.675	.641	.787	.229	.220	.258	.523	.418	.872	14
15	1.660	1.492	2.213	.174	.164	.206	.695	.658	.816	.242	.233	.272	.549	.437	.919	15
16	1.723	1.545	2.308	.182	.172	.216	.712	.672	.841	.255	.245	.286	.574	.456	.965	16
17	1.783	1.596	2.400	.190	.179	.226	.728	.686	.866	.267	.257	.298	.598	.474	1.010	17
18	1.841	1.644	2.489	.198	.186	.236	.742	.698	.888	.279	.269	.311	.622	.491	1.054	18
19	1.896	1.689	2.573	.206	.193	.246	.755	.709	.909	.291	.280	.323	.644	.507	1.095	19
20	1.948	1.733	2.654	.213	.200	.255	.767	.718	.928	.303	.292	.335	.665	.523	1.136	20
21	1.998	1.775	2.732	.220	.206	.264	.779	.728	.946	.314	.303	.347	.685	.538	1.175	21
22	2.045	1.814	2.806	.227	.213	.272	.789	.736	.963	.324	.313	.359	.705	.552	1.212	22
23	2.091	1.851	2.878	.233	.218	.281	.798	.743	.979	.336	.324	.370	.724	.566	1.248	23
24	2.135	1.887	2.948	.240	.224	.289	.807	.750	.995	.346	.334	.381	.742	.579	1.283	24
25	2.177	1.922	3.016	.245	.229	.298	.816	.757	1.010	.356	.345	.391	.760	.591	1.317	25
26	2.219	1.956	3.082	.251	.234	.305	.824	.763	1.024	.367	.355	.402	.777	.604	1.351	26
27	2.259	1.989	3.147	.257	.240	.314	.831	.768	1.037	.377	.365	.412	.794	.616	1.384	27
28	2.298	2.021	3.208	.263	.245	.321	.838	.774	1.050	.387	.375	.422	.810	.627	1.415	28
35	2.534	2.210	3.598	.298	.276	.371	.878	.803	1.125	.448	.434	.487	.910	.697	1.615	35
42	2.724	2.360	3.921	.326	.301	.409	.907	.825	1.180	.496	.479	.543	.995	.755	1.789	42
49	2.874	2.473	4.193	.347	.319	.441	.931	.842	1.223	.527	.507	.585	1.069	.805	1.944	49
56	2.995	2.561	4.424	.365	.332	.471	.949	.856	1.256	.548	.526	.616	1.133	.847	2.081	56
63	3.094	2.630	4.620	.378	.342	.495	.964	.868	1.281	.564	.538	.640	1.188	.882	2.204	63
70	3.177	2.685	4.795	.388	.348	.516	.977	.878	1.303	.574	.546	.658	1.238	.913	2.318	70
77	3.249	2.733	4.950	.395	.353	.532	.989	.888	1.323	.582	.553	.671	1.283	.939	2.424	77
84	3.312	2.773	5.090	.401	.357	.544	1.000	.896	1.342	.588	.558	.681	1.323	.962	2.523	84
91	3.369	2.809	5.215	.406	.361	.554	1.009	.904	1.359	.594	.562	.689	1.360	.982	2.613	91
182	3.823	3.078	6.285	.447	.386	.648	1.095	.971	1.506	.623	.582	.746	1.658	1.139	3.385	182
273	4.073	3.211	6.926	.464	.393	.698	1.145	1.014	1.582	.630	.587	.761	1.834	1.217	3.885	273
364	4.248	3.303	7.377	.473	.396	.724	1.188	1.050	1.646	.632	.588	.769	1.955	1.269	4.238	364
365	4.250	3.304	7.380	.473	.396	.724	1.189	1.051	1.646	.632	.588	.769	1.956	1.269	4.241	365

Number of days of disability resulting from all disabilities contributing t days or less

8	69,600	48,640	20,896	6,920	5,032	1,880	31,176	22,992	8,168	9,440	6,928	2,488	22,064	13,688	8,360	8
9	77,444	54,077	23,296	7,724	5,618	2,097	34,527	25,436	9,073	10,569	7,758	2,784	24,624	15,265	9,342	9
10	84,658	59,039	25,541	8,494	6,178	2,306	37,461	27,557	9,884	11,653	8,561	3,032	27,050	16,743	10,289	10
11	91,252	63,547	27,620	9,221	6,705	2,505	40,008	29,384	10,602	12,690	9,333	3,324	29,333	18,125	11,189	11
12	97,280	67,633	29,555	9,919	7,210	2,697	42,193	30,926	11,243	13,680	10,071	3,573	31,488	19,426	12,042	12
13	102,805	71,356	31,350	10,588	7,696	2,879	44,084	32,252	11,806	14,623	10,775	3,809	33,510	20,633	12,856	13
14	107,917	74,758	33,053	11,220	8,149	3,057	45,732	33,387	12,317	15,540	11,460	4,038	35,425	21,762	13,641	14
15	112,464	77,722	34,629	11,797	8,557	3,225	47,053	34,259	12,764	16,417	12,116	4,256	37,197	22,790	14,384	15
16	116,730	80,491	36,119	12,356	8,954	3,386	48,223	35,026	13,165	17,271	12,757	4,466	38,880	23,754	15,102	16
17	120,822	83,132	37,563	12,898	9,338	3,543	49,313	35,720	13,550	18,104	13,384	4,669	40,507	24,681	15,801	17
18	124,714	85,635	38,945	13,422	9,708	3,696	50,287	36,351	13,900	18,918	13,999	4,865	42,087	25,577	16,484	18
19	128,423	88,013	40,269	13,934	10,070	3,845	51,179	36,918	14,223	19,717	14,601	5,059	43,593	26,424	17,142	19
20	131,969	90,288	41,534	14,429	10,420	3,989	51,998	37,434	14,525	20,501	15,192	5,249	45,041	27,242	17,771	20
21	135,376	92,470	42,754	14,911	10,760	4,130	52,761	37,913	14,809	21,266	15,769	5,434	46,438	28,028	18,381	21
22	138,563	94,489	43,917	15,363	11,075	4,266	53,443	38,329	15,076	22,005	16,327	5,612	47,752	28,759	18,963	22
23	141,629	96,434	45,033	15,797	11,375	4,399	54,080	38,716	15,325	22,730	16,876	5,785	49,022	29,467	19,524	23
24	144,615	98,321	46,127	16,220	11,667	4,529	54,688	39,083	15,566	23,448	17,421	5,955	50,259	30,150	20,077	24
25	147,517	100,150	47,196	16,634	11,953	4,656	55,262	39,424	15,799	24,155	17,957	6,124	51,466	30,816	20,617	25
26	150,329	101,920	48,234	17,039	12,231	4,782	55,807	39,744	16,024	24,850	18,484	6,290	52,633	31,461	21,138	26
27	153,040	103,621	49,240	17,432	12,498	4,907	56,314	40,042	16,233	25,530	19,000	6,452	53,764	32,081	21,648	27
28	155,652	105,266	50,203	17,818	12,761	5,029	56,784	40,316	16,429	26,192	19,505	6,607	54,858	32,684	22,138	28
35	171,673	115,153	56,312	20,207	14,373	5,802	59,485	41,845	17,601	30,334	22,608	7,632	61,647	36,327	25,277	35
42	184,518	122,937	61,359	22,093	15,655	6,406	61,458	42,962	18,457	33,584	24,977	8,499	67,383	39,343	27,997	42
49	194,692	128,846	65,610	23,548	16,608	6,908	63,050	43,874	19,137	35,687	26,413	9,152	72,407	41,951	30,413	49
56	202,898	133,418	69,230	24,704	17,307	7,365	64,287	44,593	19,655	37,155	27,384	9,635	76,752	44,134	32,575	56
63	209,585	137,023	72,302	25,577	17,799	7,746	65,301	45,211	20,051	38,200	28,046	10,008	80,507	45,967	34,497	63
70	215,204	139,903	75,034	26,243	18,140	8,071	66,188	45,754	20,395	38,911	28,465	10,293	83,862	47,544	36,275	70
77	220,107	142,378	77,455	26,745	18,396	8,317	67,002	46,253	20,710	39,453	28,800	10,493	86,907	48,929	37,935	77
84	224,402	144,475	79,648	27,157	18,617	8,508	67,731	46,692	21,000	39,869	29,051	10,651	89,645	50,115	39,487	84
91	228,238	146,339	81,617	27,517	18,813	8,672	68,384	47,082	21,263	40,217	29,265	10,784	92,120	51,179	40,898	91
182	258,987	160,357	98,348	30,268	20,102	10,134	74,200	50,587	23,574	42,176	30,331	11,677	112,343	59,337	52,963	182
273	275,924	167,254	108,388	31,415	20,465	10,918	77,614	52,814	24,761	42,666	30,584	11,914	124,229	63,391	60,795	273
364	287,784	172,067	115,435	32,000	20,643	11,325	80,503	54,710	25,754	42,815	30,611	12,036	132,466	66,103	66,320	364
365	287,885	172,110	115,493	32,003	20,644	11,327	80,531	54,728	25,764	42,816	30,611	12,037	132,535	66,127	66,365	365

[1] Includes a negligible number of absences of ill-defined or unknown diagnosis.

[2] Includes a negligible number of absences of unknown age.

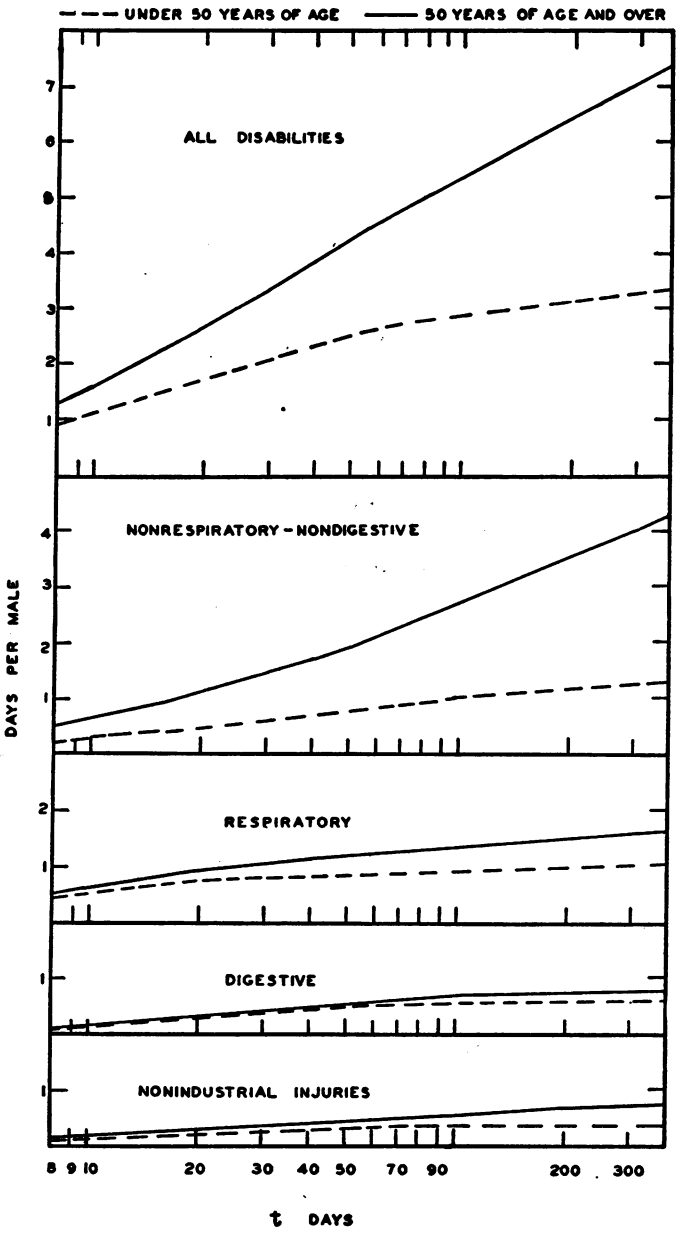

FIGURE 2.—Annual number of days of disability per male resulting from all disabilities contributing t days or less, for ages under 50 years and 50 years and over, experience of male employees of an oil refining company, absences lasting 8 calendar days or longer due to sickness and nonindustrial injuries and ending during 1933–39, inclusive. (Logarithmic horizontal scale.)

being the average annual number of days lost per male for a maximum benefit period equal to t. Thus for the oil refinery workers where the maximum benefit period was 365 days, the days lost per male on account of all sickness and nonindustrial injuries is 3.304 for the younger group, and 7.380 for the older group.

The most marked difference in the rates with respect to age is shown by the nonrespiratory-nondigestive group of diseases, both age groups showing initial rates of less than 1, and terminal rates greater than 1 and greater than 4, for the younger and older groups, respectively.

A pertinent question with respect to the age factor is: What maximum benefit period (or value of t) for the older workers yields a disability rate approximately equal to the rate for the younger group with a maximum benefit period of 365 days. This particular disability rate is 3.3 days per male, a rate which corresponds among the older males to a t of about 4 weeks. Thus, if all absences among the older group were arbitrarily terminated at 4 weeks the resulting recorded disability rate would be equal to the rate experienced by the younger group whose absences were terminated at 365 days. In other words, the older group had accumulated during the first 4 weeks of disability a sufficient number of days of disability to yield a rate equal to that for the younger group based on a year's accumulation.

RATIO OF RATES

The disability record of the older worker becomes more meaningful when it is expressed in terms of the experience of the younger group. For this reason appropriately selected ratios of the frequency and the disability rates are shown in table 3.

Ratio of the frequency rates.—Interest centers on the behavior of the ratio for the nonrespiratory-nondigestive group of diseases, the ratio increasing gradually from a value of approximately 2 to one of over 6. Thus while the older group shows a frequency of 8-day or longer disabilities approximately twice the corresponding frequency for the younger group, the frequency of disabilities lasting 273 days or longer among the older group is over 6 times the corresponding frequency for the younger group. While the initial value of the ratio for all sickness and nonindustrial injuries is lower than the initial value for the nonrespiratory-nondigestive group of diseases, the ratios move upward more or less parallel to each other as t increases in value, that is, as the disabilities of shorter duration drop out. Thus not only are the 8-day or longer frequencies in excess among the older group but when duration is taken into account the excess becomes more and more evident as duration increases.

Ratio of the disability rates.—The ratio of the disability rates for selected values of t will also be found in table 3. The nonrespiratory-nondigestive group of diseases is again of principal interest, the ratio

gradually increasing from approximately 2 to over 3. Thus the ability of the absences to continue to contribute to the disability rate becomes less and less among the younger group when compared to the older one. With regard to the other three cause groups the initial value of the ratio is more than one, and in each instance there is a tendency for the ratio to increase as t increases.

TABLE 3.—*Ratio of frequency and disability rates for ages 50 years and over to corresponding rates for ages under 50 years by broad cause group, experience of male employees of an oil refining company, absences lasting 8 calendar days or longer and ending during 1933–39, inclusive*

[Derived from tables 1 and 2]

t days	Ratio of rate for ages 50 years and over to rate for ages under 50 years									
	Rate: Annual number of absences per 1,000 males disabling for t days or more					Rate: Annual number of days of disability per male resulting from all disabilities contributing t days or less				
	All sickness and nonindustrial injuries	Nonindustrial injuries	Respiratory diseases	Digestive diseases	Nonrespiratory-nondigestive diseases	All sickness and nonindustrial injuries	Nonindustrial injuries	Respiratory diseases	Digestive diseases	Nonrespiratory-nondigestive diseases
8	1.43	1.24	1.18	1.20	2.03	1.43	1.24	1.18	1.20	2.03
14	1.67	1.31	1.50	1.11	2.31	1.47	1.25	1.23	1.17	2.09
21	1.86	1.38	1.98	1.06	2.58	1.54	1.28	1.30	1.15	2.18
28	1.95	1.56	2.36	1.02	2.70	1.59	1.31	1.36	1.13	2.26
35	2.12	1.61	2.58	1.17	2.97	1.63	1.34	1.40	1.12	2.32
42	2.23	1.65	2.50	1.31	3.03	1.66	1.36	1.43	1.13	2.37
49	2.47	1.83	2.55	1.58	3.10	1.70	1.38	1.45	1.15	2.41
56	2.76	2.41	2.28	1.74	3.45	1.73	1.42	1.47	1.17	2.46
63	3.01	2.58	2.12	2.21	3.67	1.76	1.45	1.48	1.19	2.50
70	3.24	3.50	2.14	2.09	3.88	1.79	1.48	1.48	1.21	2.54
77	3.37	3.33	2.23	1.88	4.11	1.81	1.51	1.49	1.21	2.58
84	3.52	2.83	2.27	2.17	4.35	1.84	1.52	1.50	1.22	2.62
91	3.59	3.00	2.30	2.00	4.50	1.86	1.53	1.50	1.23	2.66
182	4.20	8.00	1.57	2.00	5.73	2.04	1.68	1.55	1.28	2.97
273	5.00	4.00	1.75	----------	6.86	2.16	1.78	1.56	1.30	3.19
365	4.62	----------	2.00	----------	5.80	2.23	1.83	1.57	1.31	3.34

SUMMARY

This paper, the third of a series on the duration of disabling sickness and nonindustrial injuries, based on absences lasting 8 calendar days or longer, reported periodically by an oil refining company over a period of 7 years, presents principally two basic tables showing industrial morbidity among males by broad age and cause groups. One table gives the average annual number of absences per 1,000 males causing disability for a specified number of days, t or more, and the other, the average annual number of days of disability per male resulting from all disabilities contributing t days or less, the t in both instances varying from 8 through 365 days. For each cause group and each value of t, the frequency and the disability rates for the group of males 50 years of age and over were higher than the corresponding rates for the group under 50 years of age.

In general, the ratios of the rates, both frequency and disability, for the older age group to the corresponding rates for the younger group increased as t increased; for the nonrespiratory-nondigestive disease group, all of the ratios were greater than 2.

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THE INCIDENCE OF CANCER IN DALLAS AND FORT WORTH, TEXAS, AND SURROUNDING COUNTIES, 1938[1]

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This paper is the sixth in a series of studies of the prevalence and incidence of cancer in the United States. The information was obtained by reports from doctors and hospitals in 10 areas and concerns all cases seen (whether treated or merely observed) during the study year, 1938 in this case. The findings of the first five of these surveys have been published;[2] the first paper gives a more detailed description of the procedure used in collecting the data.

The sixth area surveyed consisted of two adjacent counties, Dallas

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

[2] Preceding papers are:

(1) Mountin, Joseph W., Dorn, Harold F., and Boone, Bert R.: The incidence of cancer in Atlanta, Ga., and surrounding counties. Pub. Health Rep., 54: 1255–1273 (1939).

(2) Dorn, Harold F.: The incidence of cancer in Cook County, Ill. Pub. Health Rep., 55: 628–650 (1940).

(3) McDowell, Arthur J.: The incidence of cancer in Pittsburgh and Allegheny County, Pa., 1937. Pub. Health Rep., 55: 1419–1451 (1940).

(4) McDowell, Arthur J.: The incidence of cancer in Detroit and Wayne County, Mich., 1937. Pub. Health Rep., 56: 703–739 (1941).

(5) McDowell, Arthur J.: The incidence of cancer in New Orleans, La., 1937. Pub. Health Rep., 56: 1141–1170 (1941).

and Tarrant, in Texas,[3] which include the cities of Dallas and Fort Worth and have a total combined population of over 600,000.[4] Reports were secured from all but 8 of the 705 doctors, and one of the 55 hospitals and allied institutions, a small home which, it is thought, could have had very few, if any, cases of cancer.

The data were collected separately in Dallas and Tarrant Counties and, although they were ultimately combined, preliminary tabulations were made for each county. The doctors and hospitals of Tarrant County reported a total of 1,091 cancer cases; in addition 11 deaths from cancer that were not included in the reported cases were obtained from the death certificate records filed with the Board of Health. Reports from Dallas County included 2,592 cases of cancer; 10 additional cancer deaths were not reported as cases.

The ratio of resident cases to deaths is sometimes used in making comparisons of cancer prevalence, but, as pointed out in an earlier paper (paper *3*, footnote 2), is liable to misinterpretation. This ratio was found to be 5.1 in Dallas County and 4.2 in Tarrant County. Both of these ratios are higher than those for any of the areas surveyed earlier, except Atlanta, Ga., where the ratio was 5.3 (table 1).

TABLE 1.—*Number of reported cases of cancer and the ratio of resident cases to resident deaths by sex and color, Dallas and Tarrant Counties, Tex., 1938*

	Dallas County					Tarrant County				
	Total			White	Colored	Total			White	Colored
	Both sexes	Male	Female			Both sexes	Male	Female		
Reported cases	2,592	1,278	1,314	2,434	158	1,091	527	564	1,061	30
Deaths not reported as a case	*10*	*4*	*6*	*10*		*11*	*5*	*6*	*8*	*3*
Total resident cases [1]	1,583	699	884	1,436	147	798	361	437	767	31
Resident death certificates	*313*	*134*	*179*	*267*	*46*	*192*	*83*	*109*	*184*	*8*
Ratio (resident cases per resident death)	5.1	5.2	4.9	5.4	3.2	4.2	4.4	4.0	4.2	3.9

[1] Includes resident cases from death certificate only.

Although the ratio of cases to deaths is higher in Dallas than in Tarrant County, this does not mean that cancer is more common in Dallas County. The number of cases of cancer per 100,000 population is 412 in Dallas and 363 in Tarrant County, a difference of 13.4 percent. But this rate is based upon all cases reported and consequently is influenced by the completeness with which cases diagnosed prior to the study year are reported. If the rate is based upon new cases, that is, those diagnosed during the study year, the rates for the white population are 274 in Dallas and 265 in Tarrant County, a

[3] The field work of collecting the data in this area was under the supervision of Bernard A. Koteen. The tabulation of the data was under the supervision of Miss Bess Cheney. Assistance in the preparation of these materials was furnished by the personnel of Work Projects Administration Official Project No. 65-2-23-356. The entire survey was directed by Harold F. Dorn.

[4] Using the preliminary count of the 1940 Census for the two counties, the population was estimated to have been 606,068 on July 1, 1938.

difference of only 3.6 percent. Since there apparently is no real difference in the incidence of cancer in the two counties, the reports have been combined and the entire area will be treated as a unit.

The prevalence rate for resident cases in the two counties combined is 394 per 100,000 population. This crude prevalence rate is higher than that for any of the areas previously reported except New Orleans, where the rate was 427. The rates in other cities were: Atlanta 390, Chicago 345, Pittsburgh 332, and Detroit 283.

NUMBER OF CASES REPORTED PER DOCTOR OR HOSPITAL

Over one-half of the doctors and nearly one-half of the institutions reported having had no cases of cancer during the study year. Many of the doctors who had seen no cases were specialists in fields in which cancer is relatively infrequent, pediatrics, psychiatry, obstetrics, etc., and the institutions reporting no cases were small homes or sanatoriums devoted to some particular field (nursing homes, tuberculosis sanatoriums, etc.). However, it is generally true that the average practitioner sees relatively few cases of cancer, and that most of the cases are cared for by a relatively small number of physicians. In this area 89 percent of the doctors had only 21.4 percent of all the cases reported by doctors. Only 3.1 percent of the doctors reported over 20 cases of cancer each, but these accounted for 59 percent of all doctors' cases. Among the hospitals, less than 30 percent reported over 20 cases each but these institutions accounted for over 97 percent of all the cases reported by hospitals (table 2).

TABLE 2.—*Percentage distribution of reporting sources by number of cancer cases reported by each, with the corresponding percentage distribution of cases, Dallas and Fort Worth, Tex., 1938*

Number of cases reported by each source	Percentage distribution of—					
	Doctors'		Hospitals'		Total	
	Reports	Cases	Reports	Cases	Reports	Cases
No cases	51.1	0	44.4	0	50.5	0
1 or more cases	48.9	100	55.6	100	49.5	100
1 case	*15.2*	*3.8*	*9.3*	*0.2*	*14.7*	*2.1*
2 to 5 cases	*22.7*	*17.6*	*11.1*	*0.8*	*21.8*	*9.6*
6 to 10 cases	*5.6*	*10.8*	*3.7*	*0.7*	*5.4*	*6.0*
11 to 20 cases	*2.3*	*8.8*	*1.9*	*0.7*	*2.3*	*4.9*
Over 20 cases	*3.1*	*59.0*	*29.6*	*97.6*	*5.3*	*77.4*
Total	100.0	100.0	100.0	100.0	100.0	100.0

FREQUENCY OF MICROSCOPIC CONFIRMATION OF DIAGNOSES

The ultimate decision as to whether a particular case should be included as a malignant growth was made by the doctor who had treated the case. If the reporting doctor had diagnosed a case as cancer, it was included in the survey even though that diagnosis had

been made only clinically. There had been a microscopic test made to confirm the diagnosis for only half (49.8 percent) of the cases reported in Dallas and Fort Worth. This is lower than the similar percentage for any of the other areas, although it is not very different from the figures for the other two southern cities already surveyed. Atlanta with 52 percent, New Orleans with 51.7 percent, and this area with 49.8 percent, have each reported a much lower percentage of cases with a microscopic diagnosis than have the three northern areas (Chicago 70 percent, Pittsburgh 62 percent, and Detroit 78 percent). One of the reasons for this is that the southern cities have many more cases of cancer of the skin, and malignant growths primary in this site are less often biopsied (table 3).

TABLE 3.—*Percentage of cancer cases with a microscopic diagnosis, by primary site and reporting source, Dallas and Fort Worth, Tex., 1938*

Primary site	Percentage of microscopic examinations in cases reported by		
	Doctors only	Hospitals [1]	All sources
Buccal cavity	23.6	52.5	36.3
Digestive tract	46.0	55.2	51.3
Respiratory system	60.9	60.4	60.6
Genito-urinary system	74.2	78.1	76.8
Breast	74.1	70.2	71.6
Skin	15.9	40.2	24.1
All other sites [2]	72.1	70.0	70.9
All sites	37.4	61.6	49.8

[1] This includes cases reported by a hospital and a doctor, as well as cases reported by hospitals only.
[2] There were too few cases primary in the brain and bones for separate listing here and these are included with "all other sites."

The smallness of the percentage of microscopic examinations among skin and buccal cavity cancers suggests that the high prevalence of these cases in this area might alone account for the low percentage of microscopic diagnoses for all cases. When this percentage is calculated for all cases *except* skin and buccal cavity for various cities, it is apparent that this is so. The figures are as follows: Dallas and Fort Worth 68.2 percent, New Orleans 54.5 percent, Pittsburgh 63.6 percent, Detroit 77.7 percent. Except for cancer of the skin and buccal cavity, therefore, this area is not low in the percentage of microscopic diagnoses. It is because there are relatively more skin cancers, and because only an exceptionally small number of them were biopsied, that the percentage of microscopic examinations is lower in this area than in any of those previously reported.

SITE DISTRIBUTION OF CANCER CASES

Table 4 lists separately by sex the percentage distribution of cases by primary site. Cases with primary site unknown are included in the last group, "all other sites."

TABLE 4.—*Percentage distribution of all cases of cancer by primary site and by sex, Dallas and Fort Worth, Tex., 1938*

Primary site	Percentage in each group		Primary site	Percentage in each group	
	Male	Female		Male	Female
Buccal cavity	18.4	4.2	Genito-urinary system	11.5	33.7
Lip	*13.6*	*1.7*	*Uterus*		*26.6*
Others	*4.8*	*2.5*	*Prostate*	*6.0*	
Digestive tract	14.5	12.7	*Kidneys, bladder*	*4.1*	*1.6*
Stomach, duodenum	*4.7*	*2.9*	*Others*	*1.4*	*5.5*
Intestines	*3.3*	*3.5*	Breast	.1	22.2
Rectum, anus	*3.0*	*3.0*	Skin	46.5	21.7
Others	*3.5*	*3.3*	Brain	1.1	.9
Respiratory system	3.1	.8	Bones	1.4	.6
Lungs, pleura	*1.5*	*.3*	All other sites	3.4	3.2
Others	*1.6*	*.5*	All sites	100.0	100.0

Skin cancer makes up one-third of all the cases reported in this area. It constitutes a much larger portion (46.5 percent) of the cases among males than among females (21.7 percent), and occurs almost exclusively among white persons. For white residents the prevalence rate of skin cancer in this area is 140 per 100,000 population, a rate higher than that for any of the areas previously reported. Figure 1 shows the prevalence rate of skin cancer for each of the study areas analyzed so far.

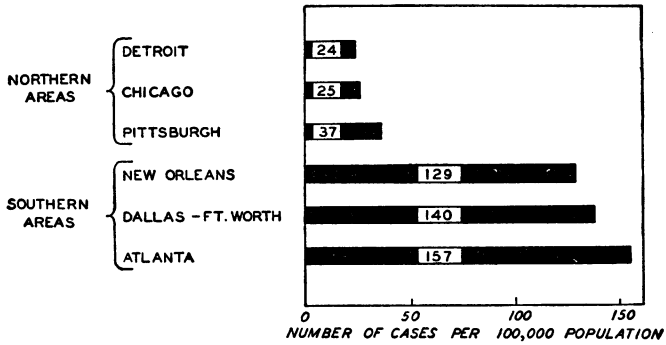

FIGURE 1.—Number of cases of skin cancer per 100,000 population in 6 urban areas.

There is a remarkable difference in the prevalence of lip cancer among males and among females, not only in this area but in each of the others investigated. In Dallas and Fort Worth, although the total number of cancer cases is divided almost equally between males and females, lip cancer makes up only 1.7 percent of the total cases among females as compared with 13.6 percent among males. The actual figures show that there were 245 cases of lip cancer among males and only 32 cases among females. Since there is no reason to suppose any great preponderance of males over females in the population of this area, cancer of the lip is seen to be 7 or 8 times as frequent among males as among females. The data collected do not permit further

examination into factors that might throw some light on this particular relationship of sex and site.

The other sex differences in the primary site of the malignant growths are similar to those observed in the earlier studies in this series. Cancer of the respiratory system as well as of the skin and buccal cavity is much more prevalent among males than among females. Nearly one-half (48.8 percent) of the cases among females were listed as cancer of the breast or of the uterus. Thus the most frequent sites of cancer among males are skin, buccal cavity, digestive tract, and genito-urinary system, while among females the order is genito-urinary system (over three-fourths of which are uterus), breast, skin, and digestive tract.

AGE DISTRIBUTION OF REPORTED CANCER CASES

The percentage distribution by age of the 3,082 cancer cases by sex is very like the age distributions found in the cities previously surveyed. Ninety-one percent of all the cases are between the ages of 30 and 79; 67.5 percent of all cases are between the ages of 40 and 69. There are 48 cases of cancer in the age groups under 20 and 153 cases under 30 years of age.

Differences in age distribution between cases among males and females and white and colored persons were found here as in the other cities surveyed. There are relatively more cases among males than females under 25 years of age. Seventy-four percent of the cases among females are found in the age groups between 25 and 64, but slightly less than 60 percent of the male patients are between these ages. The colored cases tend to be younger than the white cases. Seventy-six percent of the colored cases are in age groups below 65, while only 55.7 percent of the white cases are in these groups.

RELATIONSHIP BETWEEN PRIMARY SITE AND AGE

More than three-fourths of the cases of cancer primary in the prostate are in the age group 65 and over, while only 37.7 percent of all cases among males are in that age group (table 5). Seventy-four percent of the cancers of the female genito-urinary system are found among persons from 35 to 64 years of age (table 6). Cancer of the skin is found in appreciable numbers in every age group above 35 years, but the prevalence of cancer of this site is directly associated with age and its relative importance increases regularly with age. Malignant growths primary in the buccal cavity (except for lip), digestive tract, and respiratory system are found chiefly at ages above 35. Breast cancers occur most frequently among females in the age groups from 35 to 64, nearly three-fourths (73.7 percent) of the cases being at those ages. The only sites that appear most frequently among relatively young people are brain, bones, lip, and the group

"all other sites." [5] For these site groups more than one-third of the cases are under 45, and over one-half are under 55 years of age.

TABLE 5.—*Percentage distribution by age and primary site of male cancer cases reported, Dallas and Fort Worth, Tex., 1938*

Primary site	Age of patient									Number of cases [1]
	Under 15	15–24	25–34	35–44	45–54	55–64	65–74	75 and over	All ages	
Buccal cavity	------	2.3	8.6	17.6	22.2	22.2	20.3	6.8	100	266
Lip	------	*5.2*	*11.0*	*21.6*	*27.3*	*20.0*	*13.2*	*3.7*	*100*	*190*
Others	------	------	*2.6*	*7.9*	*9.2*	*27.6*	*38.2*	*14.5*	*100*	*76*
Digestive tract	0.4	.4	4.2	10.8	20.4	27.5	26.3	10.0	100	210
Stomach and duodenum	------	------	*2.5*	*10.0*	*16.2*	*27.5*	*30.0*	*13.8*	*100*	*80*
Others	*.6*	*.6*	*5.0*	*11.3*	*22.5*	*27.5*	*24.4*	*8.1*	*100*	*160*
Respiratory system	2.1	6.2	2.1	14.6	22.9	25.0	20.8	6.3	100	48
Genito-urinary system	2.1	.5	5.2	7.2	7.8	17.1	44.0	16.1	100	193
Prostate	------	------	------	*1.0*	*3.0*	*16.2*	*57.6*	*22.2*	*100*	*99*
Others	*4.2*	*1.1*	*10.6*	*13.8*	*12.8*	*18.1*	*29.8*	*9.6*	*100*	*94*
Skin	------	.6	3.5	10.0	21.5	25.3	24.3	14.8	100	622
All other sites [2]	12.0	12.0	9.0	7.0	13.0	25.0	19.0	3.0	100	100
All sites	1.2	1.8	5.1	11.1	19.1	24.0	26.0	11.7	100	1,469

[1] Cases of unknown age, 336 in all, are excluded here.
[2] Breast, brain, and bones are included with "all other sites" in this table, there being too few cases to permit separate listing.

TABLE 6.—*Percentage distribution by age and primary site of female cancer cases, Dallas and Fort Worth, Tex., 1938*

Primary site	Age of patient									Number of cases [1]
	Under 15	15–24	25–34	35–44	45–54	55–64	65–74	75 and over	All ages	
Buccal cavity	------	------	------	24.6	16.4	32.8	18.0	8.2	100	61
Digestive tract	------	1.4	6.8	10.5	21.0	30.6	24.2	5.5	100	219
Genitourinary system	0.2	.4	7.9	20.7	30.1	23.2	15.0	2.5	100	594
Uterus	------	*.2*	*7.4*	*21.9*	*31.4*	*22.9*	*14.5*	*1.7*	*100*	*471*
Others	*.8*	*.8*	*9.8*	*16.2*	*25.2*	*24.4*	*17.1*	*5.7*	*100*	*123*
Breast	------	------	7.3	20.3	30.6	22.8	11.9	7.1	100	369
Skin	.4	1.1	7.3	9.9	17.1	23.7	24.1	16.4	100	274
All other sites [2]	10.4	5.2	9.4	12.5	22.9	18.8	15.6	5.2	100	96
All sites	.7	.8	7.3	17.1	25.9	24.3	17.2	6.7	100	1,613

[1] Cases of unknown age, 265 in all, are excluded from this table.
[2] Respiratory system, brain, and bones had too few cases to be listed separately, and are here included with "all other sites." The actual numbers are listed in appendix table 6.

DURATION OF REPORTED CASES OF CANCER

Information was collected also on the duration of the cancer cases. This refers to the actual known duration after the case had been diagnosed as cancer by a physician, and is the period from the date the doctor so diagnosed the case to the end of the study year or, if the patient died during the year, to the date of death. Forty-two percent of all the cases had a duration of less than 6 months, but there were 90 cases, 2.6 percent, that had a duration of at least 8 years, and 118 with a duration of from 5 to 8 years. The white cases

[5] This group includes eye, certain glands, as well as a large group of ill-defined sites or cases where the primary site was unknown.

had a longer average duration than the colored cases; 67.4 percent of the white cases, and 87.7 percent of the colored cases had a duration of less than 1 year.

There are wide differences in the duration of cancer of the various primary sites. Malignant growths primary in the respiratory system, digestive tract, brain, and bones had the shortest duration. Over half of the cases in each of these sites were of less than 6 months' duration. However, 70 percent of the cases of breast cancer had longer than 6 months' duration and 48 percent had longer than 1 year's duration. Cancer of the skin, buccal cavity, and uterus likewise had a longer than average duration.

TABLE 7.—*Percentage distribution of all reported cancer cases of known vital status by primary site and duration since first diagnosed, Dallas and Fort Worth, Tex., 1938*

Primary site	Months since first diagnosis								
	Less than 6	6-11	12-23	24-35	36-47	48-59	60 and over	96 and over	Total
Buccal cavity	38.9	29.9	13.6	5.2	2.0	2.6	7.8	4.1	100
Lip	37.2	31.0	14.6	4.2	2.1	2.5	8.4	4.2	100
Others	42.5	27.4	11.3	7.5	1.9	2.8	6.6	3.8	100
Digestive tract	57.6	20.1	12.8	3.6	.7	1.8	3.4	1.4	100
Stomach and intestines	60.8	18.5	12.5	2.6	.4	.9	4.3	2.2	100
Rectum and anus	45.8	18.1	19.1	5.3	2.1	6.4	3.2	-------	100
Others	61.0	24.8	8.0	4.4	-------	-------	1.8	.9	100
Respiratory system	63.2	19.3	14.0	1.8	-------	-------	1.7	1.7	100
Genito-urinary system	42.9	25.5	16.4	6.4	2.4	2.7	3.7	1.4	100
Uterus	37.7	25.8	18.3	7.3	2.2	3.6	5.1	1.9	100
Prostate	55.2	23.9	16.7	4.2	-------	-------	-------	-------	100
Kidneys and bladder	49.0	16.7	16.7	5.2	5.2	3.1	4.1	2.1	100
Others	46.6	34.0	8.7	5.8	2.9	1.0	1.0	-------	100
Breast	29.9	21.7	21.6	9.3	6.6	3.8	7.1	3.0	100
Skin	37.5	28.2	16.1	5.8	3.7	1.4	7.3	3.5	100
All other sites[1]	52.9	19.4	16.8	4.5	2.6	.6	3.2	.6	100
All sites	42.0	25.3	16.1	5.8	3.0	2.1	5.7	2.6	100

[1] Included here with "all other sites" are 32 cases primary in the brain and 27 primary in the bones.

DIFFERENCES IN FATALITY AMONG CANCER OF VARIOUS SITES

Table 8 shows the percentage of cases of each site group that die within 1 year from the date they are first diagnosed as cancer. This percentage could be obtained directly only by observing a particular group of cases through the first year following diagnosis and determining the number of survivors. Since the survey was made of all the cases seen during one particular calendar year, the cases first seen during the study year would not have completed a year's duration, while the cases which had completed a year's duration would be only a part of the original group first seen sometime during the preceding year. Therefore, in order to compute this measure of relative fatality it was necessary to resort to an indirect method based only on the reasonable assumption that both the incidence rate and the mortality rate of cancer remain constant in two successive years. Granted this assumption, a percentage can be obtained based upon the cases first

seen in the study year and the cases dying in that year with a duration of less than 1 year. This is analogous to the computation of infant mortality using the births in one year and the deaths in that same year of infants aged under 1 year.

TABLE 8.—*Percentage of cancer cases dying within 1 year of the date first diagnosed as cancer, Dallas and Fort Worth, Tex., 1938*

Primary site	Number of cases		Percentage dying within 1 year from date first seen
	Dying in the study year and having less than 1 year's duration [1]	First seen in the study year	
Buccal cavity	28	283	9.9
Digestive tract	216	363	59.5
Respiratory system	22	56	39.3
Genito-urinary system	160	551	29.0
Breast	47	205	22.9
Skin	23	816	2.8
Brain	19	32	59.4
Bones	8	27	29.6
All other sites	34	77	44.2
All sites	557	2,410	23.1

[1] Based on all cases reported by the doctor or hospital as dead.

Of all cases of cancer, 23 percent died within 1 year of the date they were first diagnosed as malignant. It is probable that this percentage is a slight understatement because it is based on all reported cases first seen in the study year and all cases dying in the study year with less than a year's duration regardless of residence. Inclusion of nonresident cases probably lowers this index since some nonresident deaths would have occurred at the place of residence and the reporting physician may not have been aware of the death. This should have only a slight effect, however, and should scarcely affect the validity of comparisons of relative fatality among the various sites.

The sites in which cancer showed the highest relative fatality were digestive tract, brain, respiratory system, and "all other sites." About 60 percent of the cancers of the digestive tract and brain resulted in death within 1 year from the date first seen while the figures for cancer of the respiratory system and "all other sites" were 39.3 and 49.2 percent, respectively. Skin cancer, at the other extreme, resulted in death within a year in only 2.8 percent of the cases, and buccal cavity cancer in only 10 percent of the cases. Malignant growths primary in the breast and in the genito-urinary system occupy a position between these extremes with genito-urinary somewhat more fatal than breast cancer. However, when cancer of the uterus is considered apart from that of the other genito-urinary system sites, its fatality is found to be slightly less than that of breast cancer (21.3 percent for cancer of the uterus).

CASES OF CANCER IN THE GROUP UNDER OBSERVATION ONLY

It has been observed already that two classes of cancer cases were included in this survey: cases actually treated for present malignant growth during the study year, and cases that had been previously diagnosed and treated as malignant but had been "cured" and were under observation to guard against the possibility of a recurrence of the growth. It is worthwhile to examine this latter group separately, for while it is true that only a fraction of the cases of cancer was followed [6] subsequent to successful treatment, and further that even those that were followed were reported less completely than were treated cases, nevertheless, an appreciable number of such cases were reported and they are cases which have been observed, without a recurrence of the cancer, for at least 1 year. These cases, hereafter called the "observed-only" cases, constitute 10.6 percent of all cases reported, 389 in number. There were relatively more cases among females than males in this group and more white than colored cases. Most of the observed-only cases were reported by doctors rather than by hospitals; 18 percent of all the doctors' cases being in this class while only 4 percent of the hospital cases were under observation only.

TABLE 9.—*Percentage of reported cases of cancer that were under observation only, by sex, color, and reporting source, Dallas and Fort Worth, Tex., 1938*

Class of case	Percentage of cases in each class							
	Male	Female	White	Colored	Cases reported by—			All cases
					Doctor	Hospital	Both	
Observed only	9.9	11.2	10.9	4.8	18.0	4.2	0.9	10.6
Treated in 1938	90.1	88.8	89.1	95.2	82.0	95.8	99.1	89.4
All cases	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The problem of duration of the observed-only cases is interesting insofar as it concerns the length of time the cases have been under observation without showing any signs of recurrence of cancer. Consequently, a different sort of duration from that considered earlier has been used, the duration since the last date of treatment for malignant growth. This has been figured as the time from the date of last treatment up to the beginning of the study year so that each

[6] An estimate of the deficiency in follow-up observation of cancer cases can be made as follows: The number of cases first seen in 1938 and alive at the end of the study year was 1,565. If it is assumed that the same number originated in 1937 and that the same number were alive at the end of 1937 and so eligible for observation or treatment in 1938, this figure, 1,565, can be compared with the number of cases seen in 1938 which originated in 1937 according to their recorded duration. Thus a percentage can be obtained which represents the portion of those cases alive at the end of the year that were actually followed into the next year. This percentage is only 49, which means that less than half of the cases originating during a particular year and living through that year are followed long enough to have been seen again by a doctor or hospital in the subsequent year.

of the observed-only cases had a year[7] longer duration than that listed in table 10 provided he lived throughout the study year.

TABLE 10.—*Percentage distribution of cancer cases under observation only, by duration and sex, Dallas and Fort Worth, Tex., 1938*

Months since last treated (up to January 1, 1938)	Male	Female	Total	Months since last treated (up to January 1, 1938)	Male	Female	Total
Less than 6	41.3	34.8	37.8	72–83	0.6	1.4	1.0
6–11	21.2	21.9	21.6	84–95	.6	.5	.5
12–23	11.2	16.7	14.1	96 and over	1.1	1.4	1.3
24–35	9.5	6.7	8.0	Unknown duration	3.9	6.2	5.2
36–47	3.4	7.1	5.4				
48–59	3.9	1.9	2.8	Total	100.0	100.0	100.0
60–71	3.3	1.4	2.3				

INCIDENCE OF CANCER—NEW CASES IN 1938

The strict problem of incidence concerns the number of cases originating during a particular period of time. In the sense used here, incidence refers to the number of new cases of cancer being diagnosed in 1 year's time. Of the 2,410 cases of cancer reported as having been first seen in the study year 1,548 were residents. The resident rate, that is, the number of new cases of cancer coming to the attention of a doctor or hospital during the study year, is 255 per 100,000 population for the Dallas-Fort Worth survey area. For the areas already surveyed the corresponding rates are: Atlanta 197, Chicago 196, Pittsburgh 179, Detroit 139, and New Orleans 313. The incidence rate in this area, just as the prevalence rate, is higher than in any of the other areas except New Orleans.

The cases originating in 1938 showed little difference from all reported cases in either age or primary site distribution. The cases with relatively high fatality are somewhat better represented in the new cases. There was no significant difference in age distribution.

TABLE 11.—*Number of cancer cases first seen in 1938, by vital status, residence, sex, and color, Dallas and Fort Worth, Tex.*

Vital status (as of the end of the study year)	Number of cases first seen in the study year						
	White		Colored		Total		
	Male	Female	Male	Female	Male	Female	Both sexes
Resident cases:							
Alive	453	468	18	58	471	526	997
Dead	164	167	16	25	180	192	372
Unknown	77	83	3	16	80	99	179
Total	694	718	37	99	731	817	1,548
Total cases:							
Alive	793	692	19	61	812	753	1,565
Dead	223	203	18	27	241	230	471
Unknown	174	176	5	19	179	195	374
Total	1,190	1,071	42	107	1,232	1,178	2,410

[7] More precisely, each case had a year and one-half month's longer duration than here tabulated, since not only was the study year 1938 excluded, but cases last treated in December 1937 were listed as having had zero month's duration, whereas, on the average, they had had one-half month's duration by January 1, 1938. Likewise, cases first seen in November 1937, and recorded with 1 month's duration, had really averaged 1½ months, etc.

SUMMARY

A total of 2,592 cases of cancer was reported in Dallas County and 1,091 in Tarrant County during the study year. In addition, information was obtained from all of the death certificates filed during the year on which cancer appeared as a cause of death. The number of reported resident cases was 1,583 in Dallas and 798 in Tarrant County. Since it was felt that the data do not indicate a real difference in the prevalence of cancer in the actual populations of the two areas, and since the data are similar in all necessary respects, it was decided to treat the two counties as a single study area.

The prevalence rate of cancer among residents in this area was 394 per 100,000 population, a rate higher than in any of the cities surveyed earlier except New Orleans. This high rate is a result of a decidedly higher prevalence of skin cancer (140 compared with 24 in Chicago, 25 in Pittsburgh, 37 in Detroit, 129 in New Orleans, and 157 in Atlanta).

A microscopic examination of tissue confirmed the diagnosis in only half of the cancer cases reported in this area. This is lower than the percentage found in any of the other areas studied, but if cases with skin cancer are excluded the percentage of microscopic tests among the remaining cases in this area compares favorably with that of most of the other cities surveyed.

The primary sites most often involved in malignant growths are different for males and for females. Among males the order of importance of sites is skin, buccal cavity, digestive tract, and genito-urinary system. These four sites account for over 90 percent of all cases among males, while the first two include nearly two-thirds of all such cases. Among females the order is genito-urinary system (three-fourths of which are uterus), breast, skin, and digestive tract; these sites account for over 90 percent of all cases among females. Buccal cavity and respiratory cancers each are about four times as high for males as for females.

Over two-thirds of all the cases were among persons between the ages of 40 and 69. There were 153 cases of cancer among persons under 30 years of age, 48 cases among persons under 20. The mean age is somewhat lower for females than for males and lower for colored than for white persons.

There is a clear relationship between primary site and age. The percentage of cases of cancer in certain sites, particularly prostate, skin, and, to a lesser extent, digestive tract, increases markedly as age increases; female breast and uterine malignant growths, and all respiratory cancers are most frequent in persons in the middle portion of the life span (the years 35–64) while cancer of the brain, bones, and "all other sites" (including eye, glands, etc.) is relatively more frequent at ages under 35.

Forty-four percent of the cases had a duration of less than 6 months, but there were 208 cases, 6.6 percent, that had a duration of at least 5 years. There were marked differences in duration among the various sites of cancer.

The highest relative fatality was found in cancer of the brain, digestive tract, respiratory system, and "all other sites." Cancers of the skin, buccal cavity, breast (female), and genito-urinary system were relatively less fatal than all cancers combined.

At least 23 percent of the cancer cases died within 1 year of the date they were first diagnosed. About 60 percent of the cases with cancer of the digestive tract and brain died in the first year after diagnosis while only 3 percent of cases with skin cancers and 10 percent with buccal cavity cancers died that soon.

A little more than 1 case in every 10 reported was in the "cured" cancer group, that is, was under observation subsequent to successful treatment and without recurrence during the study year. Eight percent of these 389 cases under observation only had been under observation without treatment for 5 years or more.

The number of cases first diagnosed as cancer during the study year was 2,410 and the resident incidence rate of cancer was estimated at 255 per 100,000 population. This is higher than the similar rate for any of the cities previously surveyed except New Orleans.

Appendix

The following tables contain the actual figures on which the tables in the text are based. They are numbered to correspond with the related tables in the text.

TABLE 2.—*Number of sources reporting by number of cases reported and nature of source, with the actual number of cases so reported, Dallas and Fort Worth, Tex., 1938*

Number of cases reported by each source	Doctors		Hospitals		All sources	
	Number of sources	Actual number of cases reported by all sources	Number of sources	Actual number of cases reported by all sources	Number of sources	Actual number of cases reported by all sources
No cases	312	0	24	0	336	0
1 to 5 cases	232	519	11	22	243	541
1 case	*93*	*93*	*5*	*5*	*98*	*98*
2 cases	*53*	*106*	*3*	*6*	*56*	*112*
3 cases	*43*	*129*	*2*	*6*	*45*	*135*
4 cases	*24*	*96*			*24*	*96*
5 cases	*19*	*95*	*1*	*5*	*20*	*100*
6 to 10 cases	34	261	2	16	36	277
11 to 20 cases	14	214	1	15	15	229
Over 20 cases	19	1,427	16	2,162	35	3,589
Any number of cases	*299*	*2,421*	*50*	*2,215*	*329*	*4,636*
Total reporting	611	2,421	54	2,215	665	4,636

TABLE 3.—*Number of cases of cancer reported, and number with diagnosis microscopically confirmed, by primary site, and whether reported by a hospital, Dallas and Fort Worth, Tex., 1938*

Primary site	Number of cases reported					
	By doctors only		By hospitals [1]		By all sources	
	Total	With a microscopically confirmed diagnosis	Total	With a microscopically confirmed diagnosis	Total	With a microscopically confirmed diagnosis
Buccal cavity	229	54	181	95	410	149
Digestive tract	213	98	288	159	501	257
Respiratory system	23	14	48	29	71	43
Genito-urinary system	275	204	565	441	840	645
Breast	147	109	272	191	419	300
Skin	828	132	418	168	1,246	300
Brain	27	24	9	9	36	33
Bones	14	6	23	19	37	25
All other sites	45	32	78	49	123	81
All sites	1,801	673	1,882	1,160	3,683	1,833

[1] This includes cases reported by a hospital and by a doctor, as well as cases reported by hospitals only.

TABLE 4.—*Number of cases of cancer by primary site, sex, and color, Dallas and Fort Worth, Tex., 1938*

Primary site	Number of cases					
	White		Colored		Total	
	Male	Female	Male	Female	Male	Female
Buccal cavity	328	76	4	2	332	78
Lip	*245*	*32*			*245*	*32*
Others	*83*	*44*	*4*	*2*	*87*	*46*
Digestive tract	243	222	19	17	262	239
Stomach, duodenum	*77*	*46*	*7*	*8*	*84*	*54*
Intestines	*54*	*66*	*5*		*59*	*66*
Rectum, anus	*52*	*56*	*3*	*1*	*55*	*57*
Others	*60*	*54*	*4*	*8*	*64*	*62*
Respiratory system	51	14	5	1	56	15
Lungs, pleura	*24*	*6*	*3*		*27*	*6*
Others	*27*	*8*	*2*	*1*	*29*	*9*
Genito-urinary system	195	561	12	72	207	633
Uterus		*440*		*59*		*499*
Prostate	*103*		*5*		*108*	
Kidneys, bladder	*70*	*27*	*3*	*3*	*73*	*30*
Others	*22*	*94*	*4*	*10*	*26*	*104*
Breast	2	378		39	2	417
Skin	836	403	3	4	839	407
Brain	19	15	1	1	20	16
Bones	24	12	1		25	12
All other sites	57	59	5	2	62	61
All sites	1,755	1,740	50	138	1,805	1,878

TABLE 5.—*Number of cases of cancer among males, by primary site and by age of patient, Dallas and Fort Worth, Tex., 1938*

Primary site	Age of patient									
	Under 15	15–24	25–34	35–44	45–54	55–64	65–74	75 and over	Unknown	All ages
Buccal cavity	-------	6	23	47	59	59	54	18	66	332
Lip	-------	*6*	*21*	*41*	*52*	*38*	*25*	*7*	*55*	*245*
Others	-------	-------	*2*	*6*	*7*	*21*	*29*	*11*	*11*	*87*
Digestive tract	1	1	10	26	49	66	63	24	22	262
Stomach, duodenum	-------	-------	*2*	*8*	*13*	*22*	*24*	*11*	*4*	*84*
Intestine	-------	-------	*2*	*7*	*9*	*19*	*11*	*6*	*5*	*59*
Rectum, anus	-------	*1*	*6*	*6*	*12*	*11*	*13*	*1*	*5*	*55*
Others	*1*	-------	-------	*5*	*15*	*14*	*15*	*6*	*8*	*64*
Respiratory system	1	3	1	7	11	12	10	3	8	56
Lungs and pleura	*1*	*1*	*1*	*6*	*5*	*5*	*1*	*2*	*5*	*27*
Others	-------	*2*	-------	*1*	*6*	*7*	*9*	*1*	*3*	*29*
Genito-urinary system	4	1	10	14	15	33	85	31	14	207
Prostate	-------	-------	-------	*1*	*3*	*16*	*57*	*22*	*9*	*108*
Others	*4*	*1*	*10*	*13*	*12*	*17*	*28*	*9*	*5*	*99*
Breast	-------	-------	-------	-------	1	-------	-------	-------	1	2
Skin	-------	4	22	62	134	157	151	92	217	839
Brain	3	3	3	3	5	2	-------	-------	1	20
Bones	2	6	2	1	1	7	4	-------	2	25
All other sites	7	3	41	3	6	16	15	3	5	62
All sites	18	27	75	163	281	352	382	171	336	1,805

TABLE 6.—*Number of reported cancer cases among females by primary site and age of patient, Dallas and Fort Worth, Tex., 1938*

Primary site	Age of patient									
	Under 15	15–24	25–34	35–44	45–54	55–64	65–74	75 and over	Unknown	All ages
Buccal cavity	-------	-------	-------	15	10	20	11	5	17	78
Lip	-------	-------	-------	*6*	*5*	*9*	*1*	*1*	*10*	*32*
Others	-------	-------	-------	*9*	*5*	*11*	*10*	*4*	*7*	*46*
Digestive tract	-------	3	15	23	46	67	53	12	20	239
Stomach, duodenum	-------	-------	-------	*7*	*8*	*14*	*16*	*4*	*5*	*54*
Intestine	-------	-------	*4*	*7*	*13*	*15*	*15*	*4*	*8*	*66*
Rectum, anus	-------	*2*	*6*	*5*	*12*	*19*	*9*	-------	*4*	*57*
Others	-------	*1*	*5*	*4*	*13*	*19*	*13*	*4*	*3*	*62*
Respiratory system	-------	1	-------	2	4	4	1	1	2	15
Genito-urinary system	1	2	47	123	179	138	89	15	39	633
Uterus	-------	*1*	*35*	*103*	*148*	*108*	*68*	*8*	*28*	*499*
Others	*1*	*1*	*12*	*20*	*31*	*30*	*21*	*7*	*11*	*134*
Breast	-------	-------	27	75	113	84	44	26	48	417
Skin	1	3	20	27	47	65	66	45	133	407
Brain	7	1	3	1	-------	3	1	-------	-------	16
Bones	-------	1	-------	-------	5	2	2	-------	2	12
All other sites	3	2	6	9	13	9	11	4	4	61
All sites	12	13	118	275	417	392	278	108	265	1,878

TABLE 10.—*Number of cancer cases which, during 1938, were under observation only, by months since last treated, by sex, Fort Worth and Dallas, Tex.*

Months since last treated (up to January 1, 1938)	White		Total [1]		Months since last treated (up to January 1, 1938)	White		Total [1]	
	Male	Female	Male	Female		Male	Female	Male	Female
Under 6	74	70	74	73	60–65	3	1	3	1
6–11	38	44	38	46	66–71	3	2	3	2
12–17	15	20	15	21	72–77	-------	1	-------	1
18–23	5	14	5	14	78–83	1	2	1	2
24–29	9	7	9	8	84–89	-------	1	-------	1
30–35	8	6	8	6	90–95	1	-------	1	-------
36–41	5	9	5	10	96 and over	2	3	2	3
42–47	1	5	1	5	Unknown	7	13	7	13
48–53	4	2	5	2					
54–59	2	2	2	2	Total	178	202	179	210

[1] Includes colored.

DEATHS DURING WEEK ENDED JANUARY 10, 1942

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

	Week ended Jan. 10, 1942	Corresponding week, 1941
Data from 87 large cities of the United States:		
Total deaths	9,697	9,245
Average for 3 prior years	9,501	
Deaths under 1 year of age	602	585
Average for 3 prior years	554	
Data from industrial insurance companies:		
Policies in force	64,833,337	64,796,540
Number of death claims	11,660	10,108
Death claims per 1,000 policies in force, annual rate	9.4	8.1

PREVALENCE OF DISEASE

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

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED JANUARY 17, 1942

Summary

No significant increases were reported in the communicable diseases for the current week. Meningococcus meningitis and poliomyelitis were slightly above the 5-year (1937–41) median expectancy, but the incidence of these diseases was favorable.

A total of 3,894 cases of influenza was reported, as compared with 3,800 for the preceding week, 95,695 cases for the corresponding week last year, and a 5-year median of 12,516. The South Atlantic and South Central States reported 3,250 cases, or approximately 83 percent of the current total. Texas reported 1,561 cases, South Carolina 493, Virginia 348, Alabama 281, Arkansas 212, Arizona 165, California 160, and Oklahoma 116.

The incidence of smallpox (11 cases) and typhoid fever (70 cases) was below that for the corresponding week of each of the preceding 5 years. Of 65 cases of bacillary dysentery, Texas reported 56, and of 55 cases of endemic typhus fever, Georgia reported 21, Texas 15, and Alabama 7. One case of leprosy was reported in California. Of 34 cases of tularemia, 10 occurred in Kentucky and 5 in Ohio. No cases of anthrax or Rocky Mountain spotted fever were reported.

The crude death rate for the week for 88 large cities in the United States was 13.5 per 1,000 population, as compared with 13.6 for the preceding week and a 3-year (1939–41) average of 13.0.

Telegraphic morbidity reports from State health officers for the week ended January 17, 1942, and comparison with corresponding week of 1941 and 5-year median

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

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1937–41	Week ended—		Median 1937–41	Week ended—		Median 1937–41	Week ended—		Median 1937–41
	Jan. 17, 1942	Jan. 18, 1941		Jan. 17, 1942	Jan. 18, 1941		Jan. 17, 1942	Jan. 18, 1941		Jan. 17, 1942	Jan. 18, 1941	
NEW ENG.												
Maine	0	0	3	1	1,421	19	187	18	70	2	0	0
New Hampshire	0	0	0	-----	1,000	-----	8	6	12	0	0	0
Vermont	0	0	0	-----	81	-----	14	41	11	0	0	0
Massachusetts	0	3	4	-----	-----	-----	236	364	441	3	0	1
Rhode Island	5	0	0	-----	16	-----	40	0	5	0	0	0
Connecticut	0	0	2	2	1,718	10	146	13	161	2	0	0
MID. ATL.												
New York	24	18	31	[1] 14	[1] 215	[1] 57	348	1,504	389	5	6	5
New Jersey	2	18	13	10	95	24	112	645	445	1	3	2
Pennsylvania	12	24	33	-----	-----	-----	1,463	1,862	135	4	3	4
E. NO. CEN.												
Ohio	4	8	33	35	2,799	88	84	565	70	2	1	1
Indiana	14	11	20	26	793	25	31	55	12	1	0	1
Illinois	28	22	37	21	83	36	89	879	48	4	1	4
Michigan [2]	4	5	11	1	228	15	88	1,038	440	2	0	1
Wisconsin	1	0	2	16	152	61	439	421	404	0	1	0
W. NO. CEN.												
Minnesota	5	0	4	2	6	3	177	6	31	0	2	0
Iowa	0	8	6	-----	285	11	134	183	49	0	0	0
Missouri	5	7	19	5	218	95	54	15	7	2	1	0
North Dakota	0	5	0	13	268	42	85	19	5	1	1	0
South Dakota	2	2	2	2	1	1	9	11	5	0	0	0
Nebraska	1	3	3	-----	64	-----	11	8	8	0	0	0
Kansas	12	4	10	16	2,040	99	165	169	141	0	1	0
SO. ATL.												
Delaware	2	0	2	-----	54	2	2	20	2	0	0	0
Maryland	4	3	6	10	300	37	177	11	12	10	0	0
Dist. of Col.	3	2	5	1	172	10	8	4	7	0	0	1
Virginia	11	12	25	348	13,592	420	141	194	168	3	1	3
West Virginia	7	2	14	11	14,003	52	189	58	54	0	11	1
North Carolina	16	28	33	8	750	40	451	169	98	2	0	2
South Carolina	11	7	7	493	11,004	673	122	70	62	0	1	2
Georgia	7	10	13	93	10,702	136	259	64	26	0	0	0
Florida	4	4	9	14	814	12	45	8	11	0	1	0
E. SO. CEN.												
Kentucky	5	5	15	6	2,666	65	26	65	84	1	0	2
Tennessee	5	9	12	92	3,994	252	98	49	67	1	1	3
Alabama	18	10	15	281	8,622	384	27	87	68	2	1	5
Mississippi [2]	8	5	9	-----	-----	-----	-----	-----	-----	2	2	1
W. SO. CEN.												
Arkansas [2]	16	11	11	212	3,999	245	127	61	21	0	1	0
Louisiana	10	7	13	4	2,164	51	20	2	2	1	1	1
Oklahoma	13	13	14	116	2,516	263	129	0	13	0	0	0
Texas	60	28	57	1,561	12,841	895	650	84	216	7	7	2
MOUNTAIN												
Montana	0	1	1	8	901	26	59	5	7	0	0	0
Idaho	4	0	1	5	3	6	10	0	46	0	0	0
Wyoming	0	4	1	36	942	-----	22	4	5	1	0	0
Colorado	9	9	12	68	1,095	80	322	32	43	0	0	1
New Mexico	1	0	2	4	69	6	120	25	35	0	0	0
Arizona	0	8	4	165	711	242	88	64	10	2	0	0
Utah [2]	0	1	0	1	793	1	24	19	72	1	0	1
Nevada	0	1	-----	-----	109	-----	5	0	-----	0	0	-----
PACIFIC												
Washington	2	2	1	5	448	4	25	60	50	0	2	1
Oregon	0	4	2	28	276	274	65	102	27	0	0	0
California	18	20	29	160	2,327	223	1,135	105	116	6	4	1
Total	353	344	652	3,894	107,270	12,516	8,266	9,234	9,857	68	53	46
2 weeks	758	647	1,291	7,694	202,965	22,146	16,158	21,235	16,527	113	99	103

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended January 17, 1942, and comparison with corresponding week of 1941 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended—		Median 1937–41	Week ended—		Median 1937–41	Week ended—		Median 1937–41	Week ended—		Median 1937–41
	Jan. 17, 1942	Jan. 18, 1941		Jan. 17, 1942	Jan. 18, 1941		Jan. 17, 1942	Jan. 18, 1941		Jan. 17, 1942	Jan. 18, 1941	
NEW ENG.												
Maine	0	0	0	28	6	16	0	0	0	2	0	1
New Hampshire	0	0	0	14	9	8	0	0	0	0	0	0
Vermont	0	0	0	2	12	6	0	0	0	0	0	0
Massachusetts	0	0	0	299	117	191	0	0	0	4	0	2
Rhode Island	0	0	0	12	5	4	0	0	0	0	0	0
Connecticut	0	0	0	30	50	73	0	0	0	3	1	0
MID. ATL.												
New York	6	2	1	318	386	481	0	0	0	1	7	8
New Jersey	1	0	0	104	238	173	0	6	0	0	0	2
Pennsylvania	0	1	0	271	276	352	0	0	0	6	4	13
E. NO. CEN.												
Ohio	2	1	2	267	223	433	0	0	9	2	2	5
Indiana	0	0	0	135	127	157	1	1	5	1	3	1
Illinois	1	2	1	231	380	513	0	0	10	3	2	3
Michigan [2]	0	1	1	173	195	500	0	5	2	1	3	2
Wisconsin	0	4	1	141	135	203	0	10	6	1	1	0
W. NO. CEN.												
Minnesota	1	0	1	77	56	134	1	10	18	2	0	1
Iowa	1	0	0	30	54	107	0	9	18	2	3	0
Missouri	0	1	0	92	77	148	5	5	19	1	7	2
North Dakota	0	0	0	15	5	21	0	0	2	0	1	0
South Dakota	0	0	0	53	23	22	0	0	2	0	0	0
Nebraska	0	0	0	60	31	39	0	2	1	0	0	1
Kansas	0	3	1	93	94	160	0	1	20	0	0	1
SO. ATL.												
Delaware	0	0	0	33	18	13	0	0	0	1	0	0
Maryland	0	0	0	53	63	66	0	0	0	1	4	1
Dist. of Col	0	1	0	12	18	22	0	0	0	0	0	1
Virginia	0	0	0	32	39	54	0	0	0	5	2	2
West Virginia	0	0	0	61	60	66	0	0	0	1	1	2
North Carolina	0	1	1	49	66	63	0	0	0	0	0	4
South Carolina	0	0	0	9	15	11	0	0	0	1	3	1
Georgia	1	0	0	20	26	24	0	1	0	6	2	2
Florida	0	1	1	7	3	8	0	0	0	0	0	2
E. SO. CEN.												
Kentucky	0	0	1	70	54	70	0	0	2	0	0	1
Tennessee	1	2	0	64	92	48	0	0	0	4	2	2
Alabama	2	0	1	36	26	24	1	0	0	0	0	1
Mississippi [3]	2	0	0	8	13	10	0	0	0	1	0	1
W. SO. CEN.												
Arkansas [3]	2	0	1	10	9	18	0	0	3	3	4	2
Louisiana	0	2	0	4	5	15	0	0	0	8	11	7
Oklahoma	0	0	0	33	26	39	1	5	3	0	2	2
Texas	1	[2]	1	46	46	111	0	1	12	4	6	12
MOUNTAIN												
Montana	3	0	0	42	26	52	0	0	2	0	0	0
Idaho	0	2	0	14	13	19	1	0	14	0	0	0
Wyoming	0	1	0	10	6	8	0	0	1	0	0	0
Colorado	1	1	0	38	23	31	0	0	15	1	0	1
New Mexico	0	0	0	7	6	14	0	0	0	0	1	2
Arizona	0	0	0	3	2	7	1	0	0	0	1	2
Utah [2]	0	0	0	26	5	24	0	0	0	1	2	0
Nevada	0	0	------	0	0	------	0	0	------	0	0	------
PACIFIC												
Washington	0	2	0	31	38	49	0	0	6	0	2	1
Oregon	0	0	0	14	11	63	0	2	12	1	0	3
California	4	1	3	115	107	206	0	0	4	3	2	2
Total	29	30	26	3,292	3,315	5,287	11	52	315	70	79	122
2 weeks	57	66	47	6,393	6,538	9,746	21	105	591	154	165	220

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended January 17, 1942—Con.

Division and State	Whooping cough		Week ended Jan. 17, 1942								
	Week ended—			Dysentery							
	Jan. 17, 1942	Jan. 18, 1941	Anthrax	Amebic	Bacillary	Unspecified	Encephalitis	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
NEW ENG.											
Maine	34	10	0	0	0	0	0	0	0	0	0
New Hampshire	3	1	0	0	0	0	0				
Vermont	32	18	0	0	0	0	0	0	0	0	0
Massachusetts	202	216	0	1	2	0	1	0	0	0	1
Rhode Island	119	13	0	0	0	0	0	0	0	0	0
Connecticut	150	75	0	0	0	0	0	0	0	0	0
MID. ATL.											
New York	577	451	0	0	0	0	0	0	0	0	0
New Jersey	227	140	0	0	0	0	0	0	0	0	0
Pennsylvania	310	562	0	0	0	0	2	0	0	0	0
E. NO. CEN.											
Ohio	221	383	0	0	0	0	1	0	0	5	0
Indiana	59	18	0	0	0	0	0	0	0	1	0
Illinois	225	133	0	0	1	0	0	0	0	1	0
Michigan [2]	181	349	0	0	0	0	0	0	0	0	0
Wisconsin	261	115	0	0	0	0	0	0	0	0	0
W. NO. CEN.											
Minnesota	56	72	0	1	0	0	0	0	0	1	0
Iowa	11	43	0	0	0	0	0	0	0	0	0
Missouri	22	38	0	0	0	2	0	0	0	2	0
North Dakota	2	15	0	0	0	0	0	0	0	0	0
South Dakota	7	5	0	0	0	0	0	0	0	0	0
Nebraska	6	61	0	0	0	0	0	0	0	0	0
Kansas	56	65	0	0	0	0	0	0	0	1	0
SO. ATL.											
Delaware	1	7	0	0	0	0	0	0	0	0	0
Maryland	84	80	0	0	0	0	0	0	0	0	0
Dist. of Col	32	14	0	0	0	0	0	0	0	0	0
Virginia	22	89	0	0	0	13	0	0	0	0	0
West Virginia	24	59	0	0	0	0	0	0	0	0	0
North Carolina	197	370	0	0	0	0	0	0	0	2	1
South Carolina	66	97	0	0	0	0	0	0	0	2	3
Georgia	13	24	0	0	0	0	0	0	0	0	21
Florida	21	11	0	0	0	0	0	0	0	0	4
E. SO. CEN.											
Kentucky	89	23	0	0	0	0	0	0	0	10	0
Tennessee	32	49	0	0	0	1	0	0	0	4	0
Alabama	5	52	0	0	0	0	0	0	0	0	7
Mississippi [3]			0	0	0	0	0	0	0	0	0
W. SO. CEN.											
Arkansas [3]	11	24	0	0	0	0	0	0	0	3	0
Louisiana	4	4	0	0	0	0	0	0	0	2	2
Oklahoma	6	24	0	0	0	0	0	0	0	0	0
Texas	88	138	0	6	56	0	1	0	0	0	15
MOUNTAIN											
Montana	9	6	0	0	0	0	0	0	0	0	0
Idaho	6	10	0	0	0	0	1	0	0	0	0
Wyoming	8	0	0	0	0	0	0	0	0	0	0
Colorado	29	33	0	0	0	0	0	0	0	0	0
New Mexico	10	12	0	0	0	0	1	0	0	0	0
Arizona	24	29	0	0	0	8	0	0	0	0	0
Utah [2]	24	50	0	0	0	0	0	0	0	0	0
Nevada	4	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	76	103	0	0	0	0	0	0	0	0	0
Oregon	36	10	0	0	0	0	0	0	0	0	0
California	182	436	0	2	6	0	0	1	0	0	1
Total	3,864	4,537	0	10	65	24	7	1	0	34	55
2 weeks	7,728	9,324	1	24	103	56	13	4	0	72	121

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Inclusive of delayed reports as follows: Diphtheria, 3 cases; influenza, 9; scarlet fever, 3; tularemia, 2.

WEEKLY REPORTS FROM CITIES

City reports for week ended January 3, 1942

This table lists the reports from 87 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Atlanta, Ga	0	0	10	0	0	0	2	0	4	0	0	0
Baltimore, Md	1	0	8	4	152	3	12	0	18	0	2	15
Barre, Vt	0	0	------	0	0	0	0	0	0	0	0	0
Billings, Mont	0	0	------	0	0	0	0	0	2	0	0	0
Birmingham, Ala	2	0	6	1	3	0	5	0	5	0	0	2
Boise, Idaho	0	0	------	0	0	0	2	0	0	0	0	0
Boston, Mass	2	0	------	1	43	1	16	0	58	0	1	14
Bridgeport, Conn	0	0	------	0	2	0	2	0	2	0	0	0
Brunswick, Ga	0	0	------	0	0	0	0	0	0	0	0	0
Buffalo, N. Y	0	0	------	0	1	0	11	0	16	0	0	7
Camden, N. J	0	0	2	2	1	0	3	0	1	0	0	5
Charleston, S. C	0	0	55	1	0	0	2	0	1	0	0	0
Charleston, W. Va	1	0	------	0	1	0	0	0	0	0	0	0
Chicago, Ill	25	0	10	3	24	0	29	0	59	0	1	98
Cincinnati, Ohio	2	0	------	1	1	0	4	0	18	0	0	12
Cleveland, Ohio	0	0	9	0	4	1	8	0	26	0	0	27
Columbus, Ohio	0	0	------	0	4	0	5	0	2	0	0	0
Concord, N. H	0	0	------	0	0	0	0	0	3	0	0	0
Cumberland, Md	0	0	------	0	5	0	1	0	1	0	0	0
Dallas, Tex	1	0	2	2	13	0	4	0	3	0	0	1
Denver, Colo	4	0	32	0	42	0	4	0	3	0	0	7
Detroit, Mich	3	0	------	1	18	1	15	1	65	0	0	44
Duluth, Minn	0	0	------	0	0	0	1	0	6	0	0	0
Fall River, Mass	0	0	------	0	3	0	0	0	24	0	0	5
Fargo, N. Dak	0	0	------	0	0	0	0	0	0	0	0	1
Flint, Mich	0	0	------	0	0	0	1	0	1	0	0	4
Fort Wayne, Ind	0	0	------	0	0	0	2	0	2	0	0	0
Frederick, Md	0	0	------	0	0	0	0	0	0	0	0	0
Galveston, Tex	0	0	------	0	0	0	4	0	0	0	0	0
Grand Rapids, Mich	0	0	------	1	6	0	2	0	5	0	0	11
Great Falls, Mont	0	0	------	0	28	0	0	0	2	0	0	3
Hartford, Conn	0	0	------	0	2	0	2	0	5	0	0	2
Helena, Mont	0	0	------	0	0	0	0	0	0	0	0	0
Houston, Tex	1	0	------	0	0	0	4	0	2	0	0	1
Indianapolis, Ind	0	0	------	2	1	0	10	0	12	0	0	10
Kansas City, Mo	0	0	1	2	0	0	6	0	7	0	0	1
Kenosha, Wis	0	0	------	0	0	0	0	0	1	0	0	2
Little Rock, Ark	0	0	7	0	6	0	2	0	1	0	0	1
Los Angeles, Calif	2	0	12	2	17	0	6	0	19	0	0	8
Lynchburg, Va	0	0	------	0	0	0	1	0	1	0	0	0
Memphis, Tenn	0	0	10	1	4	0	5	0	5	0	1	11
Milwaukee, Wis	0	0	------	0	3	0	5	0	23	0	1	93
Minneapolis, Minn	1	0	------	0	1	0	2	0	15	0	0	1
Missoula, Mont	0	0	------	0	0	0	0	0	1	0	0	0
Mobile, Ala	0	0	------	1	5	1	0	0	0	0	0	0
Nashville, Tenn	1	0	------	1	1	0	4	0	5	0	0	0
Newark, N. J	0	0	4	1	23	0	8	0	13	0	0	18
New Haven, Conn	0	0	------	0	35	0	0	0	1	0	0	3
New Orleans, La	2	0	3	0	0	0	7	1	2	0	2	0
Omaha, Nebr	0	0	------	0	2	0	1	0	5	0	0	0
Philadelphia, Pa	5	0	1	0	6	1	18	0	45	0	0	39
Pittsburgh, Pa	0	0	3	1	4	1	13	0	12	0	0	6
Portland, Maine	1	0	------	0	1	0	6	0	6	0	0	2
Providence, R. I	3	0	------	0	5	0	3	0	5	0	1	28
Pueblo, Colo	0	0	------	0	200	0	3	0	4	0	0	0
Racine, Wis	0	0	------	0	1	0	0	0	4	0	0	15
Raleigh, N. C	0	0	------	0	0	0	3	0	3	0	0	5
Reading, Pa	0	0	1	0	1	0	0	0	0	0	0	2
Richmond, Va	1	0	------	1	0	0	2	0	3	0	0	0

City reports for week ended January 3, 1942—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Roanoke, Va.	0	0	------	0	0	0	0	0	1	0	0	0
Rochester, N. Y.	0	0	------	0	0	0	5	0	5	0	0	2
Sacramento, Calif.	1	0	------	0	27	0	3	0	4	0	0	3
Saint Joseph, Mo.	0	0	------	0	5	0	4	0	1	0	0	0
Saint Louis, Mo.	2	0	2	1	7	0	7	0	15	0	1	6
Saint Paul, Minn.	0	0	1	1	71	0	10	0	3	0	0	14
Salt Lake City, Utah	0	0	------	0	0	0	3	0	2	0	0	3
San Antonio, Tex.	1	0	3	0	0	0	10	0	1	0	0	0
Savannah, Ga.	0	0	1	1	15	0	1	0	1	0	0	1
Seattle, Wash.	0	0	------	0	1	0	4	0	2	0	0	11
South Bend, Ind.	0	0	------	0	0	0	0	0	2	0	0	3
Spokane, Wash.	0	0	------	0	4	0	2	0	2	0	0	7
Springfield, Ill.	0	0	------	0	0	0	1	0	4	0	0	0
Springfield, Mass.	0	0	------	0	2	0	1	0	11	0	0	12
Superior, Wis.	0	0	------	--------	0	0	2	0	0	0	0	3
Syracuse, N. Y.	0	0	------	0	0	0	2	0	3	0	0	18
Tacoma, Wash.	0	0	------	0	0	0	1	0	1	0	0	4
Tampa, Fla.	0	0	2	1	0	0	2	0	1	0	1	0
Terre Haute, Ind.	0	0	------	0	0	0	2	0	0	0	0	0
Topeka, Kans.	0	0	------	0	1	0	0	0	4	0	0	4
Trenton, N. J.	0	0	2	0	0	0	2	0	7	0	0	2
Washington, D. C.	4	0	------	1	6	0	8	0	11	0	1	23
Wheeling, W. Va.	0	0	------	0	58	0	1	0	1	0	0	0
Wichita, Kans.	1	0	1	0	22	0	2	0	7	0	0	1
Wilmington, Del.	0	0	------	0	2	0	4	0	11	0	0	0
Wilmington, N. C.	0	0	------	0	50	0	1	0	1	0	0	1
Winston-Salem, N. C.	1	0	1	0	27	0	3	0	5	0	0	0
Worcester, Mass.	0	------	------	0	1	0	3	0	31	0	0	16

Typhus fever.—Cases: Birmingham, 1; Charleston, S. C., 2; Los Angeles, 1; New Orleans, 1; Savannah, 4.

Rates [1] *(annual basis) per 100,000 population for a group of 87 selected cities (population, 1942, 25,781,222)*

Period	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Typhoid fever cases	Whooping cough cases
		Cases	Deaths						
Week ended Jan. 3, 1942	13.75	38.23	9.51	195.78	66.74	134.29	0.00	2.22	126.61
Average for week, 1937–41	21.57	356.06	20.14	356.06	122.89	217.70	5.29	3.26	188.61

[1] The estimated aggregate population on which the 1942 rates are computed is probably too low, in view of unusual shifts of population incident to emergency conditions. It is based on unofficial estimates, 1940 census enumeration, and for some cities the projection of intercensal rates of increase.

TERRITORIES AND POSSESSIONS

HAWAII TERRITORY

Plague (rodent).—Five rats found during the period November 21 to November 26, 1941, in Paauhau, Hamakua District, Island of Hawaii, T. H., have been proved positive for plague.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended December 20, 1941.—During the week ended December 20, 1941, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis		2	2	6	8				1	19
Chickenpox		30		214	541	90	81	12	116	1,084
Diphtheria		11	4	31	6	1	1	2		56
Dysentery									15	15
Influenza		14			2	38			53	107
Measles		1	3	409	89	48	50		17	617
Mumps		6		430	162	55	64	8	112	837
Pneumonia		2			6		1		12	21
Poliomyelitis					1		1	1	2	5
Scarlet fever	1	24	9	105	286	25	35	19	9	513
Tuberculosis	3	9	4	114	38	1	19			188
Typhoid and paratyphoid fever				13	2			1	2	18
Whooping cough			2	144	79	9	7	4	44	289

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

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

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

Plague

Peru.—During the month of November 1941, plague has been reported in Peru as follows: Ancash Department, 9 cases, 5 deaths; Libertad Department, 4 cases, 2 deaths; Lima Department, 2 cases, 1 death; Piura Department, 8 cases, 1 death.

Typhus Fever

Algeria.—During the period December 1–10, 1941, 527 cases of typhus fever were reported in Algeria. The following numbers of cases of typhus fever in Algeria were also reported: For July, 1,331 cases; August, 647 cases; September, 216 cases; October, 326 cases; and for November, 667 cases.

Yellow Fever

Ivory Coast—Azaguie.—On January 6, 1942, 1 suspected case of yellow fever was reported in Azaguie, Ivory Coast.

THE SOCIO-ECONOMIC AND EMPLOYMENT STATUS OF URBAN YOUTH IN THE UNITED STATES, 1935–36 [1]

A Review

Based on data of the National Health Survey, this study presents a detailed analysis of the employment, educational, and occupational status of urban youth in the United States. The study shows separately for the white and colored youth not only the relationship between the education and occupation of youth and their employment, but also relates employment to annual family income. The high concentration of unemployment among youth, white and colored, has been a well-known fact. However, the existence of wide differences in the employment of youth in the various income classes was for the first time revealed by the present analysis. The study likewise discloses a direct association between education of the white youth and their employment; the data indicate striking increase in employment with higher education. The contrary is true of the colored youth; their employment generally decreases with higher education. Furthermore, the study brings out the close connection between economic status, education, and occupation.

The contents of the bulletin are: I. Introduction: The scope and method of the Survey, the concepts of employment and unemployment, workers and nonworkers, racial composition of the surveyed population. II. White urban youth: General and economic characteristics of the white youth, white youth in the labor market, employment and unemployment among white youth, employment of white youth by family income, relationship between the educational attainment of the white youth workers and their employment status, relationship between the occupation of the white youth workers and their employment status. III. Colored urban youth: General and economic characteristics of the colored youth, colored youth in the labor market and their employment status, employment of colored youth by family income, relationship between the educational attainment of the colored youth workers and their employment status, relationship between the occupations of the colored youth workers and their employment status. IV. Summary. The study reflects, of course, the socio-economic condition of the midwinter of 1935–36, when the Survey was made.

[1] Public Health Bulletin No. 273, same title as above, by Bernard D. Karpinos. U. S. Government Printing Office, 1941. Available from the Superintendent of Documents, Washington, D. C., at 15 cents per copy.

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