Public Health Reports

Vol. 57 • NOVEMBER 20, 1942 • *No. 47*

CHLORACNE FROM CUTTING OILS*

By Louis Schwartz, *Medical Director, United States Public Health Service,* and Frank A. Barlow, *Medical Director, Wright Aeronautical Corporation, Paterson, N. J.*

A request from the medical director of a large motor factory for an investigation of an outbreak of dermatitis of 6 months' duration was received by the Dermatoses Investigations Section of the United States Public Health Service in February 1942.

Examination of the medical records showed that among about 20,000 employees there had been an average of over 100 cases of dermatitis per month for the last 6 months. Most of the cases were attributed to cutting oils, although varsol and the cores and molds for magnesium castings also caused a considerable percentage of the cases.

In going through the plant, many cases of dermatitis were seen. They were mostly folliculitis, acne, and boils on the anterior surfaces of the thighs and the extensor surfaces of the arms, usually seen among those who worked with ordinary insoluble cutting oils. But in the gear grinding department the workers had in addition to the ordinary type of oil folliculitis and oil acne [1] of the arms and thighs, acnelike lesions on the face (fig. 1–A), neck, behind the ears, and even on the abdomen (fig. 1–B). These lesions consisted of small, straw-colored cysts of the sebaceous glands similar to those caused by chlornaphthalenes and chlordiphenyls (fig. 2). [2]

In the course of the inspection, it was noted that in the operation of gear grinding on the Pratt & Whitney gear grinders, a heavy mist of oil (fig. 3) is given off from the gear cutting operation. This mist envelops the worker as he stands at the machine, and covers his face and clothes with a waxy, oil-like substance. This observation led to the suspicion that the workers were coming in contact with chlorinated hydrocarbons contained in the cutting oils.

It was ascertained that a particular type of gear cutting oil was used on the gear grinding operation, but the composition of the oil was not known at the factory. The foreman in the department stated

*From the Dermatoses Investigations Section, Division of Industrial Hygiene, National Institute of Health, U. S. Public Health Service.

[1] Schwartz, Louis: Dermatitis from cutting oils. Pub. Health Rep., 56:1947–1953 (Oct. 3, 1941).

[2] Schwartz, Louis: Dermatitis from synthetic resins and waxes. Am. J. Pub. Health, 26:586–592 (June 1936).

that for the past 8 months a new oil, heavier and waxier than formerly, was being used.

Samples of the eight different cutting oils used in the plant were obtained and analyzed for chlorine content. The chlorine found in the various oils is as follows:

CHART 1

Oil:	*Chlorine content; percent by weight*
No. 1	7.0
No. 2	0.15
No. 3	0.15
No. 4	1.5
No. 5	2.0
No. 6	2.8
No. 7	0.84
No. 8	1.0

Oils were decomposed by combustion on a Par bomb and the residue was analyzed for total chlorine content by a modified Volhard method. The organic chlorine substitution products present were not identified.

Numbers 1, 5, and 6 were used in the gear grinding department. This confirmed the suspicion that chlorinated hydrocarbons were the cause of this unusual and hitherto unreported type of cutting oil acne.

As a check on these findings, a similar motor manufacturing plant was visited where the same type of oil was being used in the same operation of gear grinding. Here again it was found that most of the cases of oil acne on the face occurred among operators of the Pratt & Whitney gear grinders. A few cases were also seen on other heavy cutting operations and it was ascertained that these workers had been exposed to chlorinated oils.

Samples of the oils used in this plant were analyzed for chlorine content. The analysis showed the following:

CHART 2

Oil:	*Chlorine content; percent by weight*
No. 1	0.090
No. 2	.036
No. 3	.023
No. 4	.025
No. 5 (base)	1.309
No. 6	1.085
No. 7	.027
No. 8 (base)	4.70
No. 9	.805
No. 10	.060
No. 11	.088
No. 12	.030
No. 13	.055
No. 14	.070

Numbers 5, 6, and 9 correspond to numbers 1, 5, and 6 of chart 1. Numbers 5 and 8 are base oils which are diluted before being used.

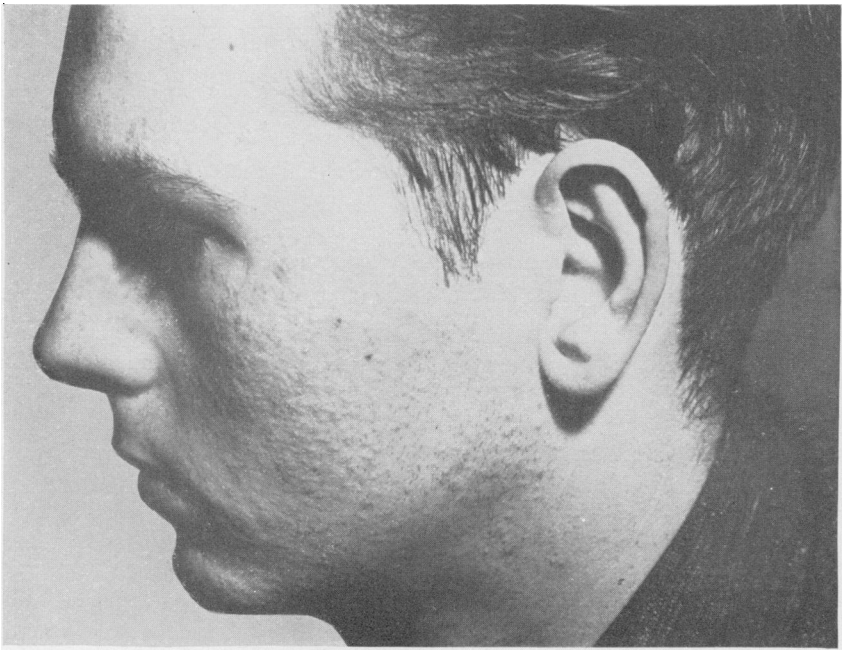

FIGURE 1-A.—Cysts of the sebaceous glands caused by chlorinated cutting oils similar to those caused by chlornaphthalenes and chlordiphenyls.

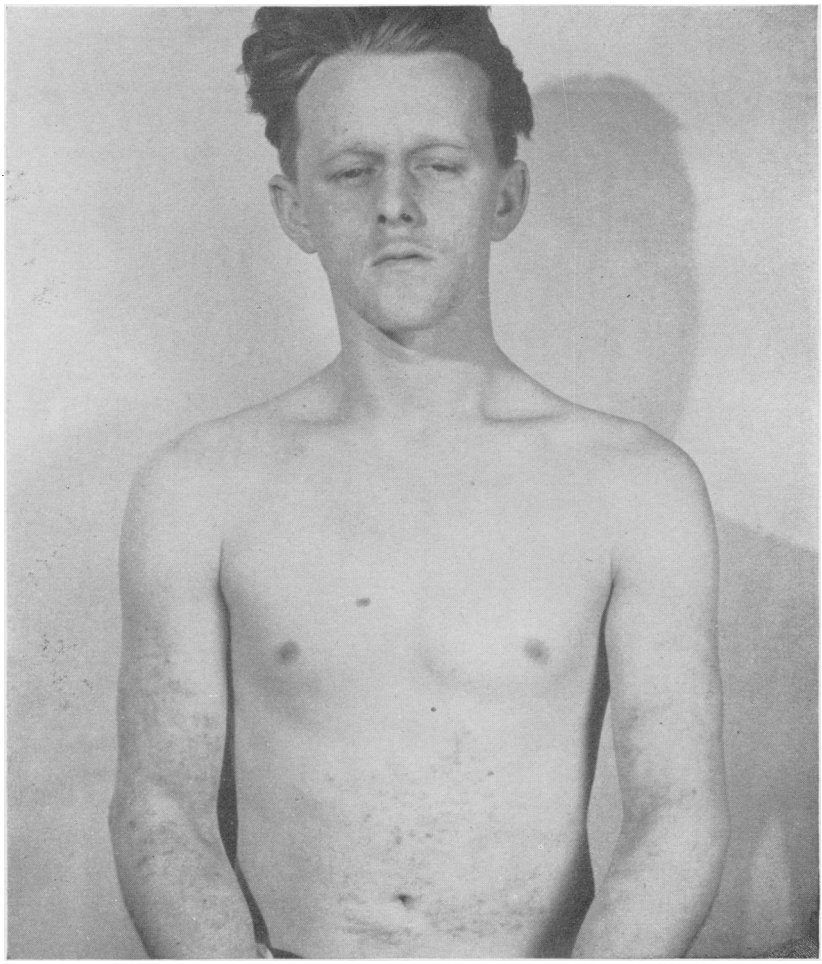

FIGURE 1-B.—Chloracne from cutting oils showing extent of lesions.

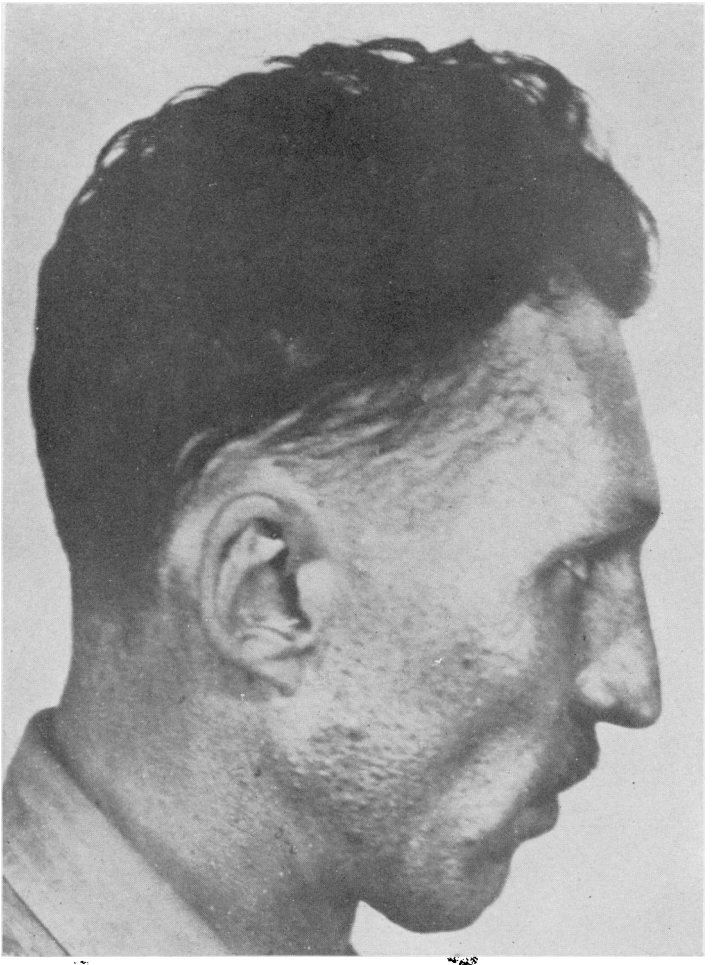

FIGURE 2.—Acne from chlornaphthalenes and chlordiphenyls. (Halowax.)

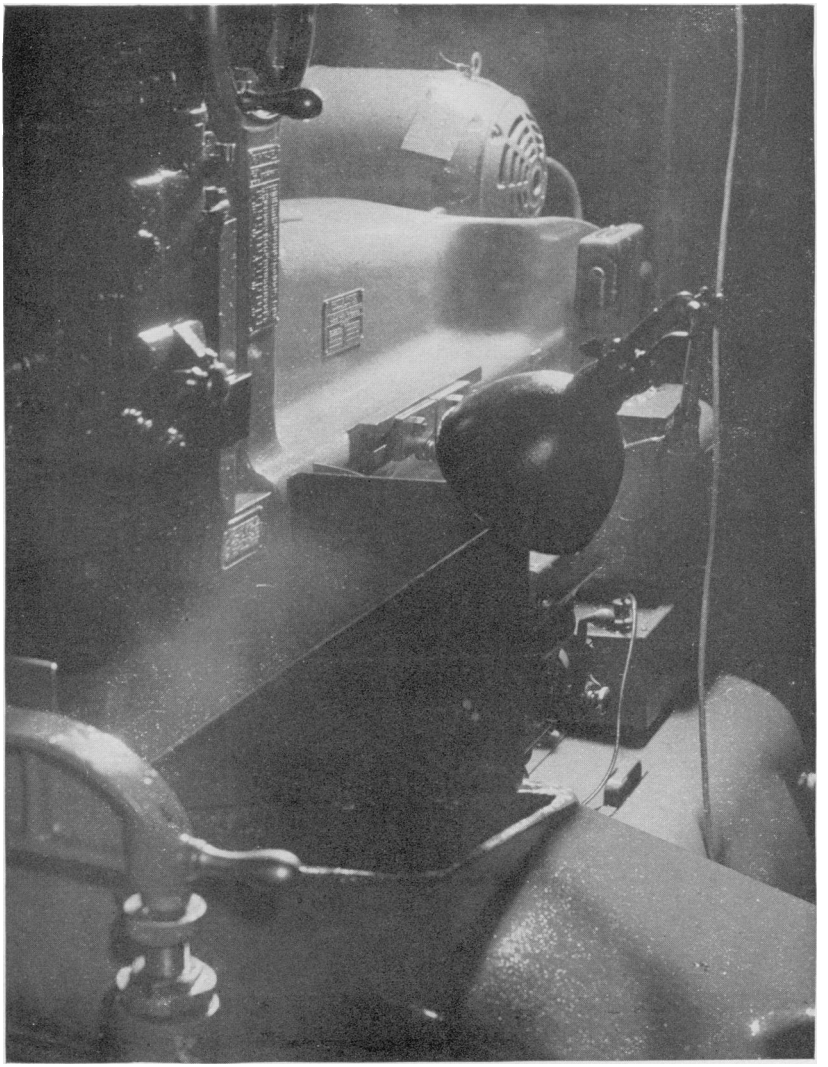

FIGURE 3.—Mist of chlorinated cutting oil occurring in heavy gear grinding operations. Note oil droplets on machine surface in right lower corner.

An analysis of No. 9 was made before and after use in heavy grinding. About 25 percent of the chlorine is given off in the grinding operation, as is shown in chart 3.

CHART 3

Oil No. 9:	*New oil*	*Used oil*
Gravity A. P. I. at 60° F	23. 20	----------
Viscosity at 100° F	109. 00	121. 00
Saponification No	49. 10	30. 30
Sulfur content, percent	0. 70	0. 70
Mineral acidity	Positive	Negative
Chlorine content, percent	0. 86	0. 53

While these investigations were going on, reports were received of similar cases occurring in two other factories manufacturing war materials. In one of these, conditions similar to those described above were found. The same chlorinated oil was used in the machines where most of the cases occurred.

The medical director of the second plant reported that oils 5, 6, and 9 of chart 2 were used on Pratt & Whitney gear grinders where the cases of face acne occurred, and that the substitution of oils free from chlorine compounds halted the occurrence of new cases.

The makers of the oils were informed of the findings and were requested to send the ingredients of the suspected oils. The following are quotations from their replies:

"* * * Oil contains approximately 6 percent sulfur and 5 percent chlorine in combination with a fatty oil. In addition we manufacture another product which contains approximately 3½ to 4 percent sulfur and 1 to 2 percent of chlorine in combination."

"* * * Oil is composed of a normally and carefully refined petroleum oil * * * with which is appropriately incorporated special fats of an animal nature, a percentage of sulfur, and an organic chlorine-bearing material."

Biopsies were taken from one of the cases and serial sections made. These were compared with biopsies from a known case of halowax acne.

Below are the reports of Dr. S. William Becker and Dr. Samuel M. Peck on the biopsies from which figures 4 and 5 were taken:

HALOWAX ACNE

H 32.—The epidermis shows some hyperkeratotic scaling over areas of relative acanthosis. The process becomes evident as one in which we have widening of follicular openings with follicular hyperkeratosis. The main pathology is in and around hair follicles, and it is these hair follicles which show the widening of their mouths and the hyperkeratosis. Large horned cysts are seen deep down in the cutis, which are evidently due to the involvement of the pilo-sebaceous apparatus in this process, as such horny cysts are surrounded by remnants of the hair structures. While some of the hairs and their attached sebaceous glands seem free of any marked amount of follicular inflammation, even in here is hyperkeratoses and enlarging of the follicular opening. In the midcutis and deeper, there can be seen dense accumulations of inflammatory exudation around

remnants of hair bulbs and hair structures, consisting of leucocytes, large mononuclear cells, many histiocytes, and foreign body giant cells. There is also seen in the papillary and subpapillary bodies throughout the section, a moderate amount of inflammatory action consisting of large mononuclear types of cells, many fixed tissue cells, and, in places, eosinophiles. These are situated around small blood vessels and free in the tissues. Evidently a great deal of pigmentation has occurred since there are many chromatophores present and relatively little inflammatory reaction in the overlying epidermis. This would indicate to me that at the time the section was taken, the process of hyperpigmentation was at an end. More data about the pigment could be deduced if sections were stained with pyronine-methyl green after being treated with silver nitrate. Sweat glands do not seem to be involved.

H 80.—The serial sections make it easier to follow the process. Here too we have essentially the same pathology as H 32, with the main seat of reaction involving the pilo-sebaceous apparatus. The rest of the epidermis shows relatively little, except for some scaling without parakeratosis. Again we see the evident widening of the follicular openings and the formation of hyperkeratotic plugs. Here too are seen horned cysts deep down in the cutis; and, in the deeper portions of hair follicles both in and around it, there is a marked inflammatory reaction. An almost tuberculoid granulation tissue is seen consisting of dense accumulations of both foreign body and Langerhans type of giant cells. Between these giant cells are many histiocytes and lymphocytes, the histiocytes in many instances having the characteristics of epithelioid cells. In the serial sections it can be seen that these horned cysts situated in the middle cutis are extensions of the enlarged hyperkeratotic follicles in which the whole follicular apparatus has been replaced by a huge invaginated structure full of horny material which has pressed against the rest of the structure causing atrophy with the resultant formation of horned cysts. Also from the serial sections it is evident that the dense mass of foreign body granulation tissue reaction is situated in and around remnants of sebaceous glands and hair bulbs.

Interpretation.—The process is analogous to acne, in that we have plugging of the follicular openings, follicular and perifollicular inflammatory reactions, and a foreign body giant reaction which is often associated in acne with the escape of sebaceous gland contents into the surrounding tissues. It differs from acne in that the plugging of the follicular openings is due almost exclusively to a hyperkeratotic process which seems to include not only the mouth of the hair follicles, but also extends downwards following the invagination into the associated structures. In acne we ordinarily have a combination of follicular hyperkeratosis and excessive secretion of the sebaceous glands. The last seems to play a very little role in this process. There is no real comedo present, but more like the follicular hyperkeratosis seen in ordinary vitamin A deficiencies.

—Dr. Samuel M. Peck.

CHLORACNE FROM CUTTING OILS

H 80.—The section consists of an elongated tissue 23 mm. long and 4.0 mm. thick in its thickest portion. Grossly, it is seen to contain several cystic structures.

Microscopic.—The stratum corneum is hyperkeratotic and loose. The hyperkeratosis extends into the orifices of both sweat ducts and follicular openings. At varying depths are cystlike structures. One such structure opens onto the surface. Inside of a broad opening the epithelium becomes greatly thinned and consists almost entirely of stratum correum, much of which has become loosened and lies free within the cystlike structure. There is very little cellular reaction about the wall of the pseudo-cyst. No sebaceous gland cells are seen in the wall.

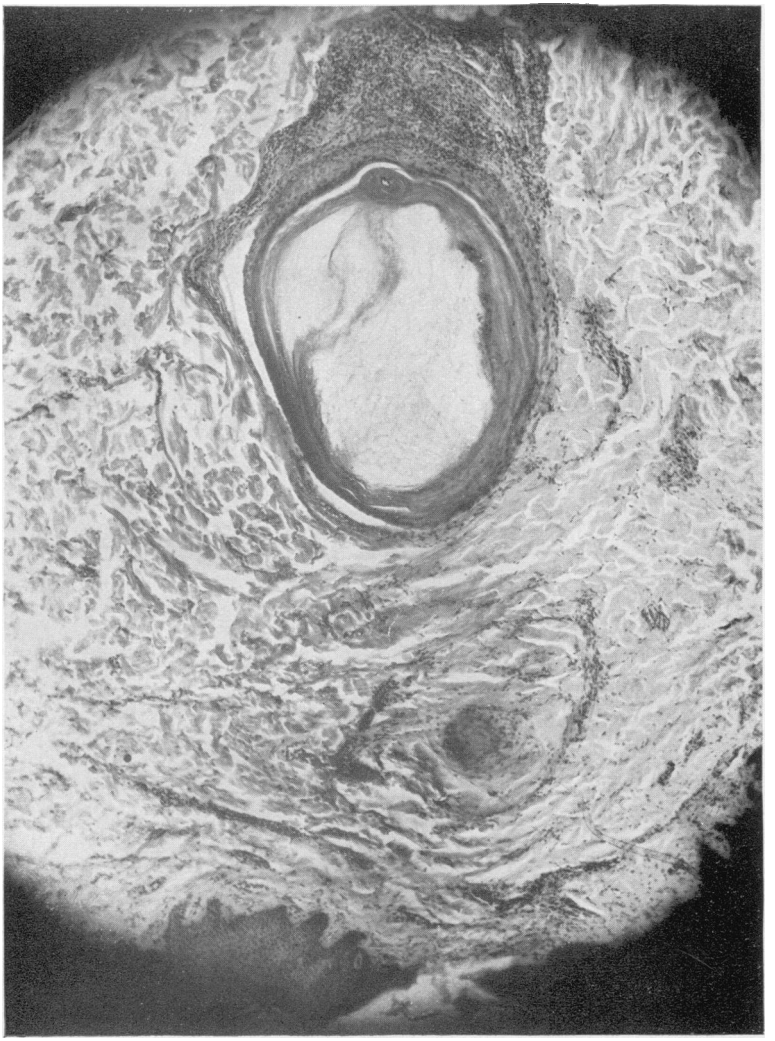

FIGURE 4.—Biopsy section of chloracne from chlornaphthalenes and chlordiphenyls. (See text for description.)

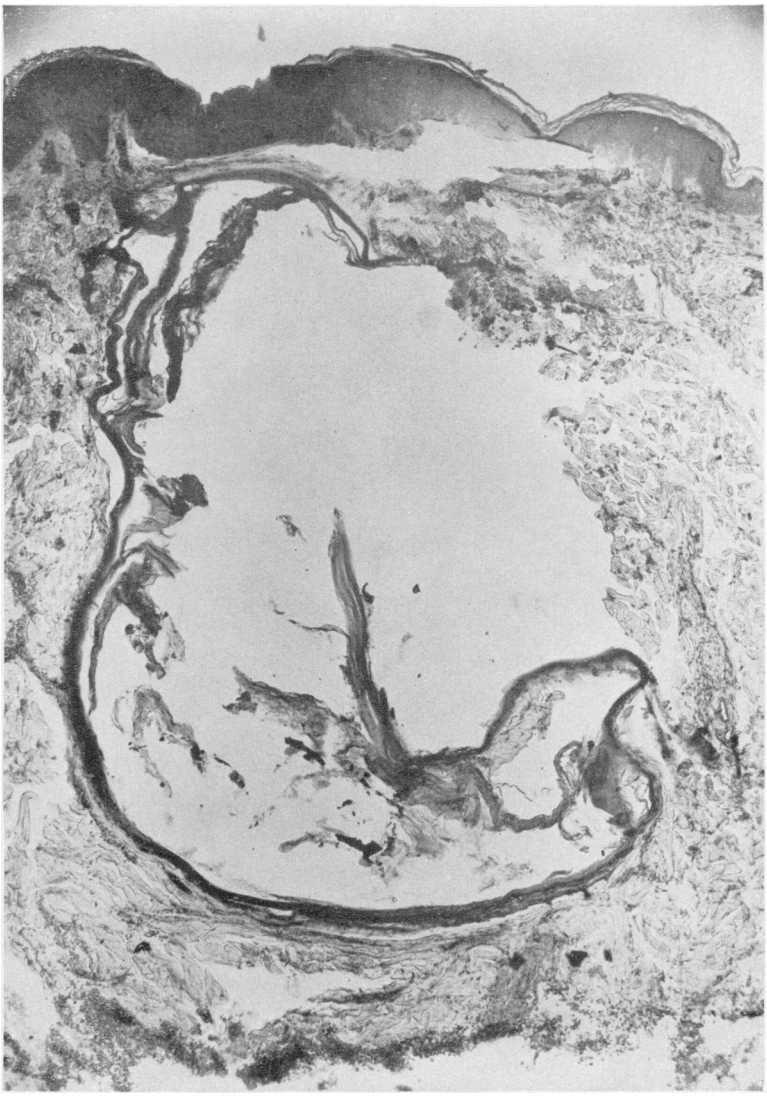

FIGURE 5.—Biopsy section of chloracne from chlorinated cutting oils. (See text for description.)

Throughout the remainder of the section are other cystlike structures with the same kind of thin epidermal lining and containing keratinized cells. In some places the cyst wall is lacking and, instead, pronounced infiltrate is present, consisting of round cells, many foreign body giant cells and some fibroblasts. Other areas present this type of infiltrate with little signs of a cystic structure save some keratinized cells. In still other areas, organization has progressed still further and the essential change is fibrosis.

A few hair follicles are seen containing small hairs. There is a round cell infiltrate about some of the sweat ducts and the glandular acini. No cystic change in the sweat structures could be seen.

Interpretation.—The essential change consists of hyperkeratosis and pseudocystic dilatation, evidently of follicular orifices. This change is identical to that seen in the so-called halowax acne.

—Dr. S. William Becker.

A typical case history is given below:

I have been employed by * * * since May 1940 as a gear grinder. I work 8 hours a day, 5 days a week. Since I have worked for * * * the only job I have held is that of a gear grinder. On this job I use a grinder all the time and I use oil constantly in this work. I don't know the analysis of this oil but the type of oil is being changed constantly and I therefore come in contact with different types of oil. The only parts of my body to come in direct contact with this grinding oil are my hands and forearms but other areas of my skin are exposed to the vapor from the grinding. On my machine I use a 14-inch grinding wheel and this wheel makes around 3,000 or 4,000 revolutions per minute. This wheel is covered with oil constantly and this causes a spray in the air at all times. In November of 1940 I noticed small pimples and red spots on both of my forearms so I reported to * * * Hospital for treatment. After 3 or 4 weeks' treatment the rash cleared up completely. The only areas of my body affected were my forearms. This rash did not return until April 1941 when it again developed on my forearms. After a few weeks' treatment it went away. In November 1941 rather good sized bumps began to appear on my face and forearms. These bumps started as whiteheads and blackheads and later they began to get inflamed. These bumps then became quite large and some of them became infected and contained pus. This condition was entirely different from the slight rash I had had previously on my forearms and I did not have the present condition until November 1941. The condition I have at present started on my face and forearms at about the same time and spread rather rapidly until it covered my entire face, parts of my forearms and upper arms, especially on the under side, and my stomach. I first reported this condition to * * * on January 27, 1942, and at that time my skin was in pretty bad condition. I have been treated by Dr. Barlow since the above date and since then the rash seems to be somewhat improved. This rash itches quite a lot and thus causes quite a bit of discomfort. I feel this condition is the result of the constant contact with the oil over a period of time. So far as I know, I did not have any cuts, abrasions, etc., that became infected and the condition started on several parts of my body at once and not at any one particular area. All the areas of my body affected by this rash were exposed directly to the oil except my stomach and I feel the oil must have soaked through my shirt to start the rash on my stomach. In addition to the exposure of the grinding oil, I am also exposed to varsol constantly. It is necessary for me to wash parts in varsol and this gets on my hands and arms. I also have to remove the varsol from the parts with an air hose and this creates a vapor or spray from the varsol. I had been working for * * * for about 18 months and was exposed to the oil and varsol constantly before the present skin condition developed.

SUMMARY

It was found that workers on cutting tools who are exposed to the mists of chlorinated cutting oils used for heavy cutting and grinding operations develop lesions on the face and other parts of the body. These lesions resemble chloracne both clinically and microscopically.

RECOMMENDATIONS

It is claimed that the oils containing organic chlorine compounds have some advantages over other oils in certain cutting operations. If this is so and they must be used, then heavy cutting operations where oil mist is given off should be vented in such a manner that the vapors are carried away and do not come in contact with the worker.[3]

Workers on such operations should be provided with clean work clothes daily and with sleeves and aprons made of a material impervious to oil.[4] They should be provided with a protective ointment of the type which forms a water-soluble, oil-repellent film for use on the face and neck, and showers after work should be compulsory and supervised.

The oil chemists of the plant should ascertain the ingredients of all cutting oils which are used and inform the safety director so that the workers may be adequately protected from those containing chlorine compounds.

The ordinary remedies for the treatment of acne vulgaris do but little good in chloracne. The treatment recommended is washing of the affected parts several times daily with a special industrial skin cleanser consisting of sulfonated castor oil, 98 parts, and Duponol W. A. Pure, 2 parts;[5] once or twice a week a number of cysts should be evacuated by incision or expression under antiseptic conditions.

LOCATION AND MOVEMENT OF PHYSICIANS, 1923 AND 1938—TURNOVER AS A FACTOR AFFECTING STATE TOTALS[1]

By JOSEPH W. MOUNTIN, *Assistant Surgeon General*, ELLIOTT H. PENNELL, *Statistician*, and VIRGINIA NICOLAY, *United States Public Health Service*

General observations concerning the distribution and movement of physicians in the continental United States during the period 1923 to 1938 were presented in a previous report.[2] Although the physician-

[3] It was found that some cutting oils also contain as much as 5 percent carbon tetrachloride.

[4] Schwartz, Louis, Warren, Leon H., and Goldmann, Frederick H.: Clothing for protection against occupational skin irritants. Pub. Health Rep., 55: 1158 (June 28, 1940).

[5] Schwartz, Louis: A new industrial skin cleanser. Pub. Health Rep., 56: 1788 (Sept. 5, 1941).

[1] Assistance in the preparation of these materials was furnished by the personnel of Work Projects Administration Official Project No. 65-2-23-356.

[2] Mountin, Joseph W., Pennell, Elliott H., and Nicolay, Virginia: Location and movement of physicians 1923 and 1938—General observations. Pub. Health Rep., 57: 1363-1375 (1942).

population ratio for the country as a whole was essentially the same at the beginning as at the end of this interval (131 per 100,000 population), the data revealed a growing disparity in the extent to which populations in States with different characteristics shared in the physician total over the 15-year period. In 1938 residents of a large group of wealthy and highly urbanized States realized provisions for medical service, as expressed by numbers of physicians, which were twice as great as those in States ranking low in terms of income and urbanization. Inasmuch as the differences had greatly increased over the study period, the question naturally arises regarding the extent to which recruitment of new registrants and subsequent physician migration affect trends in States; also whether or not increments to the profession from either source were dependent upon conditions that might be ameliorated in the interest of fostering a more equable distribution of professional resources. For this reason it seems pertinent to present additional data focused on the degree to which physician migration and recruitment of new registrants contributed to this phenomenon, and the circumstances that were associated with the turnover in selected groups of States. Since the investigation covers the period from 1923 to 1938, the findings do not reflect the influence of the war situation as it has later developed. Their main value lies in a portrayal of change that occurs under the free play of social forces during a complete economic cycle.

As was described in the preliminary report, the location of individual physicians was traced through the several directories of the American Medical Association [3] published during the study period, and listings therein were construed to indicate active participation in medical practice. Those former registrants whose names were omitted from the 1938 register are classified as having discontinued active professional work and it is assumed that in most cases they had deceased; those newly registered represent, for the most part, recent graduates.

Of note is the finding that during the study period 52,000 physicians in the continental United States left the medical profession and more than 75,000 entered this field. In addition, there were nearly 6,000 who both entered and departed from the profession without being included in the totals for either the initial or terminal year. Thus approximately 133,000 had entered or were lost from the profession. Only 94,000 physicians were included throughout the 15-year period, and of these 13,000 made one or more changes in location which involved movement from one State to another. For an average group of 100 physicians in the 1923 directory, 56 were listed in the same State, 36 had left the profession, and 8 had moved to another State by 1938; meanwhile, 8 had moved to this State and 51 new registrants

[3] American Medical Directory, eighth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, and fifteenth editions, 1923, 1925, 1927, 1929, 1931, 1934, 1936, and 1938. American Medical Association, Chicago.

had entered the profession. The net effect of these changes reflected an increase of 15.9 percent in the total number of physicians over the period, an increase almost exactly proportional to the corresponding population increase.

Without doubt a turnover of this magnitude warrants an investigation into the influences effecting so notable an interchange, particularly with reference to States in which the provisions for care were greatly modified during the period. While the differences between the additions to and the subtractions from physician totals in States represent a measure of net change that occurred, such turnover may eventuate from varied action. Physicians whose names appeared in a 1938 State list will comprise those continuously listed therein throughout the 15-year period, those who had moved thereto from another State, and others who were registered some time after 1923 and were residing therein in 1938. On the other hand, physicians listed in a given State in 1923 may have maintained constant residence in that State, separated from the profession, or moved to another State by 1938. It is apparent, then, that the loss of physicians and the recruitment to replace losses in any given State may reflect not only the balance between decedents and new registrants over the period but also the effect of migration from or to that State.

Every loss through death or removal to a foreign country will indicate the subtraction of one physician from the total for the continental United States as well as from the State in which his name was last listed during the period, while a newly registered physician will represent, at the end of the period, an addition to both the national total and the number for that State in which he was listed. On the other hand, migration between States cannot alter the number of physicians for the United States as a whole because interstate movement would neither augment nor diminish this national total. In selected States, however, it is possible that the increments arising from immigration of physicians may exceed or fall short of the decrements resulting from emigration so that a net gain or loss is derived therefrom in State totals. The net effect of the turnover entailed in the several above-mentioned factors determines both the nature and amount of fluctuation in the number of physicians in a State over the study period.

For the purposes of this study, States have been classified in one of three basic groups: (A) States in which physician totals were greatly increased (20 percent or more) during the study period, (B) States in which physician totals were slightly increased (less than 20 percent) during the study period, and (C) States in which physician totals were decreased during the study period. There were 15, 13, and 21

States, respectively, in these three categories.[4] This arrangement groups States showing similar trends in physician-population ratios. In the first category all but three States gave evidence of more generous numbers of physicians per unit of population at the end than at the beginning of the study period, and in the three States constituting exceptions the rate of population increase was sufficiently high over the period to exceed the proportionate increase in physicians so that reduced ratios were recorded by the end of the period. In the intermediate group of States ratios failed to change greatly; only a single State showed more generous facilities at the terminal than at the

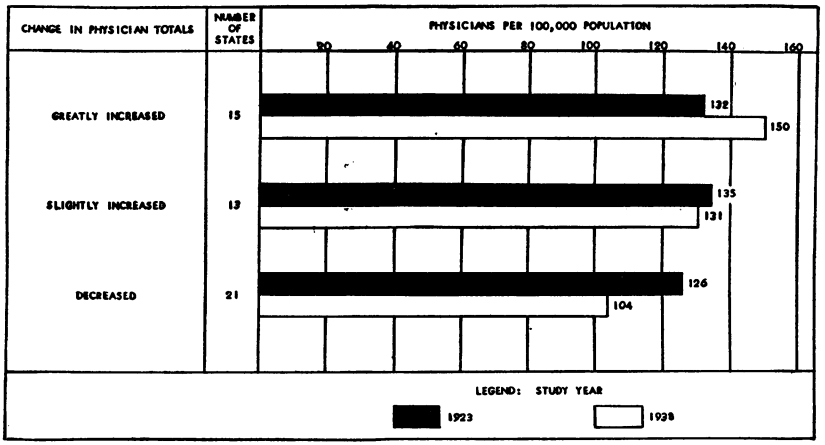

FIGURE 1.—Physicians per 100,000 population in 1923 and in 1938 for States wherein physician totals were greatly increased, slightly increased, or decreased over the period from 1923 to 1938.

initial year. In the third group, reduced physician totals were associated with declining physician-population ratios.

In 1923 the number of physicians per 100,000 population was not widely divergent between the three basic groups of States. Provisions for care in States comprising the third group were somewhat below the national average for that year, whereas slightly more generous numbers of physicians were manifest in the first and intermediate groups (fig. 1). During the period the ratio for the first group of States registered a considerable gain, for intermediate States a slight decline, and for the third group a substantial decrease.

The fraction of all physicians dropped from the profession was 36 percent for the country as a whole, and varied only between 34 for

[4] States included in the three basic groups are as follows: Group A: Arizona, California, Connecticut, Delaware, Florida, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Carolina, Rhode Island, Washington, and Wisconsin. Group B: Colorado, District of Columbia, Illinois, Louisiana, Nevada, New Mexico, Ohio, Oregon, Pennsylvania, Texas, Utah, Virginia, and West Virginia. Group C: Alabama, Arkansas, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Mississippi, Missouri, Montana, Nebraska, New Hampshire, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Vermont, and Wyoming.

States showing large physician increases to 38 in States realizing net losses in physician totals over the period. The highest percentage described States in which the total number of physicians had actually declined over the period. Further subtractions due to emigration to other States represented from 7 to 8 percent of the physicians listed in 1923. The net result of migration, however, contributed very little to the change. In States with the greatest gains, 10 physicians had emigrated from other States by 1938 for every 7 initially located therein who had moved to other States by the end of the study period. In intermediate States and in those showing decreased physician totals there was a small net loss due to migration; in both groups approxi-

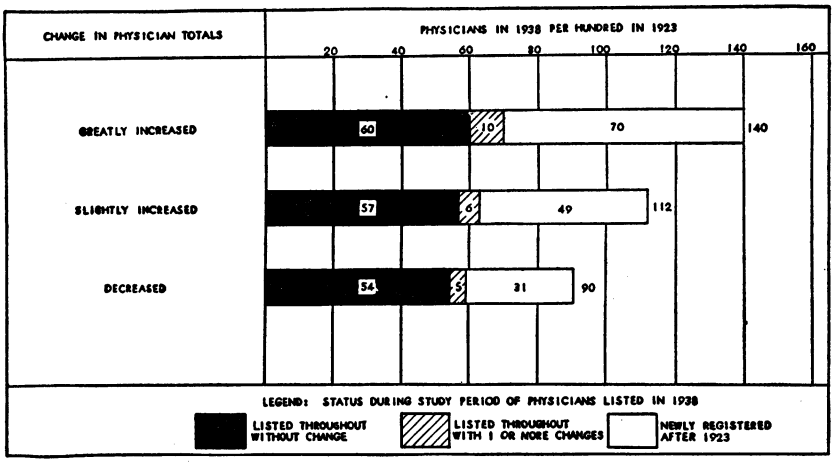

FIGURE 2.—Physicians in 1938 per 100 in 1923 for States wherein physician totals were greatly increased, slightly increased, or decreased over the period from 1923 to 1938.

mately 8 percent of the physicians listed therein in 1923 had moved to other States by 1938 while an average of only 6 and 5, respectively, had migrated to States in these two groups for every 8 who had moved away during the period.

There is evidence of a striking difference in one essential respect, namely, the number of new registrants settling in the States during the study interval (fig. 2). In States with largely increased numbers, 70 new registrants had established residence therein during the period for every 100 physicians in the State in 1923. In contrast, the corresponding addition of new registrants in States showing declines in physician totals was 31, a number less than one-half as large as that which prevailed in the former group. States in the intermediate group realized 49 new registrants for every 100 physicians in States at the beginning of the period. It would appear, then, that those States evincing greatly increased numbers of physicians gave evidence of such a great influx of young physicians that new registrants numeri-

cally dominated the total in 1938. In States where the number of physicians had been reduced from 1923 to 1938, such additions were much smaller and the final total is predominantly comprised of those physicians who were listed in the profession throughout the study period.

In States in which new registrants make up a large fraction of the total physicians it is to be expected that the average age will be relatively low, and that physician reserves measured in terms of average expected future years of practice for physicians will greatly exceed those in areas where the physician group indicates smaller fractions of recent graduates. In a significant manner does the median age of physicians located in the three basic groups of States at the end of the study period demonstrate these differences. Where the largest gains occurred the median age was 43 years, where physicians increased to a lesser extent the median was 49 years, and in States where net losses in physician totals occurred the median was 53 years. Accordingly, it is evident that there was a spread of 10 years between the median ages for the three groups of States. Such a spread would indicate that those States in which the increment of new physicians was proportionately small are faced with important recruitment problems in the future if the level which even now exists is to be maintained.

In brief, the findings thus far presented reveal that in States with expanding physician totals the losses from the profession during the period represented 34 per 100 physicians in 1923, there was no significant change through migration, and 70 new registrants were located in these States in 1938 for every 100 physicians residing therein in 1923. The median age of physicians in these States was 43 years. At the other extreme, States with net decreases in physicians during the interval lost 38 from the profession and in addition realized a net loss of 3 physicians through migration, but obtained only 31 new registrants for every 100 physicians in 1923. In these States the median age of physicians in 1938 was 53 years. These large differences in the recruitment of young physicians and the resulting contrast in age distributions among the three groups of States suggest that unless methods are devised and employed to promote an increased acquisition of young physicians in States heretofore showing net losses, the disparities may become more pronounced in years to come. The physician-population ratios for these States not only were below those for other States, but the median age indicates that a high fraction of physicians was in the older age groups.

In the preliminary report of this series it was shown that highly urbanized and wealthy States shared to a much larger degree in the physician total at the onset of the study period than did other States, and the disparity between physician-population ratios became even

more accentuated by 1938. This suggests that the relative ability of populations in States to purchase needed medical care has an important bearing upon any steps which might be taken to stimulate a more equable distribution of physicians. There were, however, ample poor States and sufficient relatively wealthy ones in each basic group to make practicable comparisons for wealthy and poor States, thus isolating the influences other than wealth of States which contributed to the proportionate changes in physician totals over the period. In figure 3, States occupying the upper half of the array based on per capita income in 1930 [5] are referred to as wealthy, while

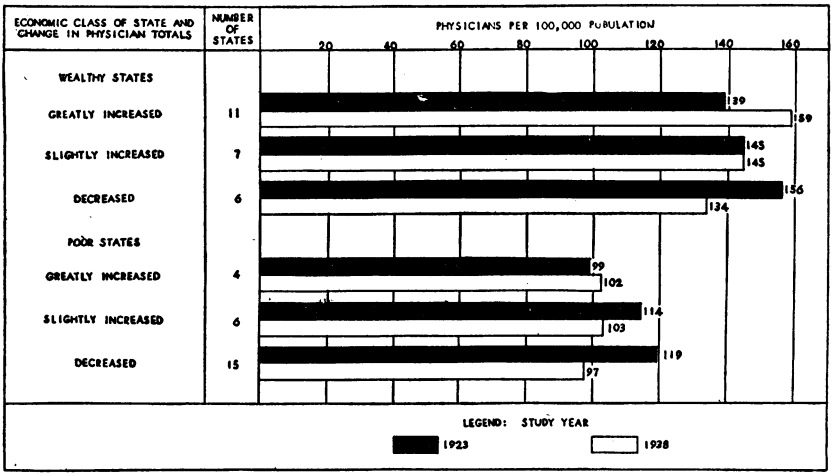

FIGURE 3.—Physicians per 100,000 population in 1923 and in 1938 for wealthy and poor States wherein physician totals were greatly increased, slightly increased, or decreased over the period from 1923 to 1938.

those below the median State are considered to be poor, although the use of these terms is intended to denote relative ability to purchase medical care rather than any precise definition of wealth.

At both the initial and terminal years of the study period the number of physicians per unit of population was much greater in wealthy than in poor States for each of the three basic groups. Where physician totals showed gains of 20 percent or more, the physician-population ratios increased from 139 to 159 per 100,000 population in wealthy States as contrasted with a slight increase from 99 to 102 in poor States. Where increases were less than 20 percent, the 1923 ratio of 145 for wealthy States showed practically no change over the period, whereas in poor States the ratio declined from 114 to 103. Where declining physician totals were recorded, less favorable ratios were found at the termination of the 15-year period in both wealthy and poor States; in the wealthy group the change from 156 to 134

[5] Classification of States based upon figures published by Frederick M. Cone, U. S. Department of Commerce, "Per capita income payments by States, 1929–40."

still reflected a less pronounced decline than did the change from 119 to 97 in poor States.

For both wealthy and poor States in a given basic group there was a marked similarity in the extent to which migrating physicians, physicians dropped from the profession, and new registrants contributed to the trends in physician totals; however, the pattern of trend described by these factors operated at a much lower level in the poorer States. The proportion of those physicians who were listed in 1923 but dropped from the profession by 1938 varied only slightly, the fraction in both wealthy and poor States being about one-third where gains in physician totals were large, 35 to 36 percent where

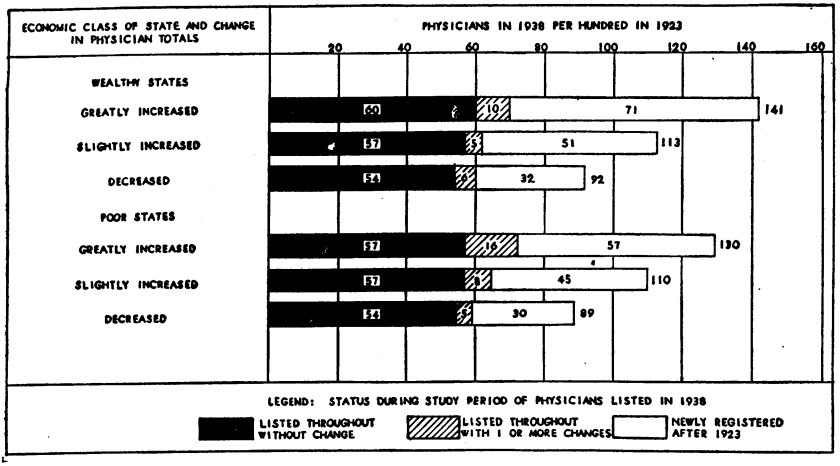

FIGURE 4.—Physicians in 1938 per 100 in 1923 for wealthy and poor States wherein physician totals were greatly increased, slightly increased, or decreased over the period from 1923 to 1938.

there were gains of less than 20 percent, and about 38 percent where the total was reduced over the period. The fraction of the physicians listed in 1923 who were listed in the same State in 1938 was likewise little altered by differences in State per capita income, nor was the net change through migration affected in any large degree.

Income differences did somewhat affect the number of new registrants in States in 1938 per 100 physicians who resided there in 1923 (fig. 4). Where physician totals showed large increases, 71 new registrants had been added in wealthy States as contrasted with 57 in poor States. In intermediate States the corresponding new registrants were 51 in wealthy and 45 in poor States, and wealthy States showing declining physician totals recruited only 32 new registrants per 100 physicians in 1923 as contrasted with 30 in poor States.

Thus, the findings presented reveal that States with high per capita incomes realized much more generous provisions for medical care than did those with low incomes. Nevertheless, there were among this group

certain States with fewer physicians at the end than at the beginning of the study period. Among the poor States, on the other hand, there were certain ones that realized increases in physicians over the period, and where these increases were large the ratio of physicians to population reflected more generous resources at the end than at the beginning of the study period. In both wealthy and poor States the nature and extent of change in physician totals largely reflected the degree to which the number of new registrants recruited during the period overbalanced or failed to equal losses from the profession.

The high degree to which large increases in physician totals appeared to be associated with the recruitment of new physicians suggests that

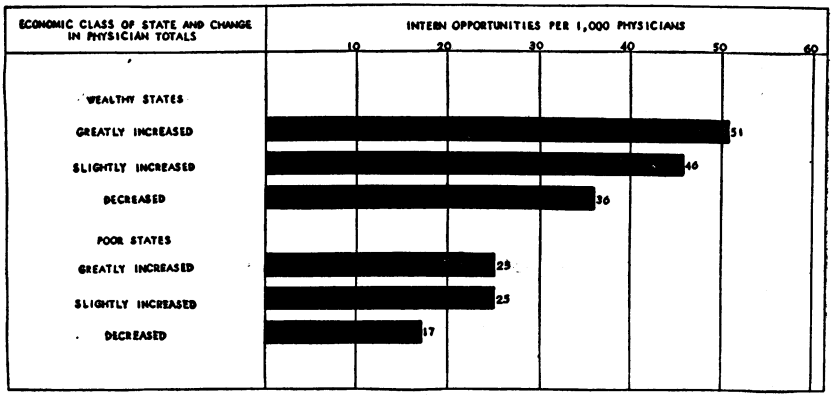

FIGURE 5.—Intern opportunities per 1,000 physicians in 1931 for wealthy and poor States wherein physician totals were greatly increased, slightly increased, or decreased over the period from 1923 to 1938.

this phenomenon was perhaps related to the extent of physician training facilities in States. A count of the number of internships in States has been used as a measure of these training facilities. These data are readily available from the material published annually by the American Medical Association [6] regarding hospitals approved for the training of interns. The total opportunities for internships in 1931 (mid-period year) have been related to total physicians (in thousands) for the corresponding year as a simple measure of the extent of such facilities with respect to the problem of recruitment (fig. 5).

The findings clearly demonstrate that in both wealthy and poor States relatively extensive training opportunities were associated with increased physician totals over the period, whereas States showing decreasing physician totals provided more limited accommodations for the training of interns. Inasmuch as increases in physician totals largely reflected the balance of new registrants over the number of physicians lost from the profession, it seems likely that the extent of

[6] Statistics obtained from "Hospitals approved for internships" as presented by the Council on Medical Education and Hospitals of the American Medical Association. J. Am. Med. Assoc., 97: 629–637. (August 29, 1931).

training opportunities contributed very materially to differences in recruitment.

SUMMARY

The data presented indicate that, at the State level, trends in physician totals largely reflected the degree to which young physicians were recruited to replace losses from the profession. The net effect of subsequent migration of physicians contributed in only a very small way to the changes which occurred.

Where large gains in physicians were evident, the median age at the end of the period was approximately 10 years below that for States in which the physician total declined.

In every comparison, wealthy States realized more generous provisions for care than did poor States in the same basic group. Where increases occurred, whether in wealthy or poor States, the gain largely reflected the balance of new registrants over the losses from the profession during the study period.

States showing gains in physicians during the interval likewise realized a higher ratio of opportunities for the training of interns per 1,000 physicians in 1931 than did those where losses occurred. While the apparent influence of this factor failed to effect the equalization of facilities between wealthy and poor States, the findings reveal that a few poor States as well as numerous wealthy ones provided relatively generous opportunities for the training of interns and were able to attract sufficient new registrants to realize some gain not only in the total number of physicians but also in their physician-population ratios over the study period. On the other hand, a few wealthy as well as numerous poor States provided less generous training opportunities and especially these failed to attract sufficient new physicians to balance losses from the profession during the period 1923 to 1938.

A DISABILITY TABLE FOR URBAN WORKERS [1]

By HAROLD F. DORN, *United States Public Health Service*

The National Health Survey, conducted during the winter of 1935–36, obtained the first comprehensive data concerning the amount of disabling illness in the urban population of the United States. Prior to this survey the only existing information was based upon a number of limited investigations of illness in selected groups of the population and upon the records of a few sick benefit associations and group health and accident insurance plans. The National Health Survey, by means of a house-to-house canvass of over 700,000 households in urban

[1] From the Division of Public Health Methods, National Institute of Health. Assistance in the preparation of these data was provided by Work Projects Administration Official Project Nos. 712150–658/9999 and 765–28–3–10.

communities and 37,000 households in rural areas, attempted to collect a variety of information concerning the amount of illness in the population, including all illnesses which kept a person from work, school, or other usual activity for 7 or more consecutive days during the 12 months immediately preceding the date of the canvass. It is the latter data, hereinafter called disabling illnesses, which are the subject of this paper.

A detailed description of the method and techniques of the survey is given elsewhere (*1*) and will not be repeated here except for a few definitions necessary for the correct interpretation of the subsequent analysis. By workers is meant (*a*) persons employed by private establishments and by governmental agencies, (*b*) unemployed persons engaged on work-relief programs, and (*c*) unemployed persons seeking work. Employment status was recorded as of the date of enumeration. Persons reported to have a chronic disease or permanent impairment which prevented them from working or seeking work were excluded from the working population.

Disability was defined as inability to work, attend school, care for home, or carry on other usual activities because of disease, accident, or physical or mental impairment. Disabling illnesses of 1 day or longer were recorded, provided the person was still unable to carry on his usual activities on the day of the visit. Otherwise, only illnesses disabling for 7 or more consecutive days were recorded. Fatal cases, hospital cases, and confinements were recorded irrespective of the duration.

Certain classes of persons were excluded from both the population and illness records. These included persons in penal institutions; residents of Army and Navy posts, orphanages, and homes for the aged; persons in hotels, rooming houses, and missions who had not been at their present abode for a month or longer. Persons who had been away from a given household for a month or longer on the date of the visit were excluded from the roster of that household because the informant could not be expected to be cognizant of their illnesses. In addition, there is evidence that a number of males between 20 and 45 years of age were not enumerated.

The illnesses discussed here include only those of urban workers 15–64 years of age. The onset must have been during the year previous to the date of enumeration and the duration of disability must have been 7 consecutive days or longer. The illness record of each person disabled on the day of the visit was modified in a manner to be described hereafter. Illnesses for which workmen's compensation was claimed have been excluded. Because of the serious underenumeration, fatal cases have also been excluded.

A question may be raised concerning the reliability of disability data collected by means of a single house-to-house canvass. The

principal errors in information collected in this way may be grouped into those resulting from the underenumeration of illness (especially terminated illnesses of short duration and those terminating in death) and those resulting from misstatement of the duration of disability. The former is the more serious type of error since it affects both the slope and the ordinates of the disability curve; the latter type of error may affect the slope of the curve if the misstatement is very great, but usually this kind of error can be successfully corrected by proper grouping and graduation of the data.

Even though the illnesses recorded were restricted to those causing disability for 7 or more consecutive days unless the person was still disabled on the day of the visit, there is evidence of failure to report an appreciable number of cases of short duration. The particular methods used to compensate for underenumeration will be discussed later.

All illness data regardless of the manner of collection are subject to the fundamental limitation that even though everyone "knows" what an illness is no one has been able to define it in unequivocal terms which will have the same meaning under all circumstances. Few, if any, persons are biologically perfect or have a body which, physiologically, functions perfectly for long periods of time. But when shall any malfunctioning be termed an illness? Since illnesses result from conditions which may be largely, if not entirely, subjective as well as from obvious objective factors, in actual practice an illness exists when the person affected thinks that it does. Moreover, factors other than the mere presence of an ailment frequently influence a person's decision as to whether disability does or does not exist. For example, workers who receive sick leave with full pay would be expected to report more disabling illnesses than workers whose wages are lost by absence from work.

Even the number of "permanently disabled" persons is altered by conditions other than the presence of disability. One obvious factor is the extent of vocational rehabilitation. Another factor is the necessity for earning a living. A recent report of the Department of Health of Scotland (*2*) reveals that the number of chronic cases applying for sick benefits tends to fluctuate directly with the amount of unemployment. It should not be inferred from these statements that disability is a mere figment of the imagination. There are illnesses which disable regardless of the economic condition or attitude of the person affected. But in addition to these illnesses there are others which may or may not be considered as disabling, depending upon circumstances other than the fact of illness itself.

It is implicit in the discussion which follows that a given population group whose characteristics remain relatively fixed and which is subject to stable environmental influences will give rise to approximately the same amount of disability each year. Moreover, the number of

cases of disability which arise will form a smooth frequency curve when classed by duration; this curve, which can be plotted when the necessary parameters have been estimated, will be spoken of as the distribution curve of disability.

If the illnesses existing in a population during an arbitrary interval of time which is shorter than the duration of the longest case of illness are recorded, four classes of cases will occur. First, there will be cases with onset prior to the beginning of the period of observation and which terminate during the period. Second, there will be cases with onset prior to the beginning of the period and which are still disabled at the end of the period. Such cases are essentially permanently disabled if the period of observation is sufficiently long. Third, there will be cases with onset within the period and with termination before the end of the period. Fourth, there will be cases with onset within the period but which are still disabled at the end of the period.

No one group of these cases will give a correct representation of the distribution curve of disability. The first, second, and fourth will include a disproportionate number of cases of long duration while the third will include relatively too many cases of short duration. For example, the report of the Scottish health insurance system for 1936–37 (*2*) showed that while the unrecovered cases were only 6.4 percent of the total number of cases arising during the year, they contributed 21.3 percent of the total days of disability. If the true distribution of cases by duration is to be established, some procedure for combining these four types of cases is necessary.

Since this method of collecting data will not yield complete information concerning cases with duration longer than the period of observation, in this case 12 months, such cases have been omitted in the following discussion. The cases with onset prior to the beginning of the period of observation but which terminated during the period have also been eliminated since it is apparent that the correct distribution curve will be given by the cases arising within the period, provided that those which terminate and those which are still disabled are properly combined.

An additional reason for excluding both types of cases with onset prior to the beginning of the period of observation arises from the fact that the purpose of this analysis is to determine the incidence and not the prevalence of disabling illness. The incidence rate must be based upon cases developing during the period of observation and must exclude cases existing at the beginning of the period.

The distributions by duration of the two types of cases arising during the period of observation should not be added because the recorded duration of the unrecovered cases is less than the true but unknown duration which would be obtained by following the cases till completion. The method of combining the cases used here is based upon two

assumptions: first, that the population is stationary, i. e., fixed in number and composition, and, second, that there is a fixed pattern of illness duration which recurs uniformly with time. If desired, the second assumption could be modified to take account of the seasonal variation in illness but such modification did not seem necessary.

The period of observation covered by the survey was 1 year and the smallest unit of time for recording the duration of an illness was 1 day. In the absence of any enumerators' instructions concerning this particular point, it was decided to assume that illnesses existing on the day of the visit were recorded as being ill for the complete day. Theoretically this procedure would record as unrecovered all cases terminating on the day of the visit.

Since a fixed pattern of illness by duration is assumed to arise uniformly with time, if all cases arising during an arbitrary period of observation of N units of time, in this case 365 days, could be followed to termination, the number of cases of each duration would be N times the assumed distribution curve of duration. In other words, the cases arising during any given day if followed to completion are assumed to be distributed by duration according to the distribution curve of disability characteristic of the population. Now consider the cases arising during the period. The exact duration of all cases which recover will be known; the number of such cases is given in column 2 of table 1. All cases of duration equal to the unit of time, i. e., 1 day, will recover except those ill on the day of enumeration. Consequently there will be $(N-1)F_1$ recovered cases with duration equal to 1 day. The frequency of cases of other durations is obtained in a similar manner.

Now consider the cases still disabled on the day of enumeration. The frequency of unrecovered cases by attained duration is given in column 3 of table 1, and is computed in a manner similar to that of the recovered cases. For example, since the cases arising on the last day of the period of observation, that is, those with an attained duration of 1 day, are assumed to be representative of the distribution curve of disability of the group, they will include cases of each duration. Cases with an attained duration of 2 days will include those arising during the day prior to the day of the visit and will include cases of all durations of 2 or more days. Column 4 contains the first differences of the frequencies in column 3, and column 5 is the product of each first difference by the corresponding duration. The sum of the frequencies in columns 2 and 5 yields the desired distribution of cases by completed duration and is entered in column 6.

If the durations are tabulated in class intervals the above procedure must be modified when dealing with the unrecovered cases. For illustrative purposes it will be assumed that the data are grouped in

intervals of five units of time but this is quite arbitrary for the groups need not be of equal length.

TABLE 1.—*Number of cases of illness by duration and stage of recovery arising during an arbitrary time interval of N units of time*

Duration D_i	Recovered cases	Unrecovered cases			All cases
	Frequency F_i	Total	First difference Δ	$D_i\Delta$	Recovered cases plus $D_i\Delta$
(1)	(2)	(3)	(4)	(5)	(6)
1	$(N-1)F_1$	$\sum_1^N F_i$	F_1	F_1	NF_1
2	$(N-2)F_2$	$\sum_2^N F_i$	F_2	$2F_2$	NF_2
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
i	$(N-i)F_i$	$\sum_i^N F_i$	F_i	iF_i	NF_i
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
$N-1$	F_{N-1}	$F_{N-1}+F_N$	F_{N-1}	$(N-1)F_{N-1}$	NF_{N-1}
N	0	F_N	F_N	NF_N	NF_N

The values of F_i represent the unknown curve of the distribution of illness by duration and must subsequently be determined from the data.

Let $f_i = \sum_i^N F_i$, that is, the frequency of unrecovered cases of the i^{th} duration as shown in table 1, column 3. If the data in table 1 are grouped into 5-day groups the new table would start as follows:

Duration	Frequency of cases unrecovered on the day of the visit	Frequency when terminated
(1)	(2)	(3)
1–5	$f_1+\ldots.+f_5=S_1$	$1f_1+f_2+f_3+f_4+f_5-5f_6$
6–10	$f_6+\ldots.+f_{10}=S_2$	$6f_6+f_7+f_8+f_9+f_{10}-10f_{11}$

The total frequency of unrecovered cases of the j^{th} class interval, S_j, is known even though the individual components are not. The problem is to obtain the frequency of completed cases shown in column 3 above. For the second group, 6–10, the frequency of completed cases is given by $S_2+5f_6-10f_{11}$ and in general if,

L_j=upper limit of the j^{th} class interval

S_j=frequency of observed cases in the j^{th} class interval

f_j=frequency of lower limit of the j^{th} class interval

the number of recovered cases $=S_j+L_{j-1}f_j-L_jf_{j+1}$.

For the first class interval, the number of recovered cases is $S_1 - L_1 f_2$.

For the last class interval, the number of recovered cases is $S_k + L_{k-1} f_k$.

The only unknown quantity in these expressions is the frequency of the shortest duration in each class interval. This can be estimated in any convenient manner. A simple method would be to plot the cumulative distribution of the frequencies in the class intervals and read the desired frequency from the graph. Otherwise some interpolation formula could be used, or a curve could be fitted to the data.

After the unrecovered cases had been redistributed by duration as described above and combined with the recovered cases, the next task was to express the results in the form of a disability table. This task was somewhat complicated by the condensed form in which the data were tabulated. The class intervals shown in table 2 were chosen at the time of coding because of the tendency to report durations in terms of weeks and months.

It will be noticed that the distribution curve by duration is a reversed J shape with a large proportion of the area under the curve concentrated over a relatively short range of durations at the beginning of the curve. Various methods of subtabulating the data were tried, none of which proved especially satisfactory. Supposedly, a Pearson type I curve could be used but the higher moments calculated from a distribution of this nature are exceedingly unreliable and, furthermore, the labor of computing the subareas of the curve, providing a satisfactory fit could be obtained, is so excessive as to render this procedure impractical. Moreover, it seemed desirable to use a less broad grouping of the data.

TABLE 2.—*Number of cases of nonfatal disabling illness among urban workers aged 15–64 years, National Health Survey, 1935–36*

Sex	Duration in days										
	7–10	11–17	18–24	25–44	45–74	75–99	100–134	135–224	225–344	345–365[a]	Total
Male	14,688	11,830	6,878	9,721	5,278	2,273	1,697	1,886	1,063	2,241	57,555
Female	7,103	6,324	4,009	5,695	2,925	1,134	819	859	438	839	30,145

[a] Due to an oversight in the redistribution of unrecovered cases by duration, the cases placed in this group were in reality of 345 and more days duration.

The respective populations were 705,660 males and 265,960 females; 90.2 percent of the males and 84.2 percent of the females were white.

The frequencies were cumulated in a more-than distribution in order to concentrate the data at isolated points, and the resulting distribution was plotted on double logarithmic paper. This had the effect of stretching the original distribution so that it departed only slightly from a straight line over any short section of the curve. A smooth curve was then passed through the points by means of a flexible ruler; frequencies were read from the curve in 3-day intervals for the first

52 days and in 21-day intervals thereafter. Decumulation of these frequencies resulted in a distribution of cases by duration such that the sum of the frequencies up to any point corresponding to one of the class interval boundaries of the original distribution was equal to the corresponding sum of the original frequencies up to that point. Thus the data were subdivided without essentially altering the general shape of the original distribution. Both the 3-day and the 21-day group frequencies were subdivided to thirds by a suitable interpolation formula.[2] The result was a distribution of cases by duration by 1-day intervals up to 28 days and by weekly intervals thereafter.

When these data were plotted on double logarithmic paper it was found that the points could be approximated by a straight line except at the two ends of the distribution where the points fell definitely below such a line. The deviation at the long durations is to be expected because of the exclusion from the population at risk of persons in institutions (persons only temporarily in hospitals were not excluded) and persons who were chronically disabled. It is possible that the exclusion of fatal cases also may have unduly affected the number of long duration cases. The deviation at the other end of the curve was noticeable at about 28 to 30 days' duration and became progressively greater as the durations became shorter. It seemed evident that this was the result of underreporting of cases of illness of less than about 4 weeks' duration.

Because of the evident bias in the data for the short and the extremely long durations it was decided to determine the parameters of the frequency curve of duration of illness from the number of cases between 28 and 189 days, inclusive. The upper limit of 189 days was chosen because many disability benefit plans terminate on or before the twenty-sixth week, which, with a 7-day waiting period, makes 189 days.

In order to obtain a complete disability curve, it was decided to fit a frequency function to the observed data lying between 28 and 189 days and then extrapolate this function backward to the first day and forward as far as durations of 1 year. It is not claimed that the resulting disability curve is an accurate representation of the unknown basic curve for this population. There is no way of either proving or disproving such a claim without an accurate and complete determination of the number of cases of disabling illness by some independent method. It is merely asserted that the curve determined in the above manner is closer to the unknown basic curve over the entire range of durations from 1 day to 1 year than are the original data as collected in the survey. Since the basic curve is a reversed J shape the largest differences between it and the curve determined in the above manner would be at the short durations.

[2] The author is indebted to Dr. Max Sasuly for developing the interpolation formula used in the subtabulation.

The accurate representation of a J-shaped distribution by a frequency curve presents a number of difficulties when the frequencies are given in class intervals. The usual procedure of computing the arithmetic mean of the frequency for each class interval and fitting the curve to these values, using the midpoint of the interval as the value of the independent variable, is not especially satisfactory. Moreover, some quadrature formula must usually be used to determine the areas after the parameters of the curve have been determined since midordinates are only roughly approximate to areas.

It was decided to fit a curve to the frequencies expressed in weekly class intervals in such a way that the sum of the square of the difference between the area under the curve between two points and the area of the corresponding rectangle of frequency would be a minimum.[3] If x_{i-1} and x_i are the lower and upper limits of any class interval and $y_{i-\frac{1}{2}}$ is the ordinate at the midpoint, $x_{i-\frac{1}{2}}$, this is equivalent to minimizing

$$\sum_{i=1}^{n}\left\{(x_i-x_{i-1})\ y_{i-\frac{1}{2}}-\int_{x_{i-1}}^{x_i}f(x)\,dx\right\}^2$$

The curve chosen was $f(x)=ax^b$ where b has only negative values. Actually a curve of the form $\frac{a}{c+x^b}$ would have been preferable since the former becomes infinite when x is zero and b is negative. However, there is no simple way of evaluating the integral of the latter curve except for special values of b so that it could not be used.

Since $f(x)$ is not linear in its parameters the integral was evaluated and the result expanded in a Taylor series about preliminary values of a and b. The linear terms of this expansion were inserted in the above expression and the necessary equations for a minimum evaluated. A disability table prepared in this way is presented in table 3.

Exclusive of disability on the day of onset of illness the number of days of disability from nonfatal illness per person per annum was nearly 60 percent greater for female than for male workers: 6.3 days as compared with 4.0 days (fig. 1). The greater amount of illness reported for females as compared with males is in agreement with the results of other studies of morbidity. Another way of expressing the difference in morbidity is to consider the average number of claims existing on a given date under an insurance plan paying benefits beginning with the second day of disability and terminating at the end of the three hundred sixty-fourth day. The average number of claims per 100,000 population would be 1,723 for females and 1,096 for males.

It will be noted that the greater amount of disability among female

[3] The author is indebted to Dr. W. Edwards Deming for calling his attention to "Note on interpolation," by Jan K. Wisniewski, J. Am. Statistical Assoc., 25: 203 (1930), where this procedure is suggested.

workers results from a relatively larger number of cases of short duration (columns 2 and 3). However, this excess amount of disability among female workers decreases fairly rapidly so that at the longer durations the male and female rates are practically equal. By the end of the twenty-sixth week the case rate among females is only 17 percent greater than the corresponding rate among males, and by the forty-fourth week there is essentially no difference in the rates.

It will be instructive to compare the amount of disability reported

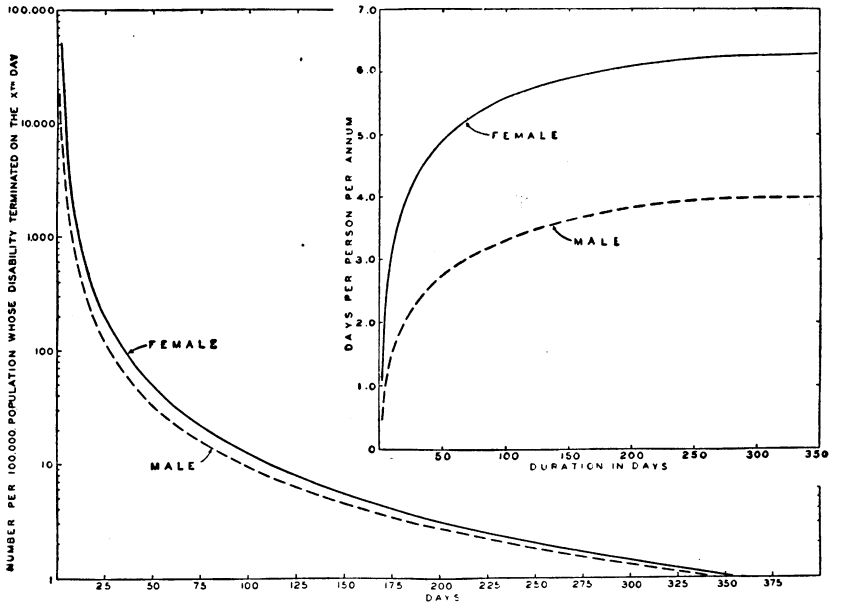

FIGURE 1.—Number of cases of nonfatal illness per 100,000 population with disability terminating on the x^{th} day and the average number of days of disability per person per annum, male and female, National Health Survey, 1935–36.

for this population with that recorded by various sick benefit and group sickness insurance plans. Before doing so, however, it is well to indicate some factors affecting disability data obtained by various methods.

As was pointed out above, it is, for all practical purposes, impossible to define either disabling or nondisabling illness in such a way that the number of cases reported by a given group of the population is not influenced by social and economic conditions. In preparing the disability data presented in table 3 it was assumed that the fundamental

curve of the incidence of disabling illness by duration was a uniformly decreasing function. In addition to theoretical reasons for believing this to be true there also are illness records which support this belief. But the particular circumstances under which any given sick benefit plan is carried on may materially alter the shape of the disability curve, especially at the short durations.

The method of selecting employees by the industries covered by the plan will influence the amount of disability. This is especially true if physical examinations are required or if persons with certain diseases are excluded. Moreover, the nature of the work and the working conditions also affect illness rates by selection of workers of particular physical types and by increasing the incidence of selected causes of illness. The shape of the disability curve at the short durations is determined to a large extent by the amount of respiratory diseases. The incidence of such diseases not only fluctuates from year to year but is also greater in some occupations than in others. Moreover, the attitude toward acute respiratory infection is changing and it is becoming more common for persons with such ailments to remain at home. Since the shape of the disability curve for individual diseases varies widely, factors which tend to increase the incidence of particular diseases will alter the general shape of the curve for all illnesses combined.

The relative burden of the cost of illness and the loss of wages affects the amount of disability, especially at the short durations. There is some evidence that the amount of disability is also affected by whether or not compensation is given (*3*). The results of insurance company group morbidity investigations indicate that the relative number of claims for short duration disability is influenced by the length of the waiting period and that this influence persists for durations of as much as 2 to 3 weeks after the end of the waiting period (*4*). In addition to these and other factors, variations in age, sex, and similar characteristics also affect disability rates.

Furthermore, it is important to bear in mind the special limitations of the disability data presented in table 3. The amount of disability has been decreased by the exclusion of data for persons permanently disabled, persons in institutions, workmen's compensation cases, and cases of fatal illness. The extent to which underreporting of disability has been corrected by the procedure used in preparing the disability table is also unknown.

TABLE 3.—*Disability table for nonfatal illnesses among urban workers aged 15–64 years, by sex, National Health Survey, 1935–36*

Duration in days x_1—x_2	Number per 100,000 whose disability ended during duration x		Number per 100,000 with disability of duration x or more		Number of days of disability per person per annum from disability of duration x or less		Average prevalence of disabled cases of duration x or less per 100,000 population	
	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9
1–2	18,811	52,659	44,097	107,229	0.44	1.07	121	294
2–3	7,061	17,858	25,286	54,570	.69	1.62	189	443
3–4	3,799	9,025	18,225	36,712	.88	1.99	241	544
4–5	2,405	5,456	14,426	27,687	1.02	2.26	279	620
5–6	1,672	3,660	12,021	22,231	1.14	2.48	312	681
6–7	1,237	2,628	10,349	18,571	1.24	2.67	340	732
7–8	956	1,979	9,112	15,943	1.34	2.83	367	775
8–9	763	1,545	8,156	13,964	1.42	2.97	389	813
9–10	625	1,240	7,393	12,419	1.49	3.09	408	847
10–11	522	1,018	6,768	11,179	1.56	3.21	427	878
11–12	443	851	6,246	10,161	1.62	3.31	444	906
12–13	382	722	5,803	9,310	1.68	3.40	460	931
13–14	332	620	5,421	8,588	1.73	3.49	474	955
14–15	292	520	5,089	7,968	1.78	3.57	488	977
15–16	259	490	4,797	7,448	1.83	3.64	501	997
16–17	232	417	4,538	6,958	1.88	3.71	515	1,016
17–18	209	371	4,306	6,541	1.92	3.77	526	1,034
18–19	189	333	4,097	6,170	1.96	3.84	537	1,051
19–20	172	300	3,908	5,837	2.00	3.89	548	1,067
20–21	157	272	3,736	5,537	2.04	3.95	559	1,082
21–22	145	248	3,579	5,265	2.07	4.00	567	1,097
22–23	133	226	3,434	5,017	2.11	4.05	578	1,110
23–24	123	208	3,301	4,791	2.14	4.10	586	1,124
24–25	114	191	3,178	4,583	2.17	4.15	595	1,136
25–26	106	177	3,064	4,392	2.20	4.19	603	1,148
26–27	99	164	2,958	4,215	2.23	4.23	611	1,160
27–28	93	153	2,859	4,051	2.26	4.27	619	1,171
28–35	514	826	2,766	3,898	2.46	4.52	674	1,238
35–42	358	554	2,252	3,072	2.61	4.71	715	1,291
42–49	265	398	1,894	2,518	2.73	4.88	748	1,336
49–56	204	300	1,629	2,120	2.84	5.01	778	1,373
56–63	163	234	1,425	1,820	2.93	5.13	803	1,406
63–70	134	188	1,262	1,586	3.02	5.24	827	1,435
70–77	112	154	1,128	1,398	3.09	5.33	847	1,460
77–84	95	129	1,016	1,244	3.16	5.41	866	1,483
84–91	82	109	921	1,115	3.22	5.49	882	1,504
91–98	71	94	839	1,066	3.28	5.56	899	1,523
98–105	63	82	768	912	3.36	5.62	921	1,539
105–112	56	71	705	830	3.41	5.67	934	1,555
112–119	50	63	649	759	3.45	5.72	945	1,568
119–126	45	56	599	696	3.49	5.77	956	1,581
126–133	40	51	554	640	3.53	5.81	967	1,594
133–140	37	45	514	589	3.56	5.85	975	1,604
140–147	34	41	477	544	3.60	5.89	986	1,614
147–154	31	37	443	503	3.62	5.92	992	1,623
154–161	28	34	412	466	3.65	5.96	1,000	1,632
161–168	26	31	384	432	3.68	5.99	1,008	1,640
168–175	24	29	358	401	3.70	6.01	1,014	1,647
175–182	23	27	334	372	3.73	6.04	1,022	1,654
182–189	21	25	311	345	3.75	6.06	1,027	1,661
189–196	20	23	290	320	3.77	6.08	1,044	1,666
196–203	19	21	270	297	3.79	6.10	1,049	1,672
203–231	64	74	251	276	3.85	6.17	1,066	1,690
231–259	52	58	187	202	3.90	6.22	1,079	1,703
259–287	43	46	135	144	3.93	6.25	1,088	1,713
287–315	35	38	92	98	3.95	6.27	1,093	1,719
315–343	31	33	57	60	3.96	6.29	1,096	1,722
343–371	26	27	26	27	3.96	6.29	1,096	1,723

The duration intervals are the limits of integration used in calculating the number of cases upon which the rates are based; the interval 1–2 stands for the second day; the interval 28–35 stands for the fifth week. In column 2, the figures should be interpreted as follows: 18,811 per 100,000 male population had a disability which ended on the second day; 514 per 100,000 male population had a disabling illness which ended during the fifth week. In column 4, 44,097 per 100,000 male population were disabled on the second day or longer; 2,766 per 100,000 male population were disabled on the twenty-ninth day or longer, i. e., 4 or more weeks. In other words, the disability terminated during the fifth week or later. In column 6, the amount of disability per person per annum resulting from all disability existing during the fifth week or of shorter duration was 2.46 days.

In tables 4 and 5 the number of days of certain specified durations of disability per person per annum are shown for a number of insured groups. For male workers, the amount of disability reported by the industrial sick benefit organizations is about 10 to 20 percent greater than that reported in the Health Survey. The experience of the Aetna Life and intercompany investigations, however, shows rates of disability from one and one-half to two times those for the Health Survey. The relative difference in amount of disability is even greater for females than for males. In addition to the factors affecting disability rates mentioned above, it should be remembered that most of the workers included in the Health Survey received no compensation for disability whereas the workers covered by the insurance plans did.

TABLE 4.—*The number of days of disability per person per annum reported by selected investigations, male workers only*

Period of disability [a]	Health Survey	Intercompany investigations [b]	Aetna Life [c]	Industrial sick benefit organizations [d]	Ratio to Health Survey		
					Intercompany investigations	Aetna Life	Industrial sick benefit organizations
4th day-13 weeks	2.6	4.2	4.1	----------	1.62	1.58	----------
4th day-26 weeks	3.1	5.7	4.8	----------	1.84	1.55	----------
4th day-52 weeks	3.3	6.6	5.4	----------	2.00	1.64	----------
8th day-13 weeks	2.0	3.0	3.5	2.3	1.50	1.75	1.15
8th day-26 weeks	2.5	4.4	4.2	2.8	1.76	1.68	1.12
8th day-52 weeks	2.7	5.3	4.7	3.3	1.96	1.74	1.22

[a] The period of disability continued 13, 26, and 52 weeks, respectively, after the 4th and 8th day.
[b] Group accident and sickness experience of 6 private insurance companies, 1931-35, white males in standard industries. Includes disabling sickness and nonoccupational accidents. See reference *4*.
[c] Includes disabling sickness and nonoccupational accidents of white males, 1920-25. See reference *5*.
[d] Includes disability from sickness and nonindustrial injuries among male workers (mostly whites) in selected industries, 1935-37. See reference *6*.

It is estimated that the average amount of disability per person per annum from cases of illness which terminate in death is about 0.35 to 0.40 day for male workers when the period of disability extends for 52 weeks beginning with the eighth day. If this amount is added to the number of days from nonfatal illness in table 4, the amount of disability per male worker reported in the Health Survey is only slightly less than that reported by the industrial sick benefit organizations. No estimate was made of the amount of disability from fatal cases of illness for females but since mortality rates, as a rule, are lower among females than among males the average number of days per annum must be less than that for males. Adding even 0.40 of a day to the figures in table 5 leaves the total days for fatal and nonfatal cases combined for female workers less for the Health Survey than for the industrial sick benefit organizations.

TABLE 5.—*The number of days of disability per person per annum reported by selected investigations, female workers only*

Period of disability [a]	Health Survey	Metropolitan Life [b]	Industrial sick benefit organizations	Aetna Life	Ratio to Health Survey		
					Metropolitan Life	Industrial sick benefit organizations	Aetna Life
8th day–13 weeks	2.9	7.0	4.6	6.7	2.41	1.59	2.31
8th day–26 weeks	3.4	8.9	5.2	7.8	2.62	1.53	2.29
8th day–52 weeks	3.6	.....	5.6	.....	.....	1.56	.....

[a] See footnote a to table 4.
[b] Includes disability from sickness and nonindustrial accidents among white female workers, 1923–26. See reference 7.

Because of the exclusion of certain types of cases described above, and underreporting of cases of short durations, the amount of disability per person reported in the Health Survey is evidently less than that of persons covered by sickness insurance plans. Nevertheless, it was decided to present the results of the Health Survey, especially since these make available for the first time disability data for workers classified by income, occupation, and employment status. Even though the absolute amount of disability may be too low there is no reason to believe that the relative variation by income and occupational class is seriously in error. Disability tables for workers classed by employment status, income, occupation, and age are being prepared and will be subsequently published. Some results for certain classes of workers are presented in table 6.

TABLE 6.—*The number of days of disability per person per annum from nonfatal illnesses for selected classes of workers, National Health Survey, 1935–36*

Class of worker			Days of disability
Sex	Age	Income	
Males	15–64	Total employed	3.6
Males	15–64	Total unemployed	5.4
Males	15–64	$3,000 and over	3.9
Males	15–64	Under $3,000	4.0
Males	15–64	Under $2,000	4.0
Males	15–24	Total	3.1
Males	55–64	Total	5.8
Males	15–64	Under $3,000 clerical and manual	4.0
Females	15–64	Under $3,000 clerical and manual	5.5
Females	15–64	Total employed	5.4
Females	15–64	Total unemployed	8.4

REFERENCES

(*1*) Perrott, George St. J., Tibbitts, Clark, and Britten, Rollo H.: The National Health Survey: Scope and method of the Nation-wide canvass of sickness in relation to its social and economic setting. Pub. Health Rep., **54**: 1663–1687 (1939).

(*2*) Seventh report on incapacitating sickness in the insured population of Scotland (1st July 1936 to 30th June 1937). Department of Health for Scotland, 1939.

(3) Brundage, Dean K.: A 10-year record of absences from work on account of sickness and accidents. Pub. Health Rep., 42: 529–550 (1927).
(4) Fitzhugh, Gilbert W.: Recent morbidity upon lives insured under group accident and health policies and premiums based thereon. Transactions of the Actuarial Society of America, 38: 354–383 (1937).
(5) Keffer, Ralph: Group sickness and accident insurance. Transactions of the Actuarial Society of America, 28: 5–34 (1927).
(6) Gafafer, William M., and Frasier, Elizabeth S.: Studies on the duration of disabling sickness. I. Duration of disability from sickness and non-industrial injuries among the male and female memberships of 25 industrial sick benefit organizations, 1935–37, inclusive. Pub. Health Rep., 55: 1892–1903 (1940).
(7) Bassford, H. R.: Discussion of Keffer's paper. Transactions of the Actuarial Society of America, 28: 264–275 (1927).

BIOLOGICAL PRODUCTS

Establishments Licensed for the Propagation and Sale of Viruses, Serums, Toxins, and Analogous Products

There is presented herewith a list of the establishments holding licenses issued by the Federal Security Agency in accordance with the act of Congress approved July 1, 1902, entitled "An act to regulate the sale of viruses, serums, toxins, and analogous products in the District of Columbia, to regulate interstate traffic in said articles, and for other purposes."

The licenses granted to these establishments for the products mentioned do not imply an endorsement of the claims made by the manufacturers for their respective preparations. The granting of a license means that inspection of the establishment concerned and laboratory examinations of samples of its products are made regularly to insure the observance of safe methods of manufacture, to ascertain freedom from contamination, and to determine the potency or safety, or both, of botulism antitoxin; diphtheria antitoxin; dysentery antitoxin, Shiga; histolyticus antitoxin; odematiens antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; sordellii antitoxin; staphylococcus antitoxin; tetanus antitoxin; vibrion septique antitoxin; antidysenteric serum; antimeningococcic serum; antipneumococcic serum; anti-Rocky Mountain spotted fever serum; meningococcus typing serum; pneumococcus typing serum; bacterial vaccines made from cholera vibrio, plague bacillus and typhoid bacillus; diphtheria toxin-antitoxin mixture, diphtheria toxoid, tetanus toxoid, diphtheria toxin for Schick test, scarlet fever streptococcus toxin for Dick test, scarlet fever streptococcus toxin for immunization; equine encephalomyelitis vaccine; Rocky Mountain spotted fever vaccine; smallpox vaccine; typhus vaccine, and the arsphenamines and other organic arsenicals, the only products for which potency standards or tests have been established.

The enumeration of the products is as follows: Serums are placed

first, the antitoxins, being more important, heading the list. The other products are arranged generally in the order of their origin.

Establishments Licensed and Products for Which Licenses Have Been Issued

AMERICAN ESTABLISHMENTS

Parke Davis & Co., Detroit, Mich.—License No. 1:

Diphtheria antitoxin; erysipelas streptococcus antitoxin; gonococcus antitoxin; meningococcus antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; staphylococcus antitoxin; tetanus antitoxin; vibrion septique antitoxin; antianthrax serum; antidysenteric serum; antigonococcic serum; antiinfluenza bacillus serum; antimeningococcic serum; antipneumococcic serum; antistreptococcic serum; hemostatic serum (Lapenta); immune globulin (human); normal human plasma; normal horse serum; meningococcus typing serum; pneumococcus typing serum; rabies vaccine (Cumming), rabies vaccine (killed virus); smallpox vaccine; typhus vaccine; tuberculin old, tuberculin T. R., tuberculin B. E., tuberculin B. F., tuberculin-purified protein derivative; bacterial vaccines made from acne bacillus, acne diplococcus, Brucella melitensis, cholera vibrio, colon bacillus, dysentery bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, prodigiosus bacillus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus and typhoid bacillus; diphtheria toxin-antitoxin mixture; diphtheria toxoid-antitoxin mixture; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; diphtheria toxin for Shick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; allergenic extracts (including animal derivatives, foods, and pollens); poison ivy extract; trichinella extract; modified bacterial derivatives made from colon bacillus, gonococcus, paratyphoid bacillus A, para typhoid bacillus B, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; bacterial antigens made from colon bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, and streptococcus; phenarsine-oxide hydrochloride.

Mulford Biological Laboratories, Sharp & Dohme, Broad and Wallace Streets, Philadelphia, Pa.—License No. 2:

Botulism antitoxin; diphtheria antitoxin; erysipelas streptococcus antitoxin; B. histolyticus antitoxin; B. odematiens antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; B. sordellii antitoxin; staphylococcus antitoxin; tetanus antitoxin; vibrion septique antitoxin; antianthrax serum; antidysenteric serum; antierysipeloid serum; antigonococcic serum; antiinfluenza bacillus serum; antimelitensis serum; antimeningococcic serum; antipneumococcic serum; anti-Rocky Mountain spotted fever serum; antistreptococcic serum; antitularemic serum; antivenin (Nearctic crotalidae), antivenin (Latrodectus mactans), antivenin Bothropic, antivenin (Crotalus terrificus); acute anterior poliomyelitis immune serum (human); measles immune serum (human); scarlet fever immune serum (human); immune globulin (human); normal human plasma; normal human serum; normal serum albumin; normal horse serum; meningococcus typing serum; pneumococcus typing serum; rabies vaccine (Pasteur), rabies vaccine (killed virus); smallpox vaccine; typhus vaccine; tuberculin old, tuberculin T. R., tuberculin B. E., tuberculin B. F., tuberculin-purified protein derivative; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, dysentery bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, Brucella melitensis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, Bacterium tularense, and typhoid bacillus; sensitized bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxin-antitoxin mixture; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances); poison ivy extract; poison oak extract; pneumococcus antibody solution; bacterial antigens made from acne bacillus, colon bacillus, dysentery bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, proteus bacillus, pyocyaneus bacillus, staphylococcus aureus, streptococcus, typhoid bacillus; bee venom; snake venom solution.

The Cutter Laboratories, Berkeley, Calif.—License No. 8:

Diphtheria antitoxin; B. odematiens antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; B. sordellii antitoxin; tetanus antitoxin; vibrion septique antitoxin; antianthrax serum; antimeningococcic serum; antistreptococcic serum; normal human plasma; normal serum albumin; normal horse serum; equine encephalomyelitis vaccine; rabies vaccine (killed virus); smallpox vaccine; tuberculin old; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer

bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, pseudodiphtheria bacillus; staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; bacterial antigens made from colon bacillus, staphylococcus aureus; diphtheria toxoid; tetanus toxoid; diphtheria toxin for Schick test; allergenic extracts (including pollens); poison ivy extract; poison oak extract.

Bureau of Laboratories, Department of Health, Foot East Sixteenth Street, New York City.—License No. 14:

Diphtheria antitoxin; tetanus antitoxin; antimeningococcic serum; antipneumococcic serum; normal horse serum; rabies vaccine (killed virus); smallpox vaccine; tuberculin old; bacterial vaccines made from paratyphoid bacillus A, paratyphoid bacillus B, and typhoid bacillus; diphtheria toxoid; tetanus toxoid; diphtheria toxin for Schick test.

Lederle Laboratories, Inc., Pearl River, N. Y.—License No. 17:

Botulism antitoxin; diphtheria antitoxin; erysipelas streptococcus antitoxin; B. histolyticus antitoxin; B. odematiens antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; staphylococcus antitoxin; B. sordellii antitoxin; tetanus antitoxin; vibrion septique antitoxin; antianthrax serum; antidysenteric serum; antimeningococcic serum; antipneumococcic serum; anti-Rocky Mountain spotted fever serum; antistaphylococcic serum; hemostatic globulin; immune globulin (human); normal human plasma; normal serum albumin; normal horse serum; meningococcus typing serum; pneumococcus typing serum; encephalitis vaccine, herpes "F" strain; equine encephalomyelitis vaccine; rabies vaccine (killed virus); Rocky Mountain spotted fever vaccine; smallpox vaccine; typhus vaccine; tuberculin old; bacterial vaccines made from acne bacillus, Brucella melitensis; cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, streptococcus, and typhoid bacillus; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; allergenic extracts (including pollens, animal derivatives, foods, vegetable derivatives, miscellaneous substances); poison ivy extract; poison oak extract; trichinella extract; snake venom solution; bacterial antigen made from pertussis bacillus.

Sherman Laboratories (G. H. Sherman, M.D., founder), 14600 East Jefferson Avenue, Detroit, Mich.—License No. 30:

Staphylococcus toxoid; bacterial vaccines made from acne bacillus, Brucella melitensis, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; allergenic extracts (including pollens); poison ivy extract; poison oak extract; bacterial antigens made from colon bacillus, gonococcus, micrococcus catarrhalis, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, and streptococcus.

The Abbott Laboratories, Fourteenth Street and C.-W. Interurban Railroad Tracks, North Chicago, Ill.—License No. 43:

Normal human plasma; bacterial vaccines made from acne bacillus, Brucella melitensis, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, micrococcus tetragenus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; bacterial antigens made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, micrococcus catarrhalis, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus; tetanus toxoid; allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances); poison ivy extract.

The Upjohn Co., Kalamazoo, Mich.—License No. 51:

Bacterial vaccines made from colon bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; bacterial antigens made from colon bacillus, staphylococcus aureus, streptococcus.

E. R. Squibb & Sons' Research and Biological Laboratories, New Brunswick, N. J.—License No. 52:

Diphtheria antitoxin; erysipelas streptococcus antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; staphylococcus antitoxin; tetanus antitoxin; vibrion septique antitoxin: antiinfluenza bacillus serum; antimeningococcic serum; antipertussis serum; antipneumococcic serum; antistreptococcic serum; immune globulin (human); normal serum albumin; normal horse serum; antivenin (Latrodectus mactans); pneumococcus typing serum; rabies vaccine (Pasteur), rabies vaccine (killed virus); smallpox vaccine; typhus vaccine; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, streptococcus, and typhoid bacillus; bacterial antigen made from staphylococcus aureus; leucocyte extract; diphtheria toxin-antitoxin mixture; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; diphtheria toxin for Shick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus

toxin for immunization; allergenic extracts (including pollens); poison ivy extract; poison oak extract; arsphenamine, neoarsphenamine, phenarsine hydrochloride; sulfarsphenamine; tryparsamide.

Eli Lilly & Co., Indianapolis, Ind.—License No. 56:
Diphtheria antitoxin; erysipelas streptococcus antitoxin; perfringens antitoxin; tetanus antitoxin; vibrion septique antitoxin; antimeningococcic serum; antistreptococcic serum; hemostatic serum (Lilly); heterophile antibody; normal human plasma; normal serum albumin; normal horse serum; rabies vaccine (modified Harris); smallpox vaccine; typhus vaccine; tuberculin old; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; bacterial vaccine made from partially autolized pneumococci; diphtheria toxin-antitoxin mixture; diphtheria toxoid; tetanus toxoid; diphtheria toxin for Schick test; bacterial antigens made from acne bacillus, colon bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, and streptococcus; fungus antigens; trichinella extract.

Gilliland Laboratories, Marietta, Pa.—License No. 63:
Diphtheria antitoxin; dysentery antitoxin, Shiga; perfringens antitoxin; scarlet fever streptococcus antitoxin; tetanus antitoxin; vibrion septique antitoxin; anticolon bacillus serum; antidysenteric serum; antimeningococcic serum; antipneumococcic serum; antistreptococcic serum; immune globulin (human); normal horse serum; pneumococcus typing serum; rabies vaccine (Pasteur); rabies vaccine (killed virus); smallpox vaccine; tuberculin old, tuberculin B. E., tuberculin B. F.; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxin-antitoxin mixture; diphtheria toxoid; tetanus toxoid; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization.

Antitoxin and Vaccine Laboratory, Department of Public Health, Commonwealth of Massachusetts, 375 South Street, Jamaica Plain, Boston 30, Mass.—License No. 64:
Diphtheria antitoxin; scarlet fever streptococcus antitoxin; antiinfluenza bacillus serum; antimeningococcic serum; antipneumococcic serum; immune globulin (human); normal serum albumin; pneumococcus typing serum; smallpox vaccine; tuberculin old; bacterial vaccines made from paratyphoid bacillus A, paratyphoid bacillus B, and typhoid bacillus; diphtheria toxin-antitoxin mixture; diphtheria toxoid; diphtheria toxin for Schick test.

United States Standard Products Co., Woodworth, Wis.—License No. 65:
Diphtheria antitoxin; perfringens antitoxin; tetanus antitoxin; vibrion septique antitoxin; smallpox vaccine; rabies vaccine (killed virus); bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; bacterial antigens made from staphylococcus albus, staphylococcus aureus; diphtheria toxoid; tetanus toxoid; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; allergenic extracts (including pollens); poison ivy extract; poison oak extract.

D. L. Harris Laboratories, Metropolitan Building, St. Louis, Mo.—License No. 66:
Rabies vaccine (Harris).

The Arlington Chemical Co., Yonkers, N. Y.—License No. 67:
Bacterial vaccines made from colon bacillus, Friedländer bacillus, micrococcus catarrhalis, micrococcus tetragenus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, and streptococcus; allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances).

Dermatological Research Laboratories, Division of Abbott Laboratories, North Chicago, Ill.—License No. 68:
Arsphenamine; silver arsphenamine; neoarsphenamine; sulfarsphenamine; bismuth arsphenamine sulfonate; neosilver arsphenamine; trisodium sulfarsphenamine.

The Winthrop Chemical Co., Inc., 33 Riverside Avenue, Rensselaer, N. Y.—License No. 69:
Arsphenamine; arsphenamine diglucoside; neoarsphenamine; silver arsphenamine; sulfarsphenamine; acetylglycarsenobenzene; phenarsine hydrochloride.

Diarsenol Co., Inc., 72 Kingsley Street, Buffalo, N. Y.—License No. 70:
Arsphenamine; neoarsphenamine; sodium arsphenamine; sulfarsphenamine.

Mallinckrodt Chemical Works, St. Louis, Mo.—License No. 77:
Arsphenamine; neoarsphenamine; sulfarsphenamine.

Merck & Co., Inc., Rahway, N. J.—License No. 82:
Arsphenamine; neoarsphenamine; sulfarsphenamine; tryparsamide.

Terrell Laboratories, Texas National Bank Building, Fort Worth, Tex.—License No. 84:
Rabies vaccine (killed virus).

Jensen-Salsbery Laboratories, Twenty-first and Penn Streets, Kansas City, Mo.—License No. 85:
Botulism antitoxin; antianthrax serum, antierysipeloid serum; rabies vaccine (killed virus); bacterial vaccine made from Brucella melitensis; diphtheria toxin for Schick test; diphtheria toxoid.

Hollister-Stier Laboratories, Spokane, Wash., Los Angeles, Calif., and Wilkinsburg, Pa.—License No. 91:
Acute anterior poliomyelitis immune serum (human); bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catharrhalis, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and xerosis bacillus; allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances); poison ivy extract; poison oak extract.

Medical Arts Laboratory, Medical Arts Building, Oklahoma City, Okla.—License No. 98:
Rabies vaccine (killed virus).

Bureau of Laboratories, Michigan State Department of Health, Lansing, Mich.—License No. 99:
Diphtheria antitoxin; scarlet fever streptococcus antitoxin; tetanus antitoxin; antimeningococcic serum; antipneumococcic serum; pneumococcus typing serum; rabies vaccine (Cumming); smallpox vaccine; tuberculin old; bacterial vaccines made from paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus and typhoid bacillus; diphtheria toxoid; tetanus toxoid; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization.

National Drug Co., 4663 Stenton Avenue, Philadelphia, Pa.—License No. 101:
Diphtheria antitoxin, erysipelas streptococcus antitoxin; scarlet fever streptococcus antitoxin; perfringens antitoxin; staphylococcus antitoxin; tetanus antitoxin; vibrion septique antitoxin; antimeningococcic serum; antipneumococcic serum; antistreptococcic serum; immune globulin (human); normal horse serum; pneumococcus typing serum; tuberculin old; rabies vaccine (killed virus); smallpox vaccine; bacterial vaccines made from acne bacillus, Brucella melitensis, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, pyocyaneus bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxin-antitoxin mixture; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; streptococcus erythrogenic toxin; allergenic extracts (including pollens and miscellaneous substances); bacterial antigen made from staphylococcus aureus.

Mulford Colloid Laboratories, Thirty-eighth and Ludlow Streets, Philadelphia, Pa.—License No. 102: Poison ivy extract; poison oak extract.

Allergy Laboratories, 1200 North Walker Street, Oklahoma City, Okla.—License No. 103:
Allergenic extracts (including pollens, foods, animal derivatives, and miscellaneous substances).

O. F. Kirk Co., New York, N. Y.—License No. 105:
Bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; allergenic extracts (including pollens).

The Porro Biological Laboratories, 718 Medical Arts Building, Tacoma, Wash.—License No. 107:
Bacterial vaccines made from micrococcus catarrhalis, pneumococcus, staphylococcus aureus, and streptococcus; allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances).

Central Pharmacal Co., Seymour, Ind.—License No. 109:
Bacterial antigens made from colon bacillus, Friedländer bacillus, gonococcus, micrococcus catarrhalis, pertussis bacillus, pneumococcus, pyocyaneus bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus.

Pitman-Moore Co., Division of Allied Laboratories, Inc., Zionsville, Ind.—License No. 110:
Diphtheria antitoxin; perfringens antitoxin; tetanus antitoxin; vibrion septique antitoxin; antierysipeloid serum; immune globulin (human); normal horse serum; equine encephalomyelitis vaccine; rabies vaccine (killed virus); bacterial vaccines made from acne bacillus, colon bacillus, Brucella melitensis, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, micrococcus tetragenus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; diphtheria toxin for Schick test; allergenic extracts (including pollens); poison ivy extract; poison oak extract; bacterial antigens made from colon bacillus, gonococcus, staphylococcus albus, staphylococcus aureus, streptococcus.

The Wm. S. Merrell Co., Cincinnati, Ohio—License No. 111:
Bacterial vaccines made from colon bacillus, Friedländer bacillus, influenza bacillus, micrococcus catarrhalis, pneumococcus, staphylococcus albus, staphylococcus aureus, and streptococcus.

Wyatt Clinic Laboratories, Tucson, Ariz.—License No. 112:
Bacterial antigen made from streptococcus.

Michael Reese Hospital, Twenty-ninth Street and Ellis Avenue, Chicago, Ill.—License No. 113:
Acute anterior poliomyelitis immune serum (human); measles immune serum (human); mumps immune serum (human); scarlet fever immune serum (human); normal human plasma; normal human serum.

The Milwaukee Serum Center, Columbia Hospital, Milwaukee, Wis.—License No. 117:
Acute anterior poliomyelitis immune serum (human); measles immune serum (human); pertussis immune serum (human); scarlet fever immune serum (human); normal human serum.

Barry Allergy Laboratory, Michigan Theater Building, Detroit, Mich.—License No. 119:
Allergenic extracts (including pollens).

Biological Laboratory, Illinois Department of Health, 1800 West Fillmore Street, Chicago, Ill.—License No. 120:
Rabies vaccine (killed virus); bacterial vaccines made from typhoid bacillus; diphtheria toxoid; diphtheria toxin for Schick test.

State Department of Health, Austin, Tex.—License No. 121:
Rabies vaccine (killed virus); bacterial vaccines made from paratyphoid bacillus A, paratyphoid bacillus B, typhoid bacillus; diphtheria toxin for Schick test; diphtheria toxoid.

Manhattan Convalescent Serum Laboratory, Health Research Fund, Inc., Fifteenth Street and East River, New York, N. Y.—License No. 123:
Measles immune serum (human); mumps immune serum (human); scarlet fever immune serum (human); normal human serum.

Hynson, Westcott & Dunning, Baltimore, Md.—License No. 125:
Snake venom solution.

R. J. Strasenburgh Co., Rochester, N. Y.—License No. 127:
Bee venom ointment.

Research Foundation of Toledo Hospital, Inc., Toledo, Ohio.—License No. 128:
Bacterial antigen made from colon bacillus.

A. W. Kretschmar, Inc., 396 Broadway, New York, N. Y.—License No. 132:
Bee venom solution.

Michigan State College, East Lansing, Mich.—License No. 133:
Bacterial antigen made from Brucella melitensis.

Bio-Therapeutic Laboratories, 22 Halsted Street, East Orange, N. J.—License No. 135:
Bacterial antigens made from pyocyaneus bacillus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, and streptococcus.

Hoffmann-La Roche, Inc., Roche Park, Nutley, N. J.—License No. 136:
Bee venom.

Iowa State Department of Health Serum Center, Des Moines, Iowa.—License No. 137:
Measles immune serum (human); pertussis immune serum (human); poliomyelitis immune serum (human); scarlet fever immune serum (human); normal human serum.

University of Minnesota Human Serum Laboratory, Minneapolis, Minn.—License No. 138:
Measles immune serum (human); pertussis immune serum (human); poliomyelitis immune serum (human); scarlet fever immune serum (human); normal human serum.

Philadelphia Serum Exchange, The Children's Hospital, Philadelphia, Pa.—License No. 139:
Measles immune serum (human); mumps immune serum (human); pertussis immune serum (human); scarlet fever immune serum (human); normal human serum.

Hyland Laboratories, Los Angeles, Calif.—License No. 140:
Measles immune serum (human); mumps immune serum (human); pertussis immune serum (human); poliomyelitis immune serum (human); scarlet fever immune serum (human); normal human plasma; normal human serum.

The Venomin Co., Venice, Fla.—License No. 141:
Snake venom solution.

The Bayer Co., Inc., Rensselaer, N. Y.—License No. 142:
Acetylglycarsenobenzene; neoarsphenamine; silver arsphenamine; sulfarsphenamine.

The Hicks Laboratory, Tuscon, Ariz.—License No. 143:
Bacterial vaccine made from streptococcus.

Reichel Laboratories, Kimberton, Pa.—License No. 144:
Normal human plasma.

E. E. Bartos, Inc., Locust Valley, N. Y.—License No. 145:
Allergenic extracts (including foods).

Ben Venue Laboratories, Bedford, Ohio.—License No. 146:
Normal human plasma; normal human serum.

Endo Products, Inc., Richmond Hill, N. Y.—License No. 147:
Allergenic extracts (including miscellaneous substances).

FOREIGN ESTABLISHMENTS

Connaught Antitoxin Laboratory, University of Toronto, Toronto, Canada.—License No. 73:
Diphtheria antitoxin; staphylococcus antitoxin; tetanus antitoxin; diphtheria toxoid; staphylococcus toxoid.

Boots Pure Drug Co., Ltd., Nottingham, England.—License No. 92. Selling agents for the United States, The United Drug Co., 43 Leon Street, Boston, Mass.:
Arsphenamine digluconate.

Laboratorio Brasileiro de Chimiotherapia, Rua General Roca No. 28, Rio de Janeiro, Brazil.—License No. 116. Selling agents for the United States and Hawaii, Ernst Bischoff Co., Inc., Ivoryton, Conn.; selling agents for Puerto Rico, Cesar A. Toro, Apartado 3854, Santurce, P. R.:
Fungus extracts.

Wellcome Physiological Research Laboratories, Beckenham, Kent, England.—License No. 129:
Russell viper venom.

Ayerst, McKenna & Harrison, Montreal, Canada.—License No. 134:
Staphylococcus toxoid; bacterial vaccines made from influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, streptococcus, and typhoid bacillus.

DEATHS DURING WEEK ENDED NOVEMBER 7, 1942

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

	Week ended Nov. 7, 1942	Corresponding week 1941
Data from 86 large cities of the United States:		
Total deaths	8,095	7,883
Average for 3 prior years	7,700	
Total deaths, first 44 weeks of year	355,906	355,349
Deaths per 1,000 population, first 44 weeks of year, annual rate	11.6	11.6
Deaths under 1 year of age	575	545
Average for 3 prior years	494	
Deaths under 1 year of age, first 44 weeks of year	24,443	22,322
Data from industrial insurance companies:		
Policies in force	65,224,094	64,617,631
Number of death claims	9,525	8,845
Death claims per 1,000 policies in force, annual rate	7.6	7.1
Death claims per 1,000 policies, first 44 weeks of year, annual rate	9.1	9.4

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 NOVEMBER 14, 1942

Summary

Minor increases were recorded for the current week, as compared with the preceding week, for influenza, measles, meningococcus meningitis, poliomyelitis, smallpox, and whooping cough, although of these diseases the incidence of only influenza and meningococcus meningitis is above the 5-year (1937–41) median expectancy.

The incidence of meningococcus meningitis continues above that for any other year since 1937. The largest numbers of cases are still being reported from the Eastern States. Of 1,596 cases of influenza (last week, 1,576; 5-year median for the week, 1,115), 1,263, or approximately 80 percent, were reported from the South Atlantic and West South Central States, in which areas Texas reported 523 cases, Virginia 308, and South Carolina 293.

The incidence of endemic typhus fever declined from 100 cases to 87, of which 28 were reported in Texas and 22 in Georgia. One case was reported in Massachusetts.

Other reports for the week include 3 cases of undulant fever in Pennsylvania, 2 cases in Maryland, and 1 case in the District of Columbia; 1 case of rat-bite fever in Maryland, 12 cases of infectious encephalitis (6 in California), 1 case of Rocky Mountain spotted fever (in New Jersey), 9 cases of smallpox, and 10 cases of typhoid fever.

Conditions responsible for the recent rather high weekly urban mortality rates are not evident in the weekly reports of the common communicable diseases received from the State health officers. The death rate for the current week for 88 large cities in the United States is 12.0 per 1,000 population, as compared with 11.6 for the preceding week and 11.5 for the 3-year (1939–41) average. The recent increase in this rate does not appear to be localized. The mortality rates for both influenza and pneumonia for 89 cities reporting this information to the Public Health Service have recently been above the 3-year average.

Telegraphic morbidity reports from State health officers for the week ended November 14, 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
	Nov. 14, 1942	Nov. 15, 1941		Nov. 14, 1942	Nov. 15, 1941		Nov. 14, 1942	Nov. 15, 1941		Nov. 14, 1942	Nov. 15, 1941	
NEW ENG.												
Maine	1	0	1	5	------	------	2	92	35	4	1	0
New Hampshire	0	0	0	1	------	------	43	3	4	0	0	0
Vermont	0	0	0	------	------	------	98	3	9	0	0	0
Massachusetts	2	3	3	------	------	------	220	101	105	1	8	1
Rhode Island	4	1	0	1	------	------	1	6	2	2	0	0
Connecticut	0	0	0	9	------	2	63	32	7	4	0	0
MID. ATL.												
New York	24	8	15	[1] 12	[1] 5	[1] 10	127	124	137	17	3	3
New Jersey	3	7	12	22	10	4	26	15	15	2	1	1
Pennsylvania	15	12	27	3	1	------	207	220	220	8	4	4
E. NO. CEN.												
Ohio	24	16	56	5	10	10	27	21	21	0	0	1
Indiana	6	27	27	6	52	12	29	17	17	1	1	1
Illinois	24	27	27	9	7	8	27	34	34	2	4	0
Michigan [2]	8	6	12	1	------	------	93	117	117	2	0	1
Wisconsin	1	2	2	29	36	36	56	116	60	0	2	0
W. NO. CEN.												
Minnesota	20	1	4	1	------	6	5	21	28	0	0	0
Iowa	3	4	7	2	2	1	43	18	18	0	0	0
Missouri	4	11	13	2	6	4	5	13	9	0	0	1
North Dakota	1	1	3	14	12	1	1	57	6	0	0	0
South Dakota	1	0	1	------	------	1	8	1	1	1	0	0
Nebraska	4	1	1	5	------	------	49	2	2	0	0	0
Kansas	5	6	6	------	16	5	9	22	9	0	0	0
SO. ATL.												
Delaware	0	0	0	------	------	------	0	0	0	0	0	0
Maryland [2]	11	17	9	1	9	5	9	40	7	4	0	0
District of Columbia	0	1	4	2	1	1	3	1	1	0	0	0
Virginia	28	35	66	308	160	114	7	86	35	3	1	2
West Viginia	14	8	13	17	26	14	2	182	24	0	0	1
North Carolina	59	63	86	1	9	3	1	98	98	0	1	0
South Carolina	40	26	21	293	276	139	2	3	5	3	0	0
Georgia	24	44	40	14	53	36	4	8	8	0	0	0
Florida	5	4	6	1	------	2	1	8	5	0	0	0
E. SO. CEN.												
Kentucky	10	11	18	3	1	4	4	2	12	0	1	1
Tennessee	18	24	24	22	26	28	29	20	20	4	0	0
Alabama	28	24	27	27	70	62	2	8	8	1	0	2
Mississippi [2]	10	18	23	------	------	------	------	------	------	0	2	1
W. SO. CEN.												
Arkansas	15	36	30	35	108	24	12	32	3	0	0	0
Louisiana	12	9	13	3	16	11	1	0	0	1	0	0
Oklahoma	10	22	22	65	141	25	1	23	3	0	0	0
Texas	56	75	65	523	1,085	200	21	49	29	3	0	0
MOUNTAIN												
Montana	0	3	2	1	1	1	4	9	8	0	0	0
Idaho	0	1	0	------	------	------	12	18	17	0	0	0
Wyoming	1	2	1	39	6	------	7	2	2	0	0	0
Colorado	16	22	8	37	31	28	3	110	13	0	0	0
New Mexico	1	1	5	1	1	1	0	8	8	0	0	0
Arizona	2	6	5	22	96	55	2	40	5	0	0	0
Utah [2]	2	0	1	1	8	3	264	23	23	0	0	0
Nevada	0	0	------	1	------	------	3	1	------	0	0	------
PACIFIC												
Washington	3	0	5	1	2	1	312	2	18	2	0	0
Oregon	1	5	4	7	7	12	117	34	14	0	0	0
California	35	12	23	44	82	28	41	349	111	4	1	1
Total	551	602	836	1,596	2,372	1,115	2,003	2,191	2,191	69	30	30
45 weeks	12,959	13,602	19,493	92,868	504,189	177,864	478,155	837,604	357,617	3,039	1,767	1,767

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended November 14, 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
	Nov. 14, 1942	Nov. 15, 1941		Nov. 14, 1942	Nov. 15, 1941		Nov. 14, 1942	Nov. 15, 1941		Nov. 14, 1942	Nov. 15, 1941	
NEW ENG.												
Maine	1	0	0	8	15	10	0	0	0	1	0	0
New Hampshire	1	3	0	15	9	2	0	0	0	0	0	0
Vermont	0	0	0	9	2	2	0	0	0	0	0	0
Massachusetts	0	1	1	197	156	123	0	0	0	1	1	1
Rhode Island	0	1	0	21	8	8	0	0	0	1	0	0
Connecticut	1	0	0	44	32	32	0	0	0	0	2	1
MID. ATL.												
New York	7	28	6	224	208	208	0	0	0	7	6	9
New Jersey	9	6	3	71	88	62	0	0	0	1	3	3
Pennsylvania	0	8	8	152	163	189	0	0	0	5	9	14
E. NO. CEN.												
Ohio	4	8	5	181	149	210	0	0	0	6	8	8
Indiana	5	6	2	57	86	104	0	0	1	0	3	3
Illinois	11	12	4	170	168	248	1	0	3	3	2	6
Michigan[3]	2	5	5	63	178	242	0	0	3	3	1	2
Wisconsin	2	4	4	133	113	116	1	0	3	0	0	1
W. NO. CEN.												
Minnesota	2	2	4	54	46	64	0	1	2	4	0	0
Iowa	2	1	3	41	43	62	0	1	1	2	1	1
Missouri	1	0	1	55	62	62	0	1	1	2	2	2
North Dakota	0	2	0	13	16	24	0	0	0	0	0	1
South Dakota	3	0	0	18	13	13	0	0	0	1	0	0
Nebraska	7	0	0	15	13	15	0	0	0	0	6	0
Kansas	1	1	1	37	85	98	0	0	1	1	0	4
SO. ATL.												
Delaware	0	1	0	19	12	10	0	0	0	0	0	0
Maryland[3]	0	2	0	53	50	35	0	0	0	11	4	4
Dist. of Col.	0	2	0	19	17	10	0	0	0	0	0	0
Virginia	0	7	1	85	79	65	0	1	0	2	9	9
West Virginia	1	1	1	35	67	84	0	0	0	1	5	5
North Carolina	0	5	2	116	83	89	1	0	0	2	3	4
South Carolina	0	3	1	20	14	14	0	0	0	4	3	3
Georgia	1	4	2	42	63	40	0	1	0	4	8	8
Florida	2	4	1	10	4	4	0	0	0	3	2	2
E. SO. CEN.												
Kentucky	1	3	3	57	54	74	1	0	0	6	15	8
Tennessee	0	29	0	97	122	100	0	1	0	6	4	7
Alabama	3	4	1	36	63	42	0	0	0	1	4	4
Mississippi[3]	0	3	2	21	12	14	0	0	0	0	3	4
W. SO. CEN.												
Arkansas	2	3	1	13	7	13	1	0	1	1	4	7
Louisiana	0	1	1	10	2	11	0	0	1	6	11	7
Oklahoma	0	1	1	23	20	29	0	0	1	0	1	5
Texas	12	2	3	47	75	71	1	0	4	4	7	13
MOUNTAIN												
Montana	0	1	0	11	29	29	0	0	0	0	0	0
Idaho	0	0	0	1	6	11	0	0	0	0	0	0
Wyoming	0	1	0	6	9	6	0	0	0	0	3	0
Colorado	2	0	0	33	29	29	0	0	2	1	1	2
New Mexico	0	0	0	7	6	6	0	0	0	3	1	3
Arizona	4	1	0	1	6	6	0	0	0	1	0	0
Utah[3]	3	1	0	11	8	24	0	0	0	1	0	0
Nevada	1	0	------	1	1	------	0	0	------	0	0	------
PACIFIC												
Washington	1	0	1	35	20	30	3	0	0	0	0	2
Oregon	0	5	3	22	6	13	0	0	1	1	0	1
California	17	2	2	109	134	133	0	2	1	2	4	7
Total	109	174	174	2,518	2,651	2,841	9	8	44	98	136	185
45 weeks	3,733	8,530	8,530	107,925	107,437	138,396	698	1,228	9,001	6,210	7,757	11,726

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended November 14, 1942—Continued

Division and State	Whooping cough		Week ended November 14, 1942								
	Week ended		Anthrax	Dysentery			Encephalitis, infectious	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
	Nov. 14, 1942	Nov. 15, 1941		Amebic	Bacillary	Unspecified					
NEW ENG.											
Maine	62	43	0	0	0	0	0	0	0	0	0
New Hampshire	3	44	0	0	0	0	0	0	0	0	0
Vermont	42	9	0	0	0	0	0	0	0	0	0
Massachusetts	207	158	0	0	11	0	0	0	0	0	1
Rhode Island	29	12	0	0	0	0	0	0	0	0	0
Connecticut	70	54	0	0	1	0	0	0	0	0	0
MID. ATL.											
New York	470	466	0	2	18	0	0	0	0	0	0
New Jersey	244	224	0	0	0	0	0	0	1	0	0
Pennsylvania	326	0	0	0	0	0	0	0	0	0	0
E. NO. CEN.											
Ohio	124	173	0	0	0	0	0	0	0	1	0
Indiana	22	39	0	0	0	0	0	0	0	1	0
Illinois	152	202	0	2	15	0	3	0	0	0	0
Michigan[1]	232	304	0	2	0	0	0	0	0	0	0
Wisconsin	143	244	0	0	0	0	0	0	0	0	0
W. NO. CEN.											
Minnesota	40	52	0	0	0	0	0	0	0	0	0
Iowa	18	15	0	0	0	0	0	0	0	0	0
Missouri	5	32	0	0	0	3	0	0	0	0	0
North Dakota	7	13	0	0	0	0	0	0	0	0	0
South Dakota	0	6	0	0	0	0	0	0	0	0	0
Nebraska	11	0	0	0	0	0	0	0	0	0	0
Kansas	17	79	0	0	0	0	1	0	0	4	0
SO. ATL.											
Delaware	1	9	0	0	0	0	0	0	0	0	0
Maryland[2]	87	28	0	0	0	13	1	0	0	0	0
Dist. of Col.	12	21	0	0	0	0	0	0	0	0	0
Virginia	50	101	0	0	0	33	0	0	0	1	1
West Virginia	7	60	0	0	0	0	0	0	0	0	0
North Carolina	41	127	0	0	0	0	0	0	0	0	6
South Carolina	20	32	0	0	2	0	0	0	0	0	3
Georgia	19	21	0	2	2	0	0	0	0	0	22
Florida	16	6	0	0	2	0	0	0	0	0	18
E. SO. CEN.											
Kentucky	19	52	0	0	0	0	0	0	0	0	0
Tennessee	27	22	0	1	0	0	0	0	0	0	1
Alabama	9	9	0	0	0	0	0	0	0	0	1
Mississippi[2]	----	----	0	0	0	0	0	0	0	0	2
W. SO. CEN.											
Arkansas	44	11	----	0	1	0	0	0	0	1	1
Louisiana	4	2	0	0	0	0	0	0	0	0	3
Oklahoma	4	23	0	0	0	0	0	0	0	0	0
Texas	85	71	0	5	116	0	0	0	0	0	28
MOUNTAIN											
Montana	11	35	0	0	0	0	0	0	0	0	0
Idaho	0	5	0	0	0	0	0	0	0	0	0
Wyoming	3	2	0	0	0	0	0	0	0	0	0
Colorado	5	81	0	0	0	0	1	0	0	0	0
New Mexico	8	20	0	0	3	0	0	0	0	0	0
Arizona	9	3	0	0	0	29	0	0	0	0	0
Utah[2]	7	29	0	0	0	0	0	0	0	0	0
Nevada	0	64	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	21	111	0	0	0	0	0	0	0	0	0
Oregon	8	18	0	0	0	0	0	0	0	0	0
California	257	164	0	3	9	0	6	0	0	2	0
Total	2,998	3,296	0	17	181	78	12	0	1	10	87
45 weeks	155,529	184,169	----	----	----	----	----	----	----	----	----

[1] New York City only.
[2] Period ended earlier than Saturday.

WEEKLY REPORTS FROM CITIES

City reports for week ended October 31, 1942

This table lists the reports from 89 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	11	1	0	0	3	0	10	0	2	2
Baltimore, Md.	2	0	1	1	1	0	12	0	14	0	2	81
Billings, Mont.	0	0	------	0	0	0	1	0	0	0	0	2
Birmingham, Ala.	1	0	1	1	0	1	3	0	1	0	0	0
Boise, Idaho	0	0	------	0	0	0	0	0	0	0	0	0
Boston, Mass.	0	1	------	0	8	5	13	0	47	0	3	33
Bridgeport, Conn.	0	0	------	0	0	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	------	1	21	1	7	0	7	0	0	9
Camden, N. J.	1	0	------	0	2	0	1	0	0	0	0	18
Charleston, S. C.	4	1	3	1	0	0	1	0	0	0	0	1
Charleston, W. Va.	0	0	1	0	0	0	0	0	2	0	0	0
Chicago, Ill.	16	0	------	1	8	2	25	5	39	0	2	78
Cincinnati, Ohio	11	0	------	0	5	0	0	0	19	0	1	2
Cleveland, Ohio	4	0	3	0	1	0	8	1	32	0	0	54
Columbus, Ohio	1	0	------	0	0	0	0	0	12	0	0	3
Concord, N. H.	0	0	------	0	1	0	1	2	0	0	0	0
Cumberland, Md.	0	0	------	0	0	0	0	0	0	0	1	0
Dallas, Texas	1	0	------	0	0	0	1	0	10	0	0	5
Denver, Colo.	7	0	21	0	4	0	5	1	1	0	4	3
Detroit, Mich.	3	0	1	1	4	1	12	2	24	0	0	79
Duluth, Minn.	0	0	------	0	0	0	0	0	2	0	0	2
Fall River, Mass.	0	0	------	0	0	0	3	0	4	0	0	12
Fargo, N. Dak.	0	0	1	1	0	0	0	0	2	0	0	0
Flint, Mich.	0	0	------	0	0	0	4	0	1	0	0	14
Fort Wayne, Ind.	0	0	------	0	0	0	0	0	0	0	0	0
Frederick, Md.	0	0	------	0	0	0	0	0	0	0	0	0
Galveston, Tex.	0	0	------	0	0	0	2	0	0	0	0	0
Grand Rapids, Mich.	0	0	------	0	2	0	2	0	0	0	0	5
Great Falls, Mont.	0	0	------	0	0	0	0	0	2	0	0	3
Hartford, Conn.	0	0	------	0	0	0	3	0	1	0	0	9
Helena, Mont.	0	0	------	0	0	0	0	0	0	0	0	0
Houston, Tex.	1	0	------	0	0	0	3	0	1	1	0	2
Indianapolis, Ind.	1	0	------	0	0	1	7	1	15	0	0	11
Kansas City, Mo.	0	0	------	1	0	0	8	0	20	0	0	1
Kenosha, Wis.	0	0	------	0	0	0	0	0	1	0	0	1
Little Rock, Ark.	0	0	------	0	1	0	3	0	0	0	0	0
Los Angeles, Calif.	13	0	13	1	2	0	8	11	21	0	0	41
Lynchburg, Va.	3	0	------	0	0	0	3	0	1	0	1	0
Memphis, Tenn.	0	0	2	0	3	0	1	0	3	0	1	3
Milwaukee, Wis.	0	0	1	1	21	0	7	0	32	0	0	26
Minneapolis, Minn.	3	0	------	0	2	1	0	1	16	0	0	7
Missoula, Mont.	0	0	------	0	0	0	2	0	0	0	0	1
Mobile, Ala.	1	0	1	0	0	0	1	0	1	0	1	0
Nashville, Tenn.	1	0	------	1	0	0	0	0	3	0	0	0
Newark, N. J.	0	0	8	0	4	2	8	1	6	0	0	19
New Haven, Conn.	0	0	------	0	2	1	2	0	1	0	0	11
New Orleans, La.	2	0	1	1	0	0	0	0	4	0	1	5
New York, N. Y.	20	1	9	2	12	11	55	3	93	0	6	122
Omaha, Nebr.	0	0	------	1	0	0	2	0	3	0	0	0
Philadelphia, Pa.	4	0	------	0	78	3	23	0	34	0	1	116
Pittsburgh, Pa.	3	0	------	0	0	1	10	0	6	0	0	12
Portland, Maine.	0	0	------	0	1	2	1	0	2	0	2	12
Providence, R. I.	2	0	------	0	2	1	2	0	2	0	0	3
Pueblo, Colo.	0	0	------	0	1	0	2	0	1	0	0	0
Racine, Wis.	0	0	------	0	3	0	0	0	0	0	0	0
Raleigh, N. C.	2	0	------	0	0	0	1	0	9	0	0	0
Reading, Pa.	0	0	------	0	0	0	0	0	0	0	0	15
Richmond, Va.	0	0	------	0	0	0	2	0	0	0	0	3

City reports for week ended October 31, 1942—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza cases	Influenza deaths	Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
Roanoke, Va	0	0	------	0	0	0	0	0	0	0	2	0
Rochester, N. Y	0	0	------	0	1	0	1	0	7	0	0	29
Sacramento, Calif	5	0	------	0	0	0	0	0	3	0	0	7
St. Joseph, Mo	0	0	------	0	0	0	2	0	1	0	0	0
St. Louis, Mo	2	0	2	2	0	0	17	1	15	0	0	6
St. Paul, Minn	0	0	------	0	0	0	5	0	3	0	1	8
Salt Lake City, Utah	2	0	------	1	41	0	1	0	7	0	0	5
San Antonio, Tex	2	0	3	3	0	0	1	1	3	0	0	0
San Francisco, Calif	1	0	------	1	6	0	8	1	6	0	0	6
Savannah, Ga	0	0	1	1	0	0	2	0	0	0	0	2
Seattle, Wash	0	0	------	0	7	0	6	1	1	0	0	4
Shreveport, La	1	0	------	0	0	0	5	0	0	0	0	0
South Bend, Ind	0	0	------	0	0	0	0	0	0	0	0	0
Spokane, Wash	0	0	------	0	12	0	1	1	6	0	0	1
Springfield, Ill	0	0	------	0	0	0	1	0	0	0	0	20
Springfield, Mass	0	0	------	0	6	0	3	0	28	0	0	5
Superior, Wis	0	0	------	0	0	0	0	0	2	0	0	7
Syracuse, N. Y	0	0	------	0	3	1	1	2	1	0	1	18
Tacoma, Wash	0	0	------	0	62	0	0	0	0	0	0	1
Tampa, Fla	1	0	------	0	0	0	0	0	0	0	0	0
Terre Haute, Ind	0	0	------	0	0	0	1	0	1	0	0	0
Topeka, Kans	0	0	------	0	0	0	0	0	1	0	0	0
Trenton, N. J	0	0	------	0	1	0	4	0	5	0	0	1
Washington, D. C	0	0	1	1	0	1	13	0	22	0	1	14
Wheeling, W. Va	0	0	------	1	2	0	3	1	0	0	0	8
Wichita, Kans	0	0	------	0	0	0	2	0	2	0	1	5
Wilmington, Del	0	0	------	0	0	0	4	0	1	0	0	1
Wilmington, N. C	0	0	------	0	0	0	0	0	1	0	0	2
Winston-Salem, N. C	2	0	------	0	1	0	0	0	1	0	0	0
Worcester, Mass	0	0	------	0	0	0	5	0	10	0	0	17

Anthrax—Cases: Philadelphia, 1.
Dysentery, amebic—Cases: Los Angeles, 4.
Dysentery, bacillary—Cases: Baltimore, 1; Charleston, S. C., 6; Chicago, 1; Detroit, 1; Fall River, 1; Los Angeles, 2; Nashville, 2; New York, 21; Richmond, 6; San Francisco, 1.
Dysentery, unspecified—Cases: San Antonio, 3.
Typhus fever.—Cases: Atlanta, 5; Brunswick, 3; Dallas, 1; Little Rock, 1; Mobile, 1; Nashville, 2; New Orleans, 1.

Rates (annual basis) per 100,000 population for the group of 89 cities in the preceding table (estimated population, 1942, 34,123,289)

Period	Diphtheria cases	Influenza cases	Influenza deaths	Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
Week ended Oct. 31, 1942	18.80	12.99	3.97	50.58	52.87	96.88	0.15	5.20	152.65
Average, 1937–41	18.22	11.58	[1] 2.77	[2] 63.32	[1] 48.27	95.60	0.46	5.41	157.37

[1] 3-year average, 1939–41.
[2] Median.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended October 17, 1942.—During the week ended October 17, 1942, 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 [1]	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis		4			1				1	6
Chickenpox		6		126	119	43	19	9	43	365
Diphtheria		7		36	1	6		2		52
Dysentery				10						10
German measles				2	8		1	3	4	18
Influenza		5			5		1		1	12
Measles				39	21	7	31		2	100
Mumps		12		115	182	12	38	21	92	472
Pneumonia		2			14				9	25
Poliomyelitis		4		2	4	2	1		2	15
Scarlet fever		2		107	75	8	9	29	27	257
Tuberculosis		5		57	48	16		5	8	139
Typhoid and paratyphoid fever				19	5			1		25
Undulant fever					1					1
Whooping cough		5		237	68	18	11	14	15	368
Other communicable diseases		7		1	255	37			8	308

[1] No report was received from New Brunswick Province for the above period.

JAMAICA

Communicable diseases—4 weeks ended October 24, 1942.—During the 4 weeks ended October 24, 1942, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chickenpox	1	8	Puerperal fever		1
Diphtheria	2	3	Tuberculosis	18	72
Dysentery	4	1	Typhoid fever	9	79
Leprosy	1	11			

SWITZERLAND

Notifiable diseases—July 1942.—During the month of July 1942, cases of certain notifiable diseases were reported in Switzerland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	10	Mumps	100
Chickenpox	170	Paratyphoid fever	51
Diphtheria	143	Poliomyelitis	104
Dysentery	2	Scarlet fever	211
German measles	34	Tuberculosis	409
Influenza	3	Typhoid fever	23
Lethargic encephalitis	1	Undulant fever	23
Measles	673	Whooping cough	143

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 in each month.

(Few reports are available from the invaded countries of Europe and other nations in war zones.)

Plague

Morocco.—During the week ended October 24, 1942, 6 cases of plague were reported in Morocco.

Typhus Fever

Algeria.—For the period October 1–10, 1942, 72 cases of typhus fever were reported in Algeria.

Morocco.—During the week ended October 24, 1942, 44 cases of typhus fever were reported in Morocco.

Rumania.—During the week ended October 31, 1942, 15 cases of typhus fever were reported in Rumania.

Tunisia.—For the period October 1–10, 1942, 105 cases of typhus fever were reported in Tunisia. For the period September 11–20, 1942, 62 cases of typhus fever were reported in Tunisia instead of 84 cases as previously reported.

Yellow Fever

Nigeria—Oshogbo.—During the week ended October 10, 1942, 1 suspected case of yellow fever was reported in Oshogbo, Nigeria.

COURT DECISION ON PUBLIC HEALTH

Statute creating hospital and health board for a particular county alone held invalid.—(Georgia Supreme Court; *Hood* v. *Burson et al.*, 20 S.E.2d 755; decided May 26, 1942, rehearing denied June 17, 1942.) In 1941 the legislature of Georgia enacted a law creating a hospital and health board for Carroll County. The board was charged with the duties and responsibilities of the public health board of the county and was designated as such for carrying into effect in the county the so-called Ellis health law of the State and for carrying on any public health clinics and activities in the county. Power was given the board to act for the people of the county in all matters pertaining to public health, public hospitalization, and public medical and dental clinics, in accordance with the laws then in force or which might thereafter be enacted. The Ellis health law provided for the creation of a county board of health for each county, which boards were to have supervision over all matters relating to health and sanitation in their respective counties. In the State constitution it was set forth that laws of a general nature should have uniform operation throughout the State and that no special law should be enacted in any case for which provision had been made by an existing general law.

The act relating to Carroll County alone was attacked as being a special or local law for which provision had been made by an existing general law (the Ellis health law) and, therefore, violative of the said constitutional provision. The supreme court of Georgia stated that the act creating a hospital and health board for Carroll County was by its own terms territorially local, not permitting of application to any other counties in the State, "Therefore it is a special or local law." The Ellis health law, continued the court, was a general law of uniform operation throughout the State and was "none the less so because of the optional principle dependent on grand jury action in the particular county before it goes into effect there." After reviewing the two laws, the court said that, insofar as matters of public health were concerned, the local act attempted to legislate upon a subject for which provision had been made by an existing general law, namely, the Ellis health law. The legislature having entered the field of public health for the counties in the State by the latter general law, and the subsequent special or local act establishing a hospital and health board for Carroll County being an enactment for which provision had been made by existing general law, the court held that the special act violated the above-mentioned constitutional provision and was invalid.