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DISABLING MORBIDITY, AND MORTALITY FROM CANCER AMONG THE MALE EMPLOYEES OF AN OIL REFINING COMPANY WITH REFERENCE TO AGE, SITE, AND DURATION, 1933-38, INCLUSIVE [1]

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The present report on morbidity and mortality from cancer based on the recorded experience of workers in oil refineries is offered principally because of the notable paucity of published morbidity data on cancer and because of the particular industry involved, one which, as is well known, has been not infrequently associated with the subject of cancer.

The basic data are made available by the records of the members of the sick benefit plan connected with an oil refining company, and cover the 6 years 1933–38. During this period a total of approximately 60,000 years of membership for male employees yielded, according to the records, 70 cases of cancer of which 46 ended in death. It is purposed to consider this morbidity and mortality with reference principally to age, site, and duration of disability for work.

While it is recognized that the actual number of cases available is small, yet it is believed that their analysis constitutes a contribution, limited to be sure, to the growing structure of a cancer epidemiology.

THE SICK BENEFIT ORGANIZATION

Since the basic data are derived from the records of a sick benefit organization, a review of the rules governing the organization is necessary. For purposes of sickness benefits, all employees are divided into two groups, salaried employees or those paid on a monthly basis, and wage earners, those paid on a weekly basis. There is no waiting period for the salaried group and the sickness benefits are full pay from

[1] From the Division of Industrial Hygiene, National Institute of Health. In connection with this paper the reader is referred to items *9* to *14* of the list of references.

It is planned to prepare a second report should further pertinent data become available. Reference is made particularly to occupational environment, and to the disposition of the cases not ending in death during the period of observation. It should be remembered that the period of observation is definitely limited to the 6 years 1933-38.

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the first day of disability for periods ranging from 2 to 12 weeks and half pay thereafter for 2 to 40 weeks, depending upon service. For wage earners the waiting period is 3 days, after which these employees receive full pay followed by half pay, depending upon service, for the time periods given above. In the present paper both groups are placed upon a similar basis with respect to waiting period since only those cases lasting 8 calendar days or longer are considered. Furthermore, the length of service of the employees with cancer was such that no case was terminated artificially except after 52 weeks of benefits.

With respect to notification, certification, and verification of disability it may be noted that the organization requires that a case be reported immediately and that satisfactory evidence of physical 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 very closely, making a consistent effort, among other things, to satisfy himself and the company medical department as to correct diagnoses.

ANALYSIS OF THE DATA

The 70 cases of cancer reported upon are those which ended during the 6 years 1933–38. These cases include 5 which began in 1932 and ended in 1933, but exclude 4 which began in 1938 and were carried over into 1939. In general, the cases which did not end in death terminated in recovery or sufficient improvement for return to work. In 5 cases, however, maximum benefits were received and records of the cases were thus terminated after 1 year of disability.

Comparison of mortality with other experiences.—The 46 deaths occurring among 58,991 male-years of membership in the sick benefit plan yield an average annual death rate of 0.78 per 1,000. The population exposed represents an age distribution ranging approximately from 15 to 69 years. The calculated crude death rate from cancer for white males aged 15 to 69 throughout the entire United States for the years 1933–37 is 0.96 per 1,000, while the experience of the industrial department of a large life insurance company (*1*) for 1935 yielded, among white males, the following death rates per 1,000 from all forms of cancer: All ages, 1–74 years, 0.86; ages 1–24, 0.04; ages 25–44, 0.26; and ages 45–74, 4.02. It is interesting to note in this connection that although previous studies (*2*, *3*) have indicated that certain types of mineral oils possess decided carcinogenic activity, the death rate in the present experience is not unfavorable.

The percentage distribution of deaths by site among the employees of the oil refining company and among white males, aged 15–69, in the United States is shown in the accompanying table:

Site	Percentage distribution of deaths from cancer		Number of deaths from cancer	
	Present experience	United States	Present experience	United States [1]
All sites	100.0	100.0	46	187,355
Digestive system	69.6	57.8	32	108,322
Respiratory system	10.9	9.4	5	17,586
Genitourinary system	8.7	15.0	4	28,146
Buccal cavity	6.5	6.1	3	11,314
Other	4.3	11.7	2	21,987

[1] References, 4–8.

The employees of the oil refining company show relatively more cancers of the digestive system than occurred among the total population, while the proportion of cancers of the genitourinary system is somewhat less. With respect to the comparison shown for lesions of the digestive system it should be stated that most of the full-time company physicians are provided with X-ray equipment, a fact which, according to the medical department of the company, probably accounts for some of the difference between the two percentages.

Age distribution of cases, deaths, and membership.—The age distribution of the 70 cases of cancer and of the 46 deaths among these cases, based on the age of the individual at the onset of cancer, is shown in table 1. The table also shows the distribution of the membership by age as of January 1, 1938.

TABLE 1.—*Distribution by 10-year age groups of cancer cases and deaths, and of the exposed membership; experience of male employees of an oil refining company—1933–38, inclusive*

Age group in years	Percentage distribution			Number		
	Cases	Deaths	Membership	Cases	Deaths	Membership [1]
Total	100.0	100.0	100.0	70	46	11,010
Under 20			.8			84
20–29	1.4		18.4	1		2,023
30–39	4.3	6.5	26.6	3	3	2,927
40–49	32.9	30.4	31.1	23	14	3,429
50–59	48.6	54.4	18.9	34	25	2,078
60 and over	12.8	8.7	4.2	9	4	469

[1] Age as of Jan. 1, 1938. On the basis of continuous membership during the entire study period of 6 years this membership of 11,010 males on Jan. 1, 1938, would yield 66,060 male-years. Actually there were 58,991 male-years indicating that the average membership per male was approximately 5.4 instead of 6 years.

The table reveals that the distribution for the membership is strikingly different from those for cases and deaths. While the age distribution of membership suggests normality, the other two distributions are not only markedly skewed to the right on the age scale but they are very similar to each other. The percentage of cases and deaths in each of the first three age groups is consistently smaller than the corresponding percentage of membership. For the age group

40–49 years, the three percentages are similar in magnitude. In the next age group, however, the proportion of cases and deaths increases sharply to 48.6 and 54.4 percent, respectively, while the proportion of membership decreases to 18.9 percent. In the last age group, all three percentages decrease, but that for membership is still less than the other two.

The differences in the age distributions are emphasized when it is realized that over 75 percent of the membership was less than 50 years of age but only 39 percent of the cases and 37 percent of the deaths occurred among persons of these ages. Indeed, no cases of cancer were recorded for persons less than 20 years of age, and only one case occurred in the 20–29 year group. No deaths occurred until the group 30–39 years was reached. In spite of the fact that the percentages representing the age group 60 years and over seem to be relatively low for cases and deaths, respectively, the morbidity and mortality reported upon appear to have been experienced primarily in middle and later life.

TABLE 2.—*Distribution by site of frequency of, and mortality from, cancer according to broad age groups, experience of male employees of an oil refining company—1933–38, inclusive*

Site	All ages	Under 50 years	50 years and over	All ages	Under 50 years	50 years and over
	Annual number of cases per 1,000 males			Annual number of deaths per 1,000 males		
All sites	1.19	0.60	3.16	0.78	0.37	2.13
Stomach	.37	.13	1.18	.32	.13	.96
Other abdominal organs	.26	.13	.66	.22	.13	.51
Oral region	.22	.09	.66	.05	----------	.22
Lungs	.14	.11	.22	.09	.05	.22
Trunk and extremities	.12	.07	.29	.05	.04	.07
Esophagus	.05	.02	.15	.05	.02	.15
General	.03	.05	----------	----------	----------	----------
	Number of cases			Number of deaths		
All sites	70	27	43	46	17	29
Stomach	22	6	16	19	6	13
Other abdominal organs	15	6	9	13	6	7
Oral region	13	4	9	3	----------	3
Lungs	8	5	3	5	2	3
Trunk and extremities	7	3	4	3	2	1
Esophagus	3	1	2	3	1	2
General	2	2	----------	----------	----------	----------

NOTE.—Number of male-years of membership: Under 50 years of age, 45,364; 50 years of age and over, 13,627.

Frequency of cases and deaths by age group and site.—The average annual number of cases and deaths per 1,000 male employees is shown by site for all ages and for two broad age groups in table 2. The average annual case rate for all ages and sites is 1.19 per 1,000. The corresponding death rate is 0.78. These figures are equivalent to an annual incidence of 6 cases per 5,000 males, 4 of these 6 cases being fatal.

Among both cases and deaths, regardless of age, the stomach and other abdominal organs are the two leading sites of cancer. The frequency and mortality rates for these sites considered together are 0.63 and 0.54 per 1,000, or more than half of the respective total rates for all sites. The oral region with 0.22 cases per 1,000 ranks third in case frequency for all ages. The death rate (0.05 per 1,000), however, ranks fourth, sharing this position with cancers of the trunk and extremities, and the esophagus.

The data for the broad age groups as shown in table 2 are presented graphically in figure 1. The rates are shown in order of decreasing case frequency. Again the stomach and other abdominal organs are the two leading sites of cancer. In the younger group, the case and

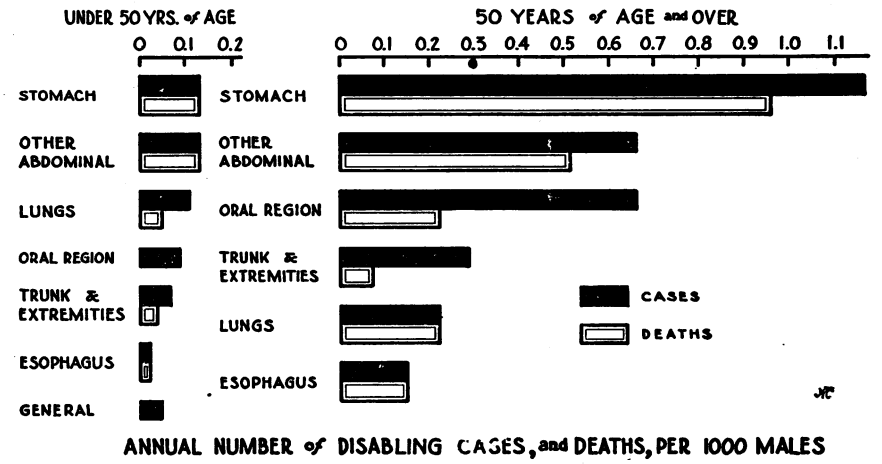

FIGURE 1.—Average annual number of disabling cases and deaths per 1,000 males from cancer, by site, for 2 broad age groups; experience of an oil refining company, 1933–38 inclusive.

death rates are equal and are the same for both sites (0.13 per 1,000). With increased age varying increases are shown in the four rates, the case and death rates for cancer of the stomach being definitely higher than the corresponding rates for other abdominal organs.

Certain changes with age may be noted in the ranking of the other sites. Cancer of the lung, although third in frequency among the males under 50 years of age, ranks fifth among the older group. The death rate in the former instance was less than half of the frequency rate, but the two rates were equal in the older group.

For cancer of the oral region the case frequency advanced with age from fourth to third place. Indeed, in the older age group the frequency of cancer of this site was equal to that for the "other abdominal organs," although the death rate for the former was less than half the latter. No deaths were recorded for cancer of the oral region in the younger group.

Of interest are the percentage changes in the rates with respect to age. In passing from the younger to the older age group both frequency and mortality rates, regardless of site, show an increase of over 400 percent. Increases are also shown for each specific site. The greatest change was recorded in the frequency of stomach cancer, which showed an increase of over 800 percent. The smallest increase, 100 percent, was shown for cancer of the lung; the death rate for this site, however, increased nearly 350 percent.

Number of cases per death.—The incidence of cancer may be expressed not only as the number of cases per 1,000 exposed population but also as the number of cases per death, an index which is particularly useful in describing morbidity and mortality relationships. This figure is the reciprocal of the fatality rate. The number of cases per death is shown by site and broad age group in the accompanying table:

Site	Number of cases per death		
	All ages	Under 50 years	50 years and over
All sites	1.52	1.59	1.48
General	[1]	[1]	[2]
Esophagus	1.60	1.00	1.00
Other abdominal organs	1.15	1.00	1.29
Stomach	1.16	1.00	1.23
Lungs	1.60	2.50	1.00
Trunk and extremities	2.33	1.50	4.00
Oral region	4.33	[3]	3.00

[1] 2 cases, no deaths.
[2] No cases.
[3] 4 cases, no deaths.

NOTE.—The data upon which the ratios are based are shown in table 2.

The number of cases per death for all sites and ages is 1.52. In other words, on the average 3 cases yielded 2 deaths. The ratio shows little change with advancing age, moving as it does from 1.59 to 1.48, indicating a somewhat lower fatality rate for the younger age group.

The number of cases per death shows marked variation with site. Cancer of the oral region for all ages shows the lowest fatality with a ratio of 4.33 cases per death. The trunk and extremities rank second with 2.33 cases per death. Cancer of the lung records 1.60 cases per death; however, when the two broad age groups are examined, 2.50 cases per death occurred in the group under 50 years of age, while all three of the cases in the older age group ended fatally.

Duration of disability by site.—Tables 3 and 4 present information on the duration of disability from all cases and from the fatal cases and those not ending fatally. Table 3 reveals, among other things, that of the 13 cases of cancer of the oral region, 7 caused disability of less than 28 days, and none of these was fatal. One death was

recorded among the three cases lasting from 29 to 91 days. Both of the cases which lasted longer than 182 days ended in death.

TABLE 3.—*Distribution by site of the number of cancer cases and deaths according to duration of disability in calendar days; experience of male employees of an oil refining company—1933–38, inclusive*

Site	All durations		Duration of disability in calendar days—									
			8-28		29-91		92-182		183-364		365	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
All sites	70	46	12	3	20	16	24	19	9	8	5	-----
Stomach	22	19	1	1	9	9	10	8	1	1	1	-----
Other abdominal organs	15	13	2	2	4	3	5	5	3	3	1	-----
Oral region	13	3	[1] 7	-----	3	1	1	-----	2	2	-----	-----
Lungs	8	5	-----	-----	2	2	3	3	1	-----	2	-----
Trunk and extremities	7	3	[2] 2	-----	2	1	1	-----	2	2	-----	-----
Esophagus	3	3	-----	-----	-----	-----	3	3	-----	-----	-----	-----
General	2	-----	-----	-----	-----	-----	1	-----	-----	-----	1	-----

[1] 6 of the lip, 1 of the mouth. 4 recorded as excised.
[2] Inguinal region and scrotum, respectively.

TABLE 4.—*Average duration of disability, in calendar days, from cancer, by site, for all cases, cases ending fatally, and cases not ending fatally; experience of male employees of an oil refining company—1933–38, inclusive*

Site	Average duration of disability			Fatal and nonfatal		Fatal		Nonfatal	
	Fatal and nonfatal	Fatal	Nonfatal	Cases	Days	Cases	Days	Cases	Days
All sites	127.3	124.1	133.4	70	8,912	46	5,710	24	3,202
General	249.0	-----	249.0	2	498	-----	-----	2	498
Lungs	191.4	90.6	359.3	8	1,531	5	453	3	1,078
Trunk and extremities	152.7	263.0	70.0	7	1,069	3	789	4	280
Other abdominal organs	127.9	116.8	200.0	15	1,918	13	1,518	2	400
Esophagus	121.0	121.0	-----	3	363	3	363	-----	-----
Stomach	111.0	97.8	194.3	22	2,442	19	1,859	3	583
Oral region	83.9	249.0	36.3	13	1,091	3	728	10	363

A corresponding relationship is noted for cancer of the trunk and extremities. The cases of shorter duration did not, in general, terminate fatally. However, the 2 cases lasting longer than 182 days were both fatal.

The reverse situation is observed for cancer of the lung. The 5 deaths among the 8 cases recorded for this site all occurred during the interval of 29 to 182 days. Two of the remaining cases received maximum benefits and were terminated artificially after 365 days of disability; it is noteworthy that these cases lived a year after onset of disability, and that they account for 2 of the total of 5 cases for which maximum benefits were provided.

The observations in the preceding paragraphs are reaffirmed when the average duration of disability with respect to termination is considered for each site. The pertinent data are presented in table 4 and graphically in figure 2.

According to figure 2 the average durations, regardless of site, for all terminations, fatal and nonfatal cases, respectively, appear to be similar in magnitude. This does not hold when the specific sites are considered. The average duration of greatest magnitude for a specific site and regardless of termination is recorded for cancer

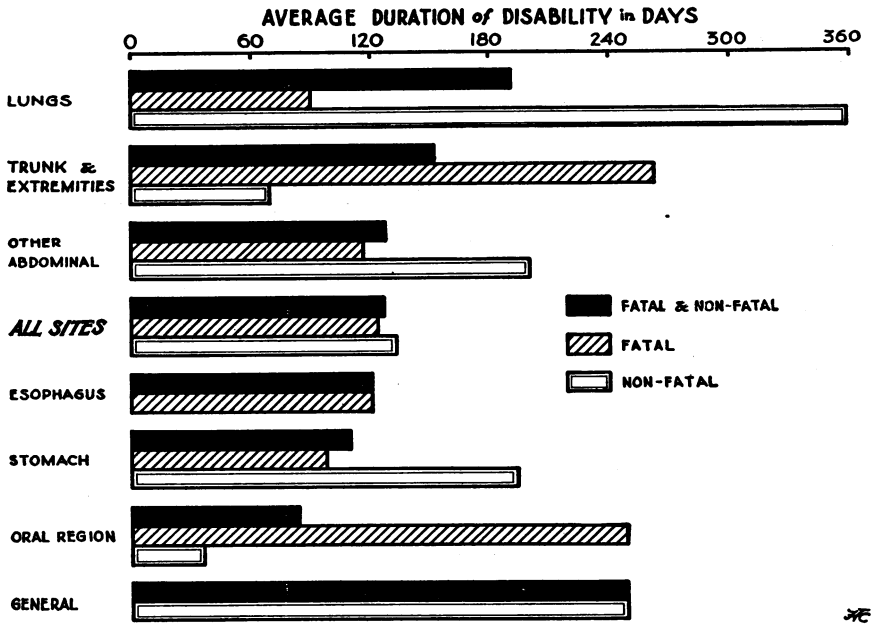

FIGURE 2.—Average duration of disability, in days, from cancer, by site, for all cases, cases ending fatally, and cases not ending fatally; experience of male employees of an oil refining company, 1933–38, inclusive. (Five cases received maximum benefits and were thus terminated after 365 days of disability; 2 of these cases were lung cancers. See text.)

of the lung. This site also ranks first with respect to average duration of nonfatal cases. Cancer of the trunk and extremities ranks second in average length of case for all terminations, but first with respect to average duration of the fatal cases. The shortest case duration regardless of termination is recorded for cancer of the oral region; this site also shows the shortest average duration for nonfatal cases.

For cancer of the stomach and other abdominal organs, sites which show high fatality, the nonfatal cases are somewhat longer, on the average, than the fatal ones.

If the average durations of the fatal and nonfatal cases, respectively, are arranged in order of decreasing magnitude by specific site, the

2 arrays present some interesting variations. The lungs come first in the array of nonfatal cases with an average case duration of 359.3 days. This site is last in the array of fatal cases with an average case duration of 90.6 days. The reverse holds for cancer of the trunk and extremities, and of the oral region. These are first and second in the arrangement of fatal cases with average durations of 263 and 249 days, respectively, and at the bottom of the array of nonfatal cases with average durations of 70 and 36.3 days.

SUMMARY

This paper analyzes the 70 cases of cancer recorded for the male members of the sick benefit plan of an oil refining company during the 6 years 1933–38. The exposure comprises approximately 60,000 years of life for male employees. There were 46 deaths. The analyses are concerned principally with site and duration of disability for work among workers of two broad age groups. Of interest are the following:

1. The exposure yielded a death rate of 0.78 per 1,000, and a frequency of 1.2 per 1,000.
2. Almost 70 percent of the deaths were related to the digestive system.
3. The two sites, stomach and other abdominal organs, accounted for more than half of the cases.
4. Each specific site showed increases with age with respect to both frequency and mortality.
5. For all ages the ratio of cases to deaths was less than 1.2 in three sites, the esophagus, stomach, and other abdominal organs.
6. Cancer of the lung showed the longest average case duration as well as the longest average duration of nonfatal cases.

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EXPERIMENTAL TRANSMISSION OF *TRYPANOSOMA CRUZI* INFECTION IN ANIMALS BY *TRIATOMA SANGUISUGA AMBIGUA*

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INTRODUCTION

Natural infection of *Triatoma gerstakeri*, *Triatoma heidemanni*, *Triatoma protracta*, and *Triatoma uhleri* with *Trypanosoma cruzi* have been reported as occurring in the United States (*2*, *3*, *10*, *11*).

The present communication describes the experimental infection of *Triatoma sanguisuga ambigua* (Neiva, 1911) with *Trypanosoma cruzi*, and the transmission of infection by this insect to susceptible animals. The natural habitat and the epidemiological significance of this vector are also noted.

Triatoma sanguisuga ambigua was first described by Neiva (*8*) in 1911; he considered it as a variety of the well-known species of *Triatoma sanguisuga* (Le Conte, 1855) (*7*, *12*, *13*); *Triatoma pintoi* (Larrouse, 1926) (*6*) is synonymous with *T. s. ambigua* (*1*, *4*).

FIELD STUDIES

Habits and biology.—During the summer of 1936 a field study was conducted in Florida by the writer. *Triatoma sanguisuga ambigua* [1] were found in a Civilian Conservation Corps camp at Sarasota, Fla.[2] This reduviid bug is popularly known as "blood sucker," "bed bug," "flying wood tick," "kissing bug," etc. Examination of collections of dead insects in various museums and schools in Florida revealed that occasional specimens have been taken from several other towns and cities of Florida, namely, St. Petersburg, Bee Ridge, Lake Hamilton, Palmetto, Thonotossassa, Inverness, and Orlando.

[1] The insects were identified by Mr. H. G. Barber of the U. S. Department of Agriculture, Washington, D. C.

[2] The writer is indebted to Dr. A. L. Matthews and his co-workers at Sarasota, Fla., for their aid during the field study.

At Sarasota, Fla., *Triatoma sanguisuga ambigua* were found to feed on tree toads of the genus *Hyla* which frequent palmetto trees.[3]

Near the Miakka River, the cabbage palmetto (*Sabal palmetto*) is from 12 to 40 feet high, with a trunk diameter of 2 feet or less. It is found growing in marshes, on hummocks, and in sandy soil throughout most sections of Florida and other southern States (*5*). The trunk is covered with old "boots" remaining from decayed leaf-stalks. As the trees grow older, the lower decayed leaf-stalks fall away, leaving a fairly smooth, slightly ridged stem. Tree toads and cockroaches and other insects live under the leaf-stalks of palmetto trees, and among them nymphs and adults of *T. sanguisuga ambigua* were found in various stages of development (see figs. 1 and 2). Three adults among 97 nymphs were found on palmetto trees on August 10, 1936. In the nymphal stage, *Triatoma* cannot fly and prefer to stay in or near nests of animals where there is usually a supply of blood available, and where the bugs are protected from heavy rainfall. Specimens of *Triatoma* were found under these conditions in the palmetto trees in Sarasota, Fla.

Several hundred palmetto trees were examined in Miami, Tampa, Tallahassee, Pensacola, and Jacksonville, Fla., and in Savannah, Ga., and no *T. s. ambigua* were found. The absence of this reduviid bug was possibly correlated with the absence of tree toads in and around these trees.

Over 50 persons in Civilian Conservation Corps camps were bitten by these bugs during the summer of 1936. The victims were, in most cases, young colored men. The bites are generally painless, no notice being taken of them at the time of the bite. However, a few hours later a moderate erythema about 3 to 4 mm. in diameter is found. This is followed by itching, in about 12 hours a definite macule develops, and at the end of 48 hours there is a definite papule with inflammation which remains for about 3 days, causing varying degrees of pain and itching.

Samples of blood obtained from 10 persons who developed the above symptoms after being bitten by the bugs were defibrinated, and mice, guinea pigs, and blood agar slants were inoculated with these samples to ascertain the possibility of *Trypanosoma cruzi* infection. Results were negative.

EXPERIMENTAL FINDINGS

Examination of Triatoma sanguisuga ambigua for natural infection with microorganisms.—The fecal material from 300 live specimens of the bugs (all collected at Sarasota, Fla.) examined microscopically in

[3] A large percentage of the tree toads was found to be naturally infected with *Haemogregarina*, but no *Trypanosoma rotatorium* were found in the blood of tree toads from this location.

cover-glass preparations was invariably negative for trypanosomes.[4] The material from the guts of about 10 percent of the bugs was infected with *Emeria*.

The examination of the saliva of 25 insects showed a short, nonmotile rod, but no flagellates were seen.

Rearing Triatoma sanguisuga ambigua.—Under laboratory conditions older specimens fed readily on a variety of animals, namely, mice, rats, guinea pigs, rabbits, English sparrows, and frogs. Newly hatched bugs were somewhat more particular and fed only on delicate skin and easily accessible blood vessels, such as occur in small frogs and in the tails of mice. After the first meal on frogs or mice, the young nymphs will then feed on other species of animals and man. The bug takes blood by its proboscis (see fig. 1), and after a full meal excretes fecal material on or about the site of the bite.

Experimental infection of Triatoma sanguisuga ambigua with Trypanosoma cruzi.—Twenty-four adult *T. s. ambigua* collected in Florida, apparently free from *Trypanosoma cruzi* infection, and 61 noninfected specimens reared in the laboratory (both nymphs and adult males and females) were fed on guinea pigs infected with *Tr. cruzi*. All the bugs became infected with *Tr. cruzi*.

The fecal excretions of these bugs were obtained by slight pressure with forceps over the abdomens of the insects, and were examined microscopically in cover-glass preparations for evidence of trypanosomes (objectives 21× and 45×, ocular 10×). Small droplets of saliva were obtained from the proboscis of the insects by exerting slight pressure over the thorax. These droplets were likewise examined microscopically and occasionally inoculated into mice and guinea pigs.

The following descriptions of two experiments are, as a whole, representative of findings of six similar groups. Because of the uniformity of the results, the remaining four experiments will not be described.

Experiment 5.—Ten adult (male and female) *T. s. ambigua* collected near Miakka River, Fla., were examined in Washington, D. C. The fecal excretions and saliva were found to be free from flagellates in three consecutive examinations, 10 days apart. These bugs were then permitted to feed for about 30 minutes on the hair-clipped skin of a young guinea pig experimentally infected with a known strain of *Tr. cruzi*. While the bugs were feeding on the infected guinea pig, direct microscopic examination of the guinea pig's ear blood showed 1 trypanosome per 10 microscopic fields (objective 45×, ocular 10×). These reduviid bugs were allowed to feed on the same infected guinea pig 4, 5, 6, 14, 15, and 17 days after the first feeding, each meal time lasting about 15 minutes. The fecal excretions and saliva of these

[4] At the present time, there is no known reservoir host of *Trypanosoma cruzi* in Sarasota, Fla., from which *Triatoma sanguisuga ambigua* may acquire the infection.

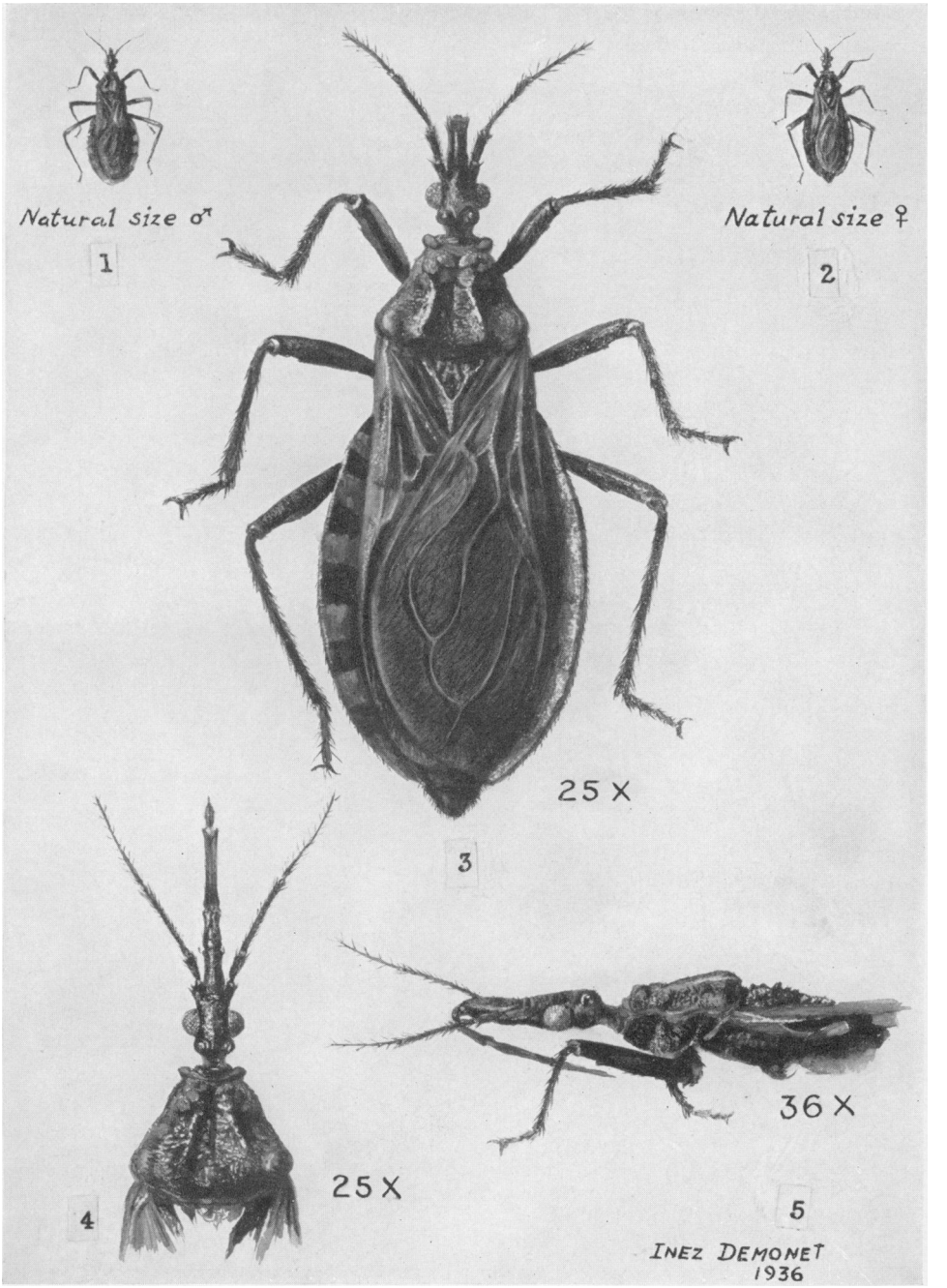

FIGURE 1.—*Triatoma sanguisuga ambigua* (photographed from colored drawing). 1. Adult male; 2, adult female; 3, dorsal view of an adult female enlarged about 25 times; 4, dorsal view of the head, showing extended proboscis ready to feed; 5, side view of head, showing proboscis bent.

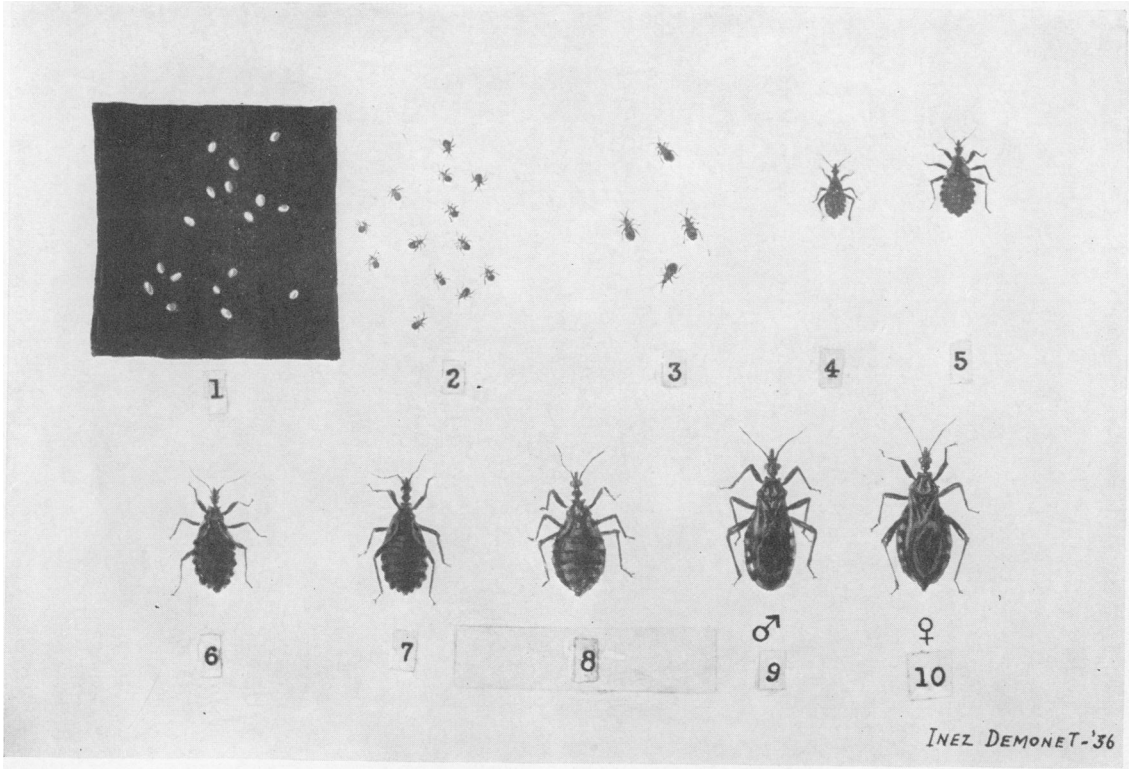

FIGURE 2.—*Triatoma sanguisuga ambigua*, natural size (photographed from colored drawing). 1. Eggs; 2, young nymphs, 1 to 4 days old; 3, 7-day-old nymph after first meal of blood; 4, 5, 6, 7, 8, large nymphs; 9, adult male; 10, adult female.

insects examined microscopically 18 days after their first meal and 1 day after the last infected meal were found to be swarming with trypanosomes. The flagellates were chiefly crithidia and a few metacyclic trypanosome forms. The saliva, on the other hand, was free from flagellates. One of the insects was crushed and its intestinal content inoculated into 2 mice and 2 guinea pigs; all of these animals developed trypanosomiasis as determined by direct microscopic examination of their blood at various intervals and by culturing trypanosomes from their blood on N. N. medium (*10*).

Experiment 7.—Two adult females and 2 nymphs of *Triatoma sanguisuga ambigua* free from infection were fed about 1 hour on a guinea pig which was experimentally infected with *Trypanosoma cruzi*. The fecal excretions of these blood-sucking insects were examined 18 days after the first infected meal and many flagellates in the forms of crithidia and metacyclic trypanosomes were found.

Both groups of experimentally infected *Triatoma sanguisuga ambigua* maintained *Tr. cruzi* infection in their intestines throughout life. The eggs from experimentally infected bugs were free from trypanosomes, and nymphs hatching from these eggs, after feeding on normal, healthy animals, showed no evidence of trypanosome infections.

MANNER OF TRANSMISSION OF *TRYPANOSOMA CRUZI* INFECTION TO SUSCEPTIBLE ANIMALS BY *TRIATOMA SANGUISUGA AMBIGUA*

Noninfectivity of the bite of Triatoma infected with Trypanosoma cruzi.—Three *Triatoma sanguisuga ambigua* experimentally infected with *Trypanosoma cruzi* were allowed to feed through gauze from a tumbler on hair-clipped skin of a young guinea pig on September 16, 18, 19, 21, and 23, 1936. By placing folded filter paper in the tumblers with the insects and immediately removing the insects after feeding, before they began to excrete fecal material, it was possible to insure that no feces came in contact with the skin. The ear blood of the guinea pig was examined microscopically 8, 9, 13, 16, 18, 19, 22, 24, 25, 26, 30, 35, 39, and 47 days following the first meal of the insects for evidence of trypanosomiasis. The results were negative. Sixty-five days following the last microscopic blood examination, the guinea pig was etherized, its heart blood introduced into N. N. tubes, and the organs fixed in 10 percent formalin. There was no growth of trypanosomes in the N. N. tubes during 2 months of observation, and microscopic study revealed no leishmania-like forms of *Tr. cruzi* in the section.

Infectivity of fecal excretion of Triatoma containing Trypanosoma cruzi.—Seventeen *Triatoma sanguisuga ambigua* (adults and nymphs) experimentally infected with *Trypanosoma cruzi* were permitted to

feed on the hair-clipped skin of 2 normal guinea pigs. The skin of the animals bore no macroscopic abrasions. The insects were applied directly to the skin and were confined to an area of about 2 inches. Their escape was prevented by a circular chamber, the top of which consisted of a mica cover having a few small holes. These holes were made to prevent the accumulation of excessive moisture in the chamber and for manipulation of the insects. The insects were confined in this chamber for 3 hours. They deposited fecal matter on the skin of the animals freely, usually near the site of a bite. The fecal droplets varied in size and color. It usually required from 15 to 30 minutes before the droplets dried on the skin of the animals. At the end of 10 minutes some of these droplets were examined microscopically and were found to be swarming with trypanosomes. At the end of 3 hours the insects were removed and placed in tumblers, while the guinea pigs were placed in cages. The ear and heart blood of the guinea pigs was examined at various intervals for evidence of trypanosomiasis. Both guinea pigs contracted the *Tr. cruzi* infection. One of these experiments will be described below.

Experiment 171.—On October 16, 1936, 1 adult and 1 nymph of *T. s. ambigua*, experimentally infected with *Tr. cruzi*, were placed in a feeding chamber in direct contact with the skin of a normal, healthy guinea pig. The nymph, after feeding, excreted one drop of coffee-colored fecal excretion on the skin of the guinea pig (back). This droplet was left to dry. The next day a few more infected *Triatoma* were fed on the same guinea pig, and the fecal excretions of these infected bugs were likewise deposited on the skin of the guinea pig.

The ear blood of this guinea pig was examined microscopically for evidence of trypanosomes 2, 5, 16, 24, and 33 days following the beginning of the experiment, with negative results. However, the microscopic examination of the blood of this guinea pig 35 days following the beginning of the experiment showed 1 trypanosome per 5 microscopic fields. The movements of the trypanosomes as seen under the microscope were zig-zag in motion, one of the characteristics of *Tr. cruzi* in a vertebrate host. The next microscopic examination of the guinea pig 7 days later also showed trypanosomes. At this time there was 1 trypanosome per about 10 microscopic fields. A few drops of heart blood of this guinea pig were inoculated into N. N. tubes which gave a rich growth of trypanosomes (*9*).

SUMMARY

1. *Triatoma sanguisuga ambigua* is widely distributed in Florida.

2. *T. s. ambigua* in Sarasota, Fla., feed on tree toads, genus *Hyla*, and have colonized in "boots" of palmetto trees.

3. During 1936–37 about 300 live *T. s. ambigua* collected in Sarasota, Fla., were examined and found to be free from *Trypanosoma cruzi* infection. A few *Triatoma* contained *Emeria* in their intestines, while many had a nonmotile bacteria in their saliva. The tree toads found on palmetto trees were free from *Trypanosoma rotatorium*, but most of them were infected with *Haemogregorina*.

4. Over 50 persons bitten by these insects in Civilian Conservation Corps camps during 1936–37 manifested various allergic symptoms and occasionally a small abscess. However, there was no indication of human trypanosomiasis as determined by cultural and animal inoculation tests of 10 persons who were bitten.

5. Eighty-five *T. s. ambigua* have been experimentally infected with *Trypanosoma cruzi* by permitting nymphs and adults (males and females) to feed on infected guinea pigs.

6. The eggs of infected *Triatoma* are free from *Tr. cruzi*, and newly hatched nymphs remained free from infection throughout their lives when fed on healthy animals.

7. The infection was not transmitted to 8 guinea pigs by the bite of 24 infected *Triatoma* when care was taken that no fecal material of the insects came in contact with the skin of the animals during feeding.

8. *T. s. ambigua* experimentally infected with *Trypanosoma cruzi* produced trypanosomiasis in healthy, normal guinea pigs when allowed to feed and then deposit fecal excretion on the hair-clipped skin of the guinea pigs. The scanty number of trypanosomes was demonstrated microscopically in the circulating blood of these guinea pigs and recultured successfully on N. N. media.

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BRIEF SUMMARY OF THE PRINCIPAL FEATURES OF WORKMEN'S COMPENSATION LAWS IN THE UNITED STATES

In view of the increasing social consciousness of Government as evidenced by Federal and State legislation in recent years, the trend and principal features of workmen's compensation laws in the United States are of especial interest to health and welfare agencies. This is true not only with respect to medical care, compensation during the period of disability, and death benefits; but the recognized responsibility of industry for injuries sustained by employees in the course of their employment, regardless of the question of negligence, is a stimulation to industry to make adequate provision for the health and protection of employees.

In addition to the exclusion of the principle involving negligence in the application of workmen's compensation acts, another important protective feature, an advance made since the first of these laws was passed, is the inclusion of occupational diseases as compensable conditions. Early in the history of compensation legislation none of the acts expressly provided for the payment of benefits for disability occasioned by occupational disease, although in some States, without specific provision in the law, occupational diseases have been included by the interpretation of the courts. The number of States making these diseases specifically compensable has been gradually increasing.

Workmen's compensation legislation in the United States is of comparatively recent history, dating from 1911. The first of these laws were enacted by the States of Washington and Kansas on March 14 of that year. The Washington law became effective on October 1, 1911, while the Kansas law went into effect on January 1, 1912. Nine other States enacted workmen's compensation laws in 1911, which became effective either in that year or in 1912. The United States Employees' Compensation Act was approved September 7, 1916, and the Longshoremen's and Harbor Workers' Compensation Act on March 4, 1927.

The principal features of workmen's compensation laws in the United States, its territories, and the District of Columbia are presented in a recent publication of the Bureau of Labor Statistics of the United States Department of Labor.[1]

[1] Principal Features of Workmen's Compensation Laws, as of January 1, 1940. By Charles F. Sharkey. Monthly Labor Review, March 1940. (Reprinted as Serial No. R. 1090.)

On January 1, 1940, compensation laws were in effect in all of the States except two, Arkansas and Mississippi. The Legislature of Arkansas adopted such a law in 1939, but the effective date has not yet been determined, pending the outcome of a referendum vote in November of 1940. The principal provisions of this law, however, are included in the following brief analysis of Mr. Sharkey's summary. In addition to these States, workmen's compensation laws are operative in the District of Columbia, Puerto Rico, Alaska, Hawaii, and the Philippine Islands, for civil employees of the Federal Government and for harbor workers and longshoremen under the Federal Longshoremen's Act.

There are now in operation in the United States and territorial possessions no less than 54 independent compensation laws which have been drafted and put into effect over a period of 30 years. While all agree in their main objective—the payment of benefits to injured employees or to the dependents of those killed in industry, without regard to the question of negligence—there is a great diversity in the details of application of this fundamental principle. This applies not only to the scope of the laws and the amount of compensation payable under them, but also to compulsory and voluntary features, the securing or not securing of the payment of benefits, the manner of securing such payments where required, the methods of administration, and the question of election or rejection of the act.

In this summary, all workmen's compensation laws in effect in the United States and its territorial possessions are included. As used here, the words "laws" and "acts" are all-inclusive, while the words "State" and "States" refer to the continental political jurisdictions so designated.

Insurance.—The financing of the payment of benefits is provided through insurance with private companies, in a governmental fund, or employer self-insurance, except in the case of the civil employees of the Federal Government, where the payments are made from congressional appropriations. Of the 54 acts, 22 are compulsory and 32 are elective, with some exceptions and variations regarding public employees, contractors on public works, and hazardous employments. Governmental insurance systems exist in 18 States and Puerto Rico, of which 8 (including Puerto Rico) are monopolistic while 11 operate on a competitive basis. Under the other acts insurance is either in private companies or by self-insurance.

Coverage.—The compensation laws do not attempt to cover all employments. Certain employees are specifically excluded by the various acts, and some laws apply only to persons engaged in hazardous employments. Casual employees are usually excluded, and generally the laws do not apply to persons engaged in agriculture and domestic

service. Most of the acts cover minors, and 13 of the State statutes provide extra compensation in the case of injury to minors employed illegally.

In 27 States and Puerto Rico, employers of less than a stipulated number of employees are exempt, but the laws usually permit voluntary election for exempt employments. The exemption number of employees ranges between 2 in Oklahoma and 16 in Alabama.

The compensation laws in 9 States apply only to hazardous employments, with permission in all but 2 of these States for employers and employees in other occupations to come under the act. In 3 of these 9 States the laws are elective in nature, while in the others they are compulsory.

Employees of the political division and its subdivisions and of municipalities are included in 31 of the compensation acts, under some of which compensation is compulsory for public employees while elective as to private employments.

Persons engaged in interstate commerce and civil employees of the United States Government are not included in the State laws. Interstate commerce comes under the jurisdiction of the Federal Government. The United States Employees' Compensation Act applies to all Federal civil employees and employees of the government of the District of Columbia, while the Longshoremen's and Harbor Workers' Compensation Act provides compensation benefits for employees in private enterprise while engaged in maritime employment upon the navigable waters of the United States.

Occupational diseases.—Of especial interest to public health workers, particularly to industrial hygienists, are the provisions relating to occupational diseases.

As originally enacted, none of the workmen's compensation acts provided expressly for the payment of benefits for disability resulting from an occupational disease. It has come to be recognized, however, that it is just as important for workmen to be protected from these diseases as from accidental injury.

Some of the compensation acts list the specific occupational diseases which are compensable, while others provide compensation for any disability resulting from an occupational disease. In a few instances the workmen's compensation act uses the word "injury" instead of the word "accident." These laws provide many cases for adjudication. In some cases the courts have had to determine whether or not a disability was due to an occupational disease; in others they have construed a law to mean that any injury resulting from an occupational disease is compensable.

In 30 instances the laws provide for compensation for all occupational diseases or for certain specified diseases.

Election.—In 23 of the 32 laws which are elective, election is presumed in the absence of positive rejection, this presumption affecting both the employer and the employee. In the others, the employer must take positive action; but, if he acts, the employee's acceptance is presumed, except in 1 State, where the employee must sign an acceptance. In 1 State the law is compulsory as to the employer, but the employee may elect not to be covered.

Extraterritorial application.—The compensation acts vary as to extraterritorial application. About two-thirds of the laws are applicable to accidents happening outside the jurisdiction. Generally, the contract of hire must have been made within the jurisdiction and either the employee must be a resident therein or the employer's place of business must be within such jurisdiction. Where the law does not specifically cover this point, the courts in some instances have construed it as having extraterritorial application.

Suits for damages at common law.—Where both parties have accepted the act, suits for damages are generally forbidden, but in one State (New Hampshire, an elective State) the employee may choose either to proceed under the compensation act or sue for damages at common law. In most of the acts having an elective provision, if the employer has accepted the act, an employee who has rejected it may sue, but in such cases the employer retains the common-law defenses.

Under 38 compensation acts, the employee may sue for damages, with the common-law defenses removed, upon failure of the employer to secure payment of compensation or to provide the insurance required by the act, or to pay the premiums. In 9 States, if there is "intent" on the part of the employer to injure, or if injury is due to his gross negligence or wilful misconduct, the employee may bring suit. In 15 instances no suits are permitted after both the employer and employee have accepted the provisions of the compensation act.

Waiting period.—All of the compensation acts except the Oregon law provide a "waiting" period immediately following injury during which time compensation shall not be paid. This period ranges from a minimum of 1 day to a maximum of 14 days, the majority of the States requiring a 7-day waiting period.

This waiting period has no relation to the requirement that medical and hospital care shall be provided, as the employee is entitled to these benefits immediately. In most of the States the payment of compensation is retroactive if the disability continues for a specified number of days or weeks.

Second injuries.—All but 8 of the compensation laws provide specifically for payment of compensation in second-injury cases. These laws are designed to cover cases in which an employee suffers the loss of a member of the body in an accident and subsequently loses

another in a second accident through which he may become permanently and totally disabled. About half of these laws provide for the apportionment of compensation according to the disability resulting from the injury, the last employer paying only the amount attributable to the second injury. The others provide that in determining compensation for the second injury the decreased earning power as the result of the first injury shall be used as a basis in rendering the award. In 12 States, the District of Columbia, Hawaii, and under the Federal Longshoremen's Act, "second-injury funds" have been established, and in case of a second accident the employer must pay only for the second injury. While the employee is compensated for the disability resulting from the combined injuries, the remainder of the award is paid from the second-injury fund. The method of financing the fund varies.

Scale of compensation.—The amounts payable under the various compensation acts are determined by three factors, namely, the rate (usually a percentage of the wages), the term or period of payment, and in most instances a maximum or weekly total payment. The amount and method of payment also differ according to the type of injury. The acts prescribe certain payments in case of death, permanent total disability, temporary total disability, and permanent partial disability. There is an apparent tendency to recognize a greater economic loss in case of permanent total disability than in case of death.

Medical benefits.—Under all of the compensation laws medical aid is required to be furnished to injured employees, usually in addition to compensation payments. Some laws allow additional amounts for hospital expenses. Seventeen acts (including U. S. Civil Employees' and Longshoremen's Acts) limit neither the amount of, nor the time during which, medical benefits are rendered; 12 limit the amount but not the time; 12 limit the time but not the amount; and 13 impose a restriction on both time and amount. Medical benefits are without cost to the workmen in the great majority of cases.

Artificial limbs and other appliances.—In some instances artificial limbs and other appliances are furnished under the compensation laws. In 21 States, under the Federal Longshoremen's Act, and the compensation act covering Federal civil employees and employees of the District of Columbia, the law requires the furnishing of artificial limbs, and in 2 other States the Compensation Commission is authorized to supply them. In 1937 the Pennsylvania law provided for supplying artificial limbs, but this provision was repealed in 1939.[2]

Administration and settlement of claims.—Workmen's compensation laws are administered either by an administrative commission (or board) or by the courts. When administration is left to the courts

[2] Information furnished by Division of Labor Law Information, Bureau of Labor Statistics.

it is usually because no other machinery for administration has been created, and this law, as in the case of other laws, is enforced in the various Federal, State, and county courts. In States where the law is administered by a commission or board, appeals to the courts are usually limited to questions of law, the determination of facts being left to the jurisdiction of the commission or board.

Accident reporting and prevention.—In only 25 instances do the workmen's compensation acts require reports to be made of all industrial accidents. The laws vary with respect to the minimum period of disability for which reporting is required, 13 requiring reports of accidents which cause disability for 1 day or more.

Most industrial States have inspection agencies which are charged with duties in connection with the prevention of accidents, chiefly through the enforcement of safety statutes, though some such agencies also prescribe standards. In 22 instances the agency administering the compensation law is also given certain additional powers as to safety devices, inspection, etc.

Cost of compensation.—In almost all instances the cost of compensation is borne entirely by the employer, although in some cases where there are governmental insurance funds a small part of the cost is borne by the public. In 1 State (Oregon) the employees contribute to the cost of compensation, in 3 States and Alaska they contribute to the medical benefit fund, and in 5 States they may contribute toward cooperative hospitals and other relief measures. The original occupational disease law of Washington State required equal contributions by employees and employers, but this provision was repealed by an amendment in 1939.

Nonresident alien dependents.—None of the workmen's compensation acts makes any distinction between resident aliens and resident citizens, but a large number have discriminatory provisions affecting nonresident alien dependents. Since 1913, there has been a tendency toward less favorable treatment of this class, by exclusion, reduced benefits, commutation to lump sums in reduced amounts, restricting possible beneficiaries to designated relationships, excluding the presumption of dependency, and excluding payments to beneficiaries in countries with which the United States does not maintain diplomatic relations.

PATIENTS IN HOSPITALS FOR MENTAL DISEASES, 1938

The Bureau of the Census, Department of Commerce, secures an annual census of hospitals for mental disease through data furnished by State, county, city, Veterans' Administration, and private hospitals. A summary of these data for 1938 has been issued.[1]

[1] Vital Statistics—Special Reports, vol. 9, No. 48, May 27, 1940, pp. 549–558.

The returns are not complete, as some institutions have not yet submitted their schedules. The information made available, however, is of interest with reference to the movement of patient population, and the distribution according to type of hospital control and type of psychosis.

Of the 513,858 patients reported at the close of the year, 457,947 were in hospitals, 1,422 in family care, and 54,849 on parole or otherwise absent. Of the 457,947 mental patients reported hospitalized, 84.0 percent were in State hospitals, 7.9 percent in county and city hospitals, 5.8 percent in Veterans' Administration hospitals, and 2.4 percent in private hospitals.

The percentage distribution of admissions under various types of control of hospitals shows considerable deviation from the percentage distribution of resident patients. The percentage of total admissions coming to private hospitals is more than six times as high as their proportion of patient population.

In State hospitals, first admissions are four times more numerous than readmissions, while in private hospitals they are only twice as frequent. The high proportion that readmissions constitute of total admissions for mental disorders in Veterans' Administration hospitals is stated to be accounted for in part by the fact that first hospitalization may have been for a physical illness, and also in part to the ease with which veterans may secure hospitalization.

Discharges comprise slightly more than half of the separations from State hospitals, and 86 percent of the separations from private hospitals. There are fewer deaths in private hospitals, where the age distribution of the patient population is probably younger and the mental deviation of a milder character.

In State and county and city hospitals more than 10 percent of the patients are on parole, as compared with less than 5 percent in Veterans' Administration and private hospitals.

In 1937, 7 States reported patients placed in family care as compared with 9 States reporting that type of care in 1938.

TABLE 1.—*Movement of patient population in hospitals for mental disease, by type of control of hospital, United States, 1938*

Class of patients	Total	Public hospitals			Private hospitals
		State [1]	County and city	Veterans' Administration	
Patients on books at beginning of year	499,879	424,028	38,735	25,461	11,655
Male	270,735	221,277	19,610	25,407	4,441
Female	229,144	202,751	19,125	54	7,214
In hospital	444,949	374,169	35,[illegible]1	24,353	11,006
In family care	1,366	1,366			
On parole or otherwise absent	53,564	48,493	3,314	1,108	649
Admissions during year	153,124	106,220	10,317	11,651	24,936
Male	90,584	59,693	5,716	11,617	13,558
Female	62,540	46,527	4,601	34	11,378
First admissions	110,089	79,408	8,133	6,142	16,406
Readmissions	33,190	21,085	1,274	3,228	7,603
Transfers from other hospitals for mental disease	9,845	5,727	910	2,281	927
Separations during year	139,145	95,156	9,791	9,176	25,022
Male	83,728	55,301	5,584	9,145	13,698
Female	55,417	39,855	4,207	31	11,324
Discharges	90,648	56,756	4,863	7,480	21,549
Direct from hospital	48,082	18,795	2,647	6,128	20,512
While on parole	42,566	37,961	2,216	1,352	1,037
Transfers to other hospitals for mental disease	11,368	6,682	1,995	606	2,085
Deaths in hospitals	36,254	30,977	2,848	1,078	1,351
Deaths of patients while on parole	875	741	85	12	37
Patients on books at end of year	513,858	435,092	39,261	27,936	11,569
Male	277,591	225,669	19,742	27,879	4,301
Female	236,267	209,423	19,519	57	7,268
In hospital	457,947	384,573	35,980	26,599	10,795
In family care	1,422	1,422			
On parole or otherwise absent	54,489	49,097	3,281	1,337	774

[1] Figures include 1 Federal hospital, St. Elizabeths, in the District of Columbia, and Morningside Hospital in Portland, Oreg., a Federal contract hospital.

PSYCHOSIS OF FIRST ADMISSIONS, BY TYPE OF CONTROL OF HOSPITALS

Hospitals under each type of control do not admit patients with various mental disorders with equal frequency.

The proportion of patients with general paresis is twice as great in Veterans' Administration hospitals as in State hospitals. First admissions of patients with psychosis associated with conditions of old age (cerebral arteriosclerosis and senile dementia) constitute 21.3 percent in State hospitals, 21.5 in county and city hospitals, and 9.9 percent in private hospitals. The vast majority of veterans have not yet reached the ages in which these diseases manifest themselves; and senile patients and those with cerebral arteriosclerosis are admitted with less frequency to private hospitals.

Private hospitals have a higher proportion of first admissions with manic-depressive psychosis than all others, while the proportion among veterans is decidedly low. Dementia praecox is more nearly uniformly distributed. Patients of this type constitute nearly one-fifth of all first admissions to State and county and city hospitals, and one-seventh of such admissions to Veterans' Administration and private hospitals.

TABLE 2.—*First admissions to hospitals for mental disease, by type of control of hospital and by psychosis, United States, 1938*

Psychosis	Number					Percent distribution				
	Total	Public hospitals			Private hospitals	Total	Public hospitals			Private hospitals
		State	County and city	Veterans' Administration			State	County and city	Veterans' Administration	
Total	110,089	79,408	8,133	6,142	16,406	100.0	100.0	100.0	100.0	100.0
With psychosis	93,345	69,753	6,961	4,080	12,551	84.8	87.8	85.6	66.4	76.5
General paresis	7,816	6,112	601	865	238	7.1	7.7	7.4	14.1	1.5
With other forms of syphilis of the central nervous system	1,496	1,082	92	242	80	1.4	1.4	1.1	3.9	0.5
With epidemic encephalitis	332	254	36	15	27	0.3	0.3	0.4	0.2	0.2
With other infectious diseases	456	315	14	47	80	0.4	0.4	0.2	0.8	0.5
Alcoholic	4,913	3,434	424	280	775	4.5	4.3	5.2	4.6	4.7
Due to drugs and other exogenous poisons	628	316	61	37	214	0.6	0.4	0.8	0.6	1.3
Traumatic	621	471	42	55	53	0.6	0.6	0.5	0.9	0.3
With cerebral arteriosclerosis	11,977	10,407	702	175	693	10.9	13.1	8.6	2.8	4.2
With other disturbances of circulation	719	548	64	18	89	0.7	0.7	0.8	0.3	0.5
With convulsive disorders	1,942	1,586	162	129	65	1.8	2.0	2.0	2.1	0.4
Senile	8,566	6,544	1,047	43	932	7.8	8.2	12.9	0.7	5.7
Involutional psychoses	3,844	2,633	236	35	940	3.5	3.3	2.9	0.6	5.7
Due to other metabolic, etc., diseases	1,338	1,096	87	36	119	1.2	1.4	1.1	0.6	0.7
Due to new growth	173	123	14	5	31	0.2	0.2	0.2	0.1	0.2
With organic changes of the nervous system	895	659	77	81	78	0.8	0.8	0.9	1.3	0.5
Psychoneuroses	4,226	2,234	175	335	1,482	3.8	2.8	2.2	5.5	9.0
Manic-depressive	12,239	8,618	882	294	2,445	11.1	10.9	10.8	4.8	14.9
Dementia praecox (schizophrenia)	21,223	16,395	1,488	928	2,412	19.3	20.6	18.3	15.1	14.7
Paranoia and paranoid conditions	1,857	1,208	188	21	440	1.7	1.5	2.3	0.3	2.7
With psychopathic personality	1,206	854	51	79	222	1.1	1.1	0.6	1.3	1.4
With mental deficiency	3,054	2,554	226	133	141	2.8	3.2	2.8	2.2	0.9
Undiagnosed and unknown psychosis	3,824	2,310	292	227	995	3.5	2.9	3.6	3.7	6.1
Without psychosis	16,744	9,655	1,172	2,062	3,855	15.2	12.2	14.4	33.6	23.5
Epilepsy	641	362	112	56	111	0.6	0.5	1.4	0.9	0.7
Mental deficiency	1,686	1,367	156	98	65	1.5	1.7	1.9	1.6	0.4
Alcoholism	7,575	4,230	656	382	2,307	6.9	5.3	8.1	6.2	14.1
Drug addiction	922	420	40	41	421	0.8	0.5	0.5	0.7	2.6
Personality disorders due to epidemic encephalitis	159	101	20	21	17	0.1	0.1	0.2	0.3	0.1
Psychopathic personality	1,095	678	65	188	164	1.0	0.9	0.8	3.1	1.0
Primary behavior disorders	408	271	19	21	97	0.4	0.3	0.2	0.3	0.6
Unclassified without psychosis	4,258	2,226	104	1,255	673	3.9	2.8	1.3	20.4	4.1

INCUBATION PERIOD OF RABIES IN DOGS

It is well known that the incubation period of rabies in human beings and animals shows great variation. It is fortunate from the standpoint of prevention that this period is prolonged, usually allowing a sufficient time for immunity to develop following the Pasteur prophylactic treatment.

Dr. J. C. Geiger, director of public health of San Francisco, has recently reported a case of rabies in a dog in that city developing 109 days after having been bitten by a rabid dog. The dog was bitten on April 16, 1940, by a sick, stray animal, which later died and was proved positive for rabies. The bitten animal showed a slight wound on the left hind leg, and, in accordance with the regulations of the Department of Public Health, was confined in isolation at the public pound for 3 months (until July 19, 1940). The physical examination of this animal on release was negative. On August 3, the animal became sick and was sent to a private veterinary hospital, where it died on August 6. Microscopic examination of the brain supported the tentative clinical diagnosis of rabies.

This case presents two important points in the control of rabies—the need for effective control of the dog population through license and provision for the impounding and humane destruction of all unlicensed animals, and the question of the quarantine period for a dog that has been bitten by a rabid dog.

Dr. Geiger states that up to May 15, 1939, San Francisco had been free from rabies for many years. The present case makes a total of 66 cases of rabies in dogs reported in San Francisco.

CANCER MORTALITY IN THE UNITED STATES

A REVIEW

A statistical review of recorded mortality from cancer in the United States has been undertaken as a part of various phases of cancer investigation being made by the National Cancer Institute. Public Health Bulletins Nos. 248 [1] and 252 [2] are the first in a series of studies of cancer mortality in the United States made from unpublished data made available by the United States Bureau of the Census. Annual records of deaths from cancer afford a large body of data which are of value with respect to a study, particularly of the trend and geographic distribution of cancer mortality.

Bulletin No. 248 deals with the trend of recorded cancer mortality in the original registration States from 1900 to 1935. Detailed tables and charts show the trend of recorded cancer mortality among males and females in 10-year age groups, for broad groups of site of cancer,

[1] Public Health Bulletin No. 248. Cancer mortality in the United States. I. Trend of recorded cancer mortality in the death registration States of 1900 from 1900 to 1935. By Associate Statistician Mary Gover. Government Printing Office, Washington, 1939. For sale by the Superintendent of Documents. Price 10 cents.

[2] Public Health Bulletin No. 252. Cancer mortality in the United States. II. Recorded cancer mortality in geographic sections of the death registration States of 1920 from 1920 to 1935. By Associate Statistician Mary Gover. Government Printing Office, Washington, 1940. For sale by the Superintendent of Documents. Price 10 cents.

namely, buccal cavity; skin; female genital organs; breast; stomach, liver; peritoneum, intestines, rectum; and other or unspecified organs. The trends for broad groups of site of cancer are supplemented by trends for the detailed sites included in each broad group of cancer mortality. The trends for detailed sites, in the original registration States, are based on a rate for the year 1925 and the successive years from 1930 to 1935 inclusive, and also on two rates in the registration States of 1914 for the years 1914 and an average of the three years 1930–32. Rates for specific sites of cancer are for all ages only and are adjusted to the age distribution of the total population of the United States as enumerated in 1930.

Comparisons are made between trends for specific ages, between males and females, and between external and internal sites of cancer.

Bulletin No. 252 shows the trend of recorded cancer mortality in five geographic sections of the United States from 1920 to 1935. Charts of the trends of rates for all ages, adjusted to the age distribution of the total population of the United States in 1930, are shown for each of the broad groups of cancer mortality, for males and females in the several sections. Appendix tables also include rates for specific ages, under 35, 35–54, 55–74, and 75 years and over. Rates for white persons for the southern section are included in the appendix tables as well as those for white and colored combined.

The trends of mortality from cancer of various sites show some difference among the sections. For example, cancer of the buccal cavity has decreased in the Northeast and East North Central sections while it has increased in the West Central and South, and remained level in the Pacific region; skin cancer shows a decline in three of the five sections, the Northeast, East North Central, and West Central, while it has remained practically level in the South and the Pacific region.

The magnitude of the rate for broad groups of site of cancer is compared in the several sections, based on age-adjusted rates for an average of the years 1931–35. Rates for all cancer, and for internal sites of cancer including stomach, liver; peritoneum, intestines, rectum; and other or unspecified organs are highest in the Northeast; the East North Central and the Pacific have much the same rates; the West Central is somewhat lower, and the South has the lowest rates. Among the external sites of cancer the high rate for cancer of the buccal cavity among southern females, the high rate for skin cancer among both males and females in the South, and the relatively high rate for cancer of the female genital organs in the South are noted.

Mortality from cancer of specific sites among colored persons is

compared with that among white persons in both northern and southern sections of the United States. Mortality from all cancer among colored males is lower than that among the whites and lower in the South than in the North. Among colored females mortality from all cancer is higher than that among whites in both sections and is lower in the South than in the North. The high rate of buccal-cavity cancer among colored females, particularly in the North, the low rate of skin cancer among both colored males and females, a rate for breast cancer which is equivalent to the white rate in both North and South, and the comparatively high rate for cancer of the genital organs among colored females in both North and South are noted.

COURT DECISION ON PUBLIC HEALTH

Compensation under workmen's compensation act denied because of noncompliance with statute requiring health certificate and medical examination.—(Texas Commission of Appeals, sec. A; *Rogers* v. *Traders & General Ins. Co.*, 139 S.W.2d 784; decided May 15, 1940.) A Texas law provided that no person operating a bakery should employ any person who, at the time of his employment, did not have in his possession a physician's certificate showing examination for and freedom from any infectious or contagious disease. The statute also required a bakery operator to have his employees medically examined at intervals of not to exceed six months.

A claim was made under the workmen's compensation act by the plaintiff because of injuries received in a bakery for which he had been working for several months prior to receiving his injuries. Under the compensation act an employee was defined as "every person in the service of another under any contract of hire, expressed or implied, oral or written." It was established without controversy that when the plaintiff was employed by the bakery he did not have in his possession a health certificate and that he was never examined by a physician to determine whether he was suffering from any infectious or contagious disease. The question presented to the commission of appeals for decision was whether or not the plaintiff was an employee of the bakery within the purview of the definition of that term as contained in the compensation law. The view was taken that the contract of hire was void because it violated the law requiring a health certificate and medical examination, and compensation was, therefore, denied on the ground that the plaintiff was not an employee within the terms of the compensation statute.

DEATHS DURING WEEK ENDED AUGUST 10, 1940

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

	Week ended Aug. 10, 1940	Corresponding week, 1939
Data from 88 large cities of the United States:		
Total deaths	7,210	7,201
Average for 3 prior years	7,348	
Total deaths, first 32 weeks of year	278,732	272,977
Deaths under 1 year of age	501	478
Average for 3 prior years	510	
Deaths under 1 year of age, first 32 weeks of year	16,191	16,275
Data from industrial insurance companies:		
Policies in force	64,946,651	66,792,520
Number of death claims	12,147	10,821
Death claims per 1,000 policies in force, annual rate	9.8	8.4
Death claims per 1,000 policies, first 32 weeks of year, annual rate	10.0	10.6

PREVALENCE OF DISEASE

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

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED AUGUST 17, 1940

Summary

No significant changes occurred during the current week in the communicable disease situation with reference to the 9 common communicable diseases included in the weekly telegraphic reports presented in the tables on the following pages. Only influenza, measles, and poliomyelitis were above the 5-year (1935–39) median expectancy, and the cumulative figures to date for each of these 9 diseases, with the single exception of influenza, are below the cumulative totals for the median of the past 5 years for the corresponding period.

The number of reported cases of poliomyelitis increased from 275 for the preceding week to 389, slightly above the 5-year median of 343 for the corresponding week. Increases were reported for all geographic areas except the West South Central, where the number of cases was the same as last week, and the Mountain States, which reported a decrease. The largest numerical increases are recorded for the East North Central States (92 to 144), West North Central (61 to 80), and the South Atlantic (28 to 46), which areas reported 70 percent of the cases for the current week. The individual States reporting the largest numbers of cases were Indiana (58), Michigan (41), Ohio (36), West Virginia (31), Kansas (30), Iowa (25), and California (23).

A low weekly record of only 6 cases of smallpox is recorded for the current week—4 States reporting only 1 case and 1 State reporting 2 cases. Twenty-two cases of Rocky Mountain spotted fever were reported in the Eastern and Central States, while only 1 case was reported in the Northwest (Wyoming). Thirty-six cases of endemic typhus fever were reported in the South Atlantic and South Central States, 14 of which occurred in Georgia.

For the current week the Bureau of the Census reports 6,948 deaths in 88 major cities of the United States, as compared with 7,210 for the preceding week and with a 3-year (1937–39) average of 7,426 for the corresponding week.

Telegraphic morbidity reports from State health officers for the week ended August 17, 1940, and comparison with corresponding week of 1939 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, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39
	Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939	
NEW ENG.												
Maine	1	0	0	1	3	------	15	3	6	0	0	0
New Hampshire	0	0	0	------	------	------	1	0	2	0	0	0
Vermont	0	0	0	------	------	------	12	9	9	0	0	0
Massachusetts	6	4	3	------	------	------	97	65	50	0	0	1
Rhode Island	0	0	0	------	------	------	11	16	0	0	0	0
Connecticut	0	0	1	1	------	------	11	17	10	0	0	0
MID. ATL.												
New York	7	9	17	[1]6	[1]6	[1]1	152	65	127	3	7	7
New Jersey [2]	7	3	5	2	2	4	64	15	36	0	1	1
Pennsylvania [2]	5	8	17	------	------	------	61	18	53	2	5	4
E. NO. CEN.												
Ohio	2	7	15	5	------	5	15	10	32	0	0	1
Indiana	5	6	6	1	3	3	3	8	5	0	0	0
Illinois	13	11	17	1	2	3	27	10	20	2	1	1
Michigan [2]	0	7	7	------	2	1	101	26	36	0	1	1
Wisconsin	0	0	1	8	23	15	125	35	37	0	0	0
W. NO. CEN.												
Minnesota	0	3	2	1	3	1	6	11	11	0	0	0
Iowa [2]	0	5	3	------	------	------	15	28	4	2	1	1
Missouri	2	2	9	------	------	30	0	1	8	0	0	1
North Dakota	2	0	0	5	------	1	1	3	3	0	0	0
South Dakota	1	0	1	------	------	------	2	0	0	0	0	0
Nebraska	1	6	2	------	------	------	0	2	2	1	1	1
Kansas	3	2	3	------	------	------	14	3	5	0	0	1
SO. ATL.												
Delaware	0	0	0	------	------	------	0	1	1	0	0	0
Maryland [2 3]	1	5	5	------	------	------	4	1	5	0	1	3
Dist. of Col. [2]	0	0	3	------	------	------	1	6	5	1	0	3
Virginia [2 4]	6	13	15	47	41	------	33	21	21	1	1	1
West Virginia [2]	11	5	8	7	11	11	4	3	4	0	2	2
North Carolina [2]	6	27	23	------	------	------	2	5	8	0	1	1
South Carolina [4]	4	9	5	145	140	50	3	1	4	0	3	0
Georgia [2 4]	6	20	20	7	11	------	4	5	0	0	0	0
Florida [4]	1	3	5	1	1	------	1	1	2	0	0	0
E. SO. CEN.												
Kentucky	10	8	8	8	5	3	26	1	8	2	2	2
Tennessee [2 4]	5	11	13	26	4	4	5	4	4	1	0	2
Alabama [4]	9	15	15	2	18	8	13	6	5	0	0	0
Mississippi [3]	4	18	15	------	------	------	------	0	------	1	0	1
W. SO. CEN.												
Arkansas	5	15	11	4	7	4	13	0	1	0	0	0
Louisiana [4]	6	9	13	1	5	11	4	9	5	0	0	2
Oklahoma [2 4]	3	8	6	3	9	9	1	8	3	0	1	1
Texas [4]	27	10	36	122	27	40	47	6	12	2	2	2
MOUNTAIN												
Montana	1	0	1	3	2	2	10	9	9	0	0	1
Idaho	0	0	0	------	------	------	2	2	2	0	1	0
Wyoming [2]	1	1	0	------	------	------	1	9	1	0	0	0
Colorado	4	2	2	4	1	------	5	4	5	0	0	1
New Mexico	0	1	1	1	------	------	9	2	4	0	0	0
Arizona	0	5	1	9	7	7	3	1	1	0	2	1
Utah [3]	0	0	1	------	2	------	19	9	9	0	0	0
PACIFIC												
Washington	2	0	1	------	------	------	20	51	11	0	0	0
Oregon	3	0	1	3	2	8	11	7	7	1	0	0
California	7	14	19	9	14	10	54	81	81	0	1	3
Total	177	272	341	433	351	324	1,028	598	879	19	34	56
33 weeks	8,865	11,968	14,515	169,222	151,650	141,707	228,492	348,447	348,447	1,117	1,387	4,165

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended August 17, 1940, and comparison with corresponding week of 1939 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39
	Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939	
NEW ENG.												
Maine	3	0	4	4	2	2	0	0	0	0	0	4
New Hampshire	0	0	0	2	1	1	0	0	0	0	0	0
Vermont	0	0	0	5	1	3	0	0	0	0	0	0
Massachusetts	3	6	6	18	15	34	0	0	0	2	3	2
Rhode Island	2	0	0	0	1	1	0	0	0	2	0	1
Connecticut	3	3	3	3	5	7	0	0	0	0	1	2
MID. ATL.												
New York	7	39	39	55	50	82	0	0	0	11	8	28
New Jersey [2]	1	12	12	21	15	16	0	0	0	8	8	9
Pennsylvania [2]	3	15	12	40	66	66	0	0	0	18	12	18
E. NO. CEN.												
Ohio	36	3	9	38	32	52	0	0	1	10	11	19
Indiana	58	2	2	14	19	14	0	3	2	6	13	9
Illinois	7	13	13	52	48	66	1	3	2	11	14	21
Michigan [2]	41	87	21	37	65	65	1	1	1	3	15	14
Wisconsin	2	0	1	30	34	37	0	3	1	1	0	2
W. NO. CEN.												
Minnesota	5	39	5	18	17	20	0	0	0	3	0	1
Iowa [2]	25	0	2	16	12	12	2	5	1	1	3	5
Missouri	11	1	1	1	13	17	0	1	2	6	24	22
North Dakota	4	0	0	2	2	4	0	0	1	0	1	0
South Dakota	3	0	1	5	7	9	0	0	0	0	1	1
Nebraska	2	0	0	0	5	5	0	0	0	3	0	0
Kansas	30	3	2	21	20	20	0	0	0	4	11	11
SO. ATL.												
Delaware	0	2	0	1	0	1	0	0	0	2	1	1
Maryland [2 3]	0	1	2	8	9	9	0	0	0	5	10	10
Dist. of Col. [2]	0	4	3	2	5	3	0	0	0	1	3	3
Virginia [2 4]	9	0	1	6	7	7	0	0	0	9	28	25
West Virginia [2]	31	0	2	12	19	11	0	5	0	15	15	21
North Carolina [2]	3	7	7	14	21	19	0	0	0	11	22	22
South Carolina [4]	0	15	0	2	6	1	0	0	0	14	11	15
Georgia [2 4]	1	4	2	9	10	9	0	0	0	24	32	32
Florida [4]	2	3	3	0	0	3	0	0	0	0	1	3
E. SO. CEN.												
Kentucky	19	3	4	15	21	21	0	0	0	19	50	48
Tennessee [2 4]	3	3	3	15	22	12	0	0	0	21	28	54
Alabama [4]	3	0	2	12	21	8	1	0	0	13	20	17
Mississippi [2]	0	1	2	0	2	5	0	0	0	14	7	6
W. SO. CEN.												
Arkansas	2	1	1	11	4	6	0	1	0	13	25	18
Louisiana [4]	4	1	2	5	5	9	0	0	0	36	21	21
Oklahoma [2 4]	9	1	1	7	6	6	0	3	0	27	32	27
Texas [4]	8	11	2	17	10	28	0	0	0	75	35	54
MOUNTAIN												
Montana	7	0	0	4	10	8	0	0	1	0	2	4
Idaho	0	0	0	1	1	1	0	0	0	0	3	2
Wyoming [2]	0	0	0	0	0	0	0	0	0	0	1	1
Colorado	0	3	2	10	10	10	1	0	0	2	5	1
New Mexico	1	1	0	1	4	4	0	0	0	2	3	9
Arizona	0	1	0	0	1	1	0	0	0	0	5	4
Utah [2]	1	0	0	5	3	8	0	0	0	1	0	0
PACIFIC												
Washington	13	1	1	8	8	8	0	0	0	4	6	3
Oregon	4	2	1	5	8	8	0	0	0	0	4	3
California	23	55	25	50	47	51	0	0	1	4	16	11
Total	389	343	343	602	690	819	6	25	30	401	503	563
33 weeks	2,059	2,148	2,148	118,887	116,482	164,859	1,958	8,657	7,974	4,993	7,105	8,141

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended August 17, 1940, and comparison with corresponding week of 1939 and 5-year median—Con.

Division and State	Whooping cough		Division and State	Whooping cough	
	Week ended			Week ended	
	Aug. 17, 1940	Aug. 19, 1939		Aug. 17, 1940	Aug. 19, 1939
NEW ENG.			SO. ATL.—continued		
Maine	34	30	South Carolina [4]	13	27
New Hampshire	0	2	Georgia [2 4]	8	22
Vermont	21	45	Florida [4]	3	16
Massachusetts	142	90			
Rhode Island	0	14	E. SO. CEN.		
Connecticut	32	48			
MID. ATL.			Kentucky	85	44
New York	298	368	Tennessee [2 4]	47	55
New Jersey [2]	88	146	Alabama [4]	15	35
Pennsylvania [2]	348	392	Mississippi [3]		
E. NO. CEN.			W. SO. CEN.		
Ohio	310	83			
Indiana	9	57	Arkansas	11	5
Illinois	155	268	Louisiana [4]	8	10
Michigan [3]	275	158	Oklahoma [2 4]	4	1
Wisconsin	98	143	Texas [4]	202	48
W. NO. CEN.			MOUNTAIN		
			Montana	17	6
Minnesota	42	47	Idaho	5	1
Iowa [2]	20	9	Wyoming [2]	3	1
Missouri	11	1	Colorado	13	8
North Dakota	23	7	New Mexico	45	5
South Dakota	7	3	Arizona	7	38
Nebraska	2	13	Utah [2]	64	48
Kansas	55	16			
SO. ATL.			PACIFIC		
			Washington	59	11
Delaware	7	10	Oregon	18	13
Maryland [2 3]	123	54	California	326	105
Dist. of Col. [2]	12	39			
Virginia [2 4]	71	50	Total	3,295	2,673
West Virginia [3]	69	10			
North Carolina [2]	90	71	33 weeks	107,172	126,631

[1] New York City only.

[2] Rocky Mountain spotted fever, week ended Aug. 17, 1940, 23 cases as follows: New Jersey, 1; Pennsylvania, 1; Iowa, 4; Maryland, 4; District of Columbia, 2; Virginia, 2; North Carolina, 4; Georgia, 1; Tennessee, 2; Oklahoma, 1; Wyoming, 1.

[3] Period ended earlier than Saturday.

[4] Typhus fever, week ended Aug. 17, 1940, 36 cases as follows: Virginia, 1; South Carolina, 1; Georgia, 14; Florida, 5; Alabama, 6; Louisiana, 4; Oklahoma, 1; Texas, 4. The report of a case of typhus fever in Tennessee for the week ended Aug. 10 was later found to be incorrect.

WEEKLY REPORTS FROM CITIES

City reports for week ended August 3, 1940

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	84	26	11	492	275	266	4	351	70	1,378	------
Current week [1]	45	26	3	752	297	158	0	321	70	1,200	------
Maine:											
Portland	0	------	0	4	1	0	0	0	0	4	32
New Hampshire:											
Concord	0	------	0	0	0	0	0	0	0	0	12
Nashua	0	------	0	0	0	0	0	0	0	0	11
Vermont:											
Barre	------	------	------	------	------	------	------	------	------	------	------
Burlington	0	------	0	0	0	0	0	0	0	0	9
Rutland	0	------	0	0	1	0	0	0	0	0	8
Massachusetts:											
Boston	1	------	0	59	10	8	0	7	0	52	189
Fall River	0	------	0	9	1	0	0	2	0	4	28
Springfield	0	------	0	7	0	1	0	1	0	3	33
Worcester	0	------	0	64	5	0	0	1	0	14	45
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	11
Providence	0	------	0	26	3	0	0	0	0	4	41
Connecticut:											
Bridgeport	0	------	0	0	0	0	0	1	0	2	29
Hartford	0	------	0	2	1	0	0	0	1	0	36
New Haven	0	------	0	0	1	1	0	0	1	2	35
New York:											
Buffalo	0	------	0	1	11	4	0	6	0	5	144
New York	7	4	0	158	50	23	0	63	11	141	1,462
Rochester	0	------	0	3	1	0	0	0	1	6	55
Syracuse	0	------	0	0	0	4	0	0	0	8	44
New Jersey:											
Camden	0	------	0	6	3	2	0	2	0	1	50
Newark	0	------	0	52	5	1	0	3	0	29	97
Trenton	0	------	0	0	2	2	0	3	4	1	34
Pennsylvania:											
Philadelphia	1	------	0	76	15	14	0	20	3	36	469
Pittsburgh	2	------	1	2	8	3	0	9	1	25	155
Reading	0	------	0	6	0	0	0	0	0	21	19
Scranton	0	------	------	0	------	0	0	------	0	2	------
Ohio:											
Cincinnati	0	------	0	0	7	2	0	4	0	28	188
Cleveland	0	2	0	5	11	10	0	6	0	122	209
Columbus	0	------	0	0	1	0	0	3	1	38	89
Indiana:											
Anderson	0	------	0	0	0	0	0	1	0	1	11
Fort Wayne	1	------	0	0	1	0	0	0	0	1	24
Indianapolis	1	------	0	1	3	1	0	4	0	3	114
Muncie	0	------	0	0	0	0	0	1	0	0	14
South Bend	0	------	0	0	1	0	0	0	0	4	19
Terre Haute	0	------	0	0	1	1	0	0	0	0	18
Illinois:											
Alton	0	------	0	0	1	3	0	3	0	3	17
Chicago	6	1	0	53	20	19	0	36	1	72	723
Elgin	0	------	0	0	0	0	0	0	0	1	12
Moline	0	------	0	0	0	0	0	0	0	0	11
Springfield	0	------	0	0	2	0	0	0	0	6	22
Michigan:											
Detroit	2	7	0	89	8	12	0	15	1	117	284
Flint	0	------	0	0	1	3	0	0	0	3	13
Grand Rapids	0	------	0	4	0	1	0	0	0	10	39
Wisconsin:											
Kenosha	0	------	0	0	0	0	0	0	0	0	7
Madison	0	------	0	7	2	0	0	0	0	6	13
Milwaukee	0	------	0	70	0	5	0	2	0	10	125
Racine	0	------	0	0	0	4	0	0	0	1	8
Superior	0	------	0	1	0	0	0	0	0	2	11

[1] Figures for Barre and Raleigh estimated; reports not received.

City reports for week ended August 3, 1940—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths all causes
		Cases	Deaths								
Minnesota:											
Duluth	0	------	0	3	0	0	0	0	0	0	19
Minneapolis	0	------	0	0	4	3	0	3	1	7	80
St. Paul	0	------	0	0	1	1	0	1	0	7	52
Iowa:											
Cedar Rapids	0	------	--------	0	-------	0	0	-------	0	0	--------
Des Moines	0	------	0	0	0	0	0	0	0	0	40
Sioux City	0	------	--------	0	-------	0	0	-------	0	0	--------
Waterloo	0	------	--------	4	-------	1	0	-------	1	0	--------
Missouri:											
Kansas City	0	------	0	1	8	0	0	4	0	3	118
St. Joseph	0	------	0	0	9	0	0	1	0	1	34
St. Louis	0	------	0	2	4	2	0	7	8	22	302
North Dakota:											
Fargo	0	------	0	0	0	0	0	0	0	0	7
Grand Forks	0	------	--------	0	-------	0	0	-------	0	0	--------
Minot	0	------	0	0	0	0	0	0	0	0	2
South Dakota:											
Aberdeen	0	------	--------	1	-------	0	1	0	0	6	--------
Nebraska:											
Lincoln	0	------	--------	0	-------	0	0	-------	0	0	--------
Omaha	0	------	0	0	2	0	0	1	0	1	79
Kansas:											
Lawrence	0	------	0	0	0	0	0	0	1	0	8
Topeka	0	------	0	2	1	0	0	0	0	0	23
Wichita	0	------	0	0	3	1	0	0	0	18	25
Delaware:											
Wilmington	0	------	0	0	1	0	0	0	0	3	39
Maryland:											
Baltimore	1	------	0	0	10	3	0	15	1	119	280
Cumberland	0	------	0	0	0	0	0	0	0	0	12
Frederick	0	------	0	0	1	0	0	0	0	0	4
Dist. of Col.:											
Washington	3	------	--------	2	10	1	0	10	0	6	220
Virginia:											
Lynchburg	1	------	0	0	1	0	0	0	1	4	12
Norfolk	0	------	0	1	2	1	0	1	0	0	48
Richmond	0	------	1	1	4	2	0	1	0	0	60
Roanoke	0	------	0	3	0	0	0	0	0	5	6
West Virginia:											
Charleston	0	1	--------	0	0	0	0	0	0	0	0
Wheeling	0	------	0	0	1	0	0	1	0	5	16
North Carolina:											
Gastonia	0	------	--------	0	-------	0	0	-------	0	0	--------
Raleigh	------	------	--------	------	-------	------	------	-------	------	------	--------
Wilmington	0	------	0	0	1	1	0	0	0	0	10
Winston-Salem	4	------	0	0	0	2	0	1	0	6	13
South Carolina:											
Charleston	0	1	0	6	2	0	0	1	1	0	35
Florence	0	1	0	0	1	0	0	0	0	0	14
Greenville	0	------	0	0	2	0	0	0	0	3	20
Georgia:											
Atlanta	0	------	0	1	3	0	0	4	0	4	92
Brunswick	0	------	0	0	0	0	0	0	0	1	3
Savannah	0	2	0	0	5	0	0	5	0	0	37
Florida:											
Miami	0	------	0	0	1	0	0	0	0	1	31
Tampa	0	------	0	0	0	0	0	0	1	0	27
Kentucky:											
Ashland	0	------	0	0	0	0	0	0	0	0	7
Covington	0	------	0	0	4	1	0	0	0	8	23
Lexington	0	------	0	2	1	0	0	1	0	1	12
Louisville	1	------	0	1	6	1	0	5	0	15	148
Tennessee:											
Knoxville	0	------	0	0	1	0	0	1	0	4	28
Memphis	0	------	0	2	0	0	0	4	2	2	89
Nashville	0	------	0	0	6	0	0	3	1	16	67
Alabama:											
Birmingham	0	3	0	8	3	0	0	2	0	1	86
Mobile	0	------	0	0	0	1	0	0	0	0	21
Montgomery	0	------	--------	0	-------	0	0	-------	0	1	--------

City reports for week ended August 3, 1940—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Arkansas:											
Fort Smith	0	------	--------	0	-------	0	0	-------	1	0	--------
Little Rock	0	------	0	0	4	0	0	2	0	3	--------
Louisiana:											
New Orleans	1	------	0	0	8	4	0	16	5	4	101
Shreveport	0	------	0	0	3	0	0	1	2	0	39
Oklahoma:											
Oklahoma City	0	------	0	0	3	1	0	1	0	0	36
Tulsa	0	------	0	0	2	0	0	0	0	16	35
Texas:											
Dallas	1	1	1	5	4	0	0	2	2	8	75
Fort Worth	0	------	0	4	0	0	0	2	1	6	37
Galveston	0	------	0	0	3	0	0	0	0	0	18
Houston	2	------	0	0	4	0	0	7	6	8	75
San Antonio	0	------	0	0	3	0	0	3	1	11	79
Montana:											
Billings	0	------	0	0	0	0	0	0	0	0	6
Great Falls	0	------	0	1	0	0	0	0	0	0	3
Helena	0	------	0	0	0	0	0	0	0	0	1
Missoula	0	------	0	0	0	0	0	0	0	0	5
Idaho:											
Boise	0	------	0	0	0	0	0	0	0	0	4
Colorado:											
Colorado Springs	0	------	0	0	1	0	0	0	0	0	13
Denver	7	------	0	1	5	1	0	4	0	7	71
Pueblo	0	------	0	0	0	0	0	0	0	0	5
New Mexico:											
Albuquerque	0	------	0	0	0	0	0	0	0	0	10
Utah:											
Salt Lake City	0	------	0	6	0	0	0	0	0	31	28
Washington:											
Seattle	0	------	0	0	2	3	0	6	0	14	97
Spokane	0	------	0	0	1	6	0	1	0	1	24
Tacoma	0	0	0	0	1	1	0	2	0	0	22
Oregon:											
Portland	1	------	0	2	2	0	0	3	0	8	77
Salem	0	------	--------	0	-------	0	0	-------	0	1	--------
California:											
Los Angeles	4	3	0	8	1	4	0	16	13	49	322
Sacramento	0	------	0	1	1	0	0	0	1	2	19
San Francisco	0	1	0	1	2	1	0	8	1	55	159

State and city	Meningitis, meningococcus		Poliomyelitis cases	State and city	Meningitis, meningococcus		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Iowa—Continued.			
Boston	0	0	2	Sioux City	0	0	5
Worcester	1	0	0	Waterloo	0	0	1
New York:				Missouri: Kansas City	0	0	2
Buffalo	0	1	0	Nebraska: Omaha	0	0	1
New York	1	0	2	Kansas: Wichita	0	0	7
New Jersey: Newark	1	1	0	Oklahoma: Oklahoma City	0	0	2
Pennsylvania: Pittsburgh	1	0	0	Texas:			
Ohio:				Dallas	0	0	4
Cincinnati	0	0	1	Houston	1	0	2
Cleveland	0	0	2	Montana: Billings	0	0	2
Illinois: Chicago	0	0	1	California:			
Michigan: Detroit	0	0	3	Los Angeles	0	0	9
Wisconsin: Kenosha	0	0	1	San Francisco	0	0	1
Iowa:				Washington: Tacoma	0	0	4
Cedar Rapids	0	0	1				

Encephalitis, epidemic or lethargic.—Cases: Springfield, Mass., 1; New York, 1; Sacramento, 2.
Pellagra.—Cases: Philadelphia, 1; Savannah, 1; Birmingham, 1; Montgomery, 2.
Typhus fever.—Cases: New York, 1; Charleston, S. C., 1; Savannah, 2; Miami, 1; Tampa, 1; Montgomery, 2.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended July 13, 1940.—During the week ended July 13, 1940, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis				2	1					3
Chickenpox		29	1	89	204	33	20		12	388
Diphtheria		1	2	15		2				20
Dysentery				5	2					7
Influenza					3				42	45
Measles	2	17	4	32	198	60	84	4	58	459
Mumps				6	57	1	3		5	72
Pneumonia					16	6	1		10	33
Poliomyelitis					3					3
Scarlet fever		2	2	33	63	7	2	6	2	117
Trachoma									1	1
Tuberculosis	5	2	17	39	41	2	44			150
Typhoid and paratyphoid fever				10	3		2	2	2	19
Whooping cough		14	4	141	88	11	16	15	6	295

CUBA

Habana—Communicable diseases—4 weeks ended June 29, 1940.—During the 4 weeks ended June 29, 1940, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	10	1	Tuberculosis	3	3
Malaria	2		Typhoid fever	72	13
Scarlet fever	2				

GREAT BRITAIN

England and Wales—Infectious diseases—13 weeks ended December 31, 1939.—During the 13 weeks ended December 31, 1939, cases of certain infectious diseases were reported in England and Wales, as follows:

Disease	Cases	Disease	Cases
Diphtheria	12,140	Puerperal pyrexia	2,005
Dysentery	583	Scarlet fever	16,910
Ophthalmia neonatorum	963	Typhoid fever	300
Pneumonia	6,744		

England and Wales—Vital statistics—Fourth quarter 1939.—During the fourth quarter ended December 31, 1939, 141,108 live births and 121,431 deaths were registered in England and Wales. The following statistics were taken from the Quarterly Return of Births, Deaths, and Marriages issued by the Registrar General and are provisional:

Birth and death rates in England and Wales, quarter ended Dec. 31, 1939

Annual rates per 1,000 population:	
Live births	13.5
Stillbirths	.54
Deaths, all causes	11.6
Deaths under 1 year of age	[1] 48

[1] Per 1,000 live births.

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

NOTE.—A cumulative table giving current information regarding the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS of July 26, 1940, pages 1367–1370. A similar table will appear in future issues of the PUBLIC HEALTH REPORTS for the last Friday of each month.

Plague

Algeria—Algiers.—During the week ended August 10, 1940, 1 case of plague was reported in Algiers, Algeria.

Hawaii Territory—Island of Hawaii—Hamakua District.—A rat found on July 17, 1940, in Paauilo, Hamakua Mill area, and two rats, one found on July 16 and one on July 17, in Paauhau area approximately 1½ miles from Honokaa village, all in Hamakua District, Island of Hawaii, T. H., have been proved positive for plague.

Yellow Fever

Colombia—Santander Department—San Vincente de Chucuri.—On July 17, 1940, 1 death from yellow fever was reported in San Vincente de Chucuri, Santander Department, Colombia.