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WHAT'S PAST IS PROLOGUE

ACADEMIC QUALIFICATIONS OF REGISTERED NURSES AS REVEALED BY THE 1941 NATIONAL SURVEY OF REGISTERED NURSES

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The first National Survey of Registered Nurses[1] was launched in January 1941. Almost 460,000 questionnaires were distributed, and about 300,000 nurses responded.[2] Considerable information regarding the total number of nurses who participated in the 1941 Survey is now available. In this paper discussion will be limited to the educational qualifications of nurses as determined by data gathered directly from the questionnaires. To give more meaning to a discussion of the educational status of nurses in 1941 a short review of the profession's past attainments may be in order.

In 1871 Godey's Lady's Book advocated, in an editorial, that the "calling of sick nurse" be "elevated to a profession which an educated lady might adopt without a sense of degradation." The physician, it reasoned, was now held in high respect because he was a "well educated and thoroughly trained professional man." So nursing, it argued, could become an established, respected, and useful profession if its members were well educated and thoroughly trained (*1*). The 1941 Survey figures of 289,286 registered nurses give clear evidence that nursing, quantitatively at least, is established. But how well educated are the members of this profession?

In 1923, but two short decades ago, the Committee for the Study of Nursing Education reported that the "defective preparation and qualifications of many instructors in schools of nursing * * * is very marked;" that "an improvement in the quality * * * of public health nurses is fundamental * * *," and that the industrial nurse's lack of training for her special field "has been a grave handicap

[1] Assistance in the preparation of these materials was furnished by the personnel of the Work Projects Administration, Official Project No. 165-2-23-300.

[2] This is the third in a series of articles relating to the Survey of Registered Nurses. The earlier articles appeared in the January and June 1942 issues of the American Journal of Nursing.

* * *" (*2*). This Committee concluded that graduation from high school and from a good school of nursing afforded sufficient preparation for the private duty and the hospital graduate staff nurse, but superintendents, supervisors, instructors, and public health nurses (including nurses in industry) should in all cases receive additional training beyond the basic nursing course. It is interesting to note that no mention is made here of the advisability, much less the necessity, of a college degree for any group, though the suggestion appears elsewhere in the report that, ideally, instructors should be "professional teachers."

In 1928 the Committee on the Grading of Nursing Schools announced, after a study of the educational background of nurses in ten States, that only 49 percent were high school graduates, including 15 percent with 1 or more years of college; 40 percent had attended high school for 3 years or less, and 11 percent had never gone beyond grade school (*3*). In 1934 the Grading Committee strongly recommended that no school of nursing accept students with less than high school graduation and that "except for unusual and important reasons" all members of the nursing school faculty be college graduates. In this 1934 final report the Committee outlined "the pathway to progress" as it viewed the status of nursing education after 8 years of study (*4*). And now, from the data collected in the National Survey of Registered Nurses, some attempt can be made to determine where, on this "pathway to progress," the profession stood in 1941.

Information regarding academic qualifications is available for 255,527 of the total 289,286 nurses who returned their questionnaires; the information for the remaining group could not be determined because of insufficient data. Therefore all totals and percentages discussed will be in terms of the 255,527 questionnaires reviewed for purposes of this study. This number includes 159,672 active nurses and 95,855 inactive nurses.

Academic qualifications have been divided into five categories. "College graduation" includes all nurses who had academic degrees such as A. B., B. S., M. A., M. S., Ph. D., and such professional degrees as Bachelor of Nursing and Master of Nursing. "Postgraduate work without college graduation" includes nurses who had had some postgraduate clinical or other advanced nursing or academic courses but who did not hold college degrees. The three remaining categories—"high school graduation without postgraduate work," "high school work without graduation" and "no high school work"—are self-explanatory.

Approximately 4 percent of the 255,527 nurses were college graduates; 24 percent had had some college or advanced clinical education, and 56 percent were high school graduates only. In other words, 84 percent of all the nurses were high school graduates; approx-

imately 15 percent had not completed high school, and 1 percent did not get beyond grade school.

These figures have been further analyzed according to active and inactive nurses by type of position. Active nurses were those employed in nursing work at the time of the inventory; inactive nurses included the nurses not employed in nursing work at that time. It may be recalled that the questionnaire used in the 1941 Survey requested nurses to indicate their present or last active nursing employment by general type. Type of nursing could be checked as institutional, public health, industrial, private duty, or other. All nurses whose type of employment could not fall into one of the first four groups were considered "other." This latter group includes nurses in physicians' offices, air and rail stewardesses, nurses in key positions such as executive secretaries of State nurses associations, etc. The figures for "other" will be shown in the tables to follow; but the discussion of educational qualifications by type of position will be limited to the four more or less homogeneous types. Table 1 brings out some rather interesting variations.

TABLE 1.—*Distribution of active and inactive nurses in different position classifications, by academic qualifications*

Type of position and employment status	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Grand total	255,527	100.0	3.7	24.2	56.2	14.2	1.3
Active	159,672	100.0	4.6	26.7	56.0	11.7	1.0
Inactive	95,855	100.0	2.1	20.2	57.5	18.3	1.9
Institutional:							
Active	80,802	100.0	5.2	26.3	58.2	9.5	.8
Inactive	34,194	100.0	2.9	23.2	58.5	14.1	1.3
Public health:							
Active	17,619	100.0	12.7	55.9	22.2	8.5	.7
Inactive	6,614	100.0	7.4	42.6	33.3	15.1	1.6
Industrial:							
Active	5,416	100.0	1.4	23.4	57.8	15.8	1.6
Inactive	3,310	100.0	1.0	17.5	57.7	21.4	2.4
Private duty:							
Active	46,006	100.0	1.0	16.4	65.0	16.0	1.6
Inactive	44,223	100.0	.8	14.1	60.8	21.8	2.5
Other:							
Active	9,829	100.0	3.7	28.5	55.1	11.7	1.0
Inactive	7,514	100.0	2.4	23.6	54.9	18.1	1.0

Of the 160,000 actively employed nurses, nearly 5 percent were college graduates as compared with 2 percent of the total inactive nurses. The relative number of the active and inactive nurses who were high school graduates is practically the same; but, at the other end of the educational scale, the percentage of inactive nurses without *any* high school education is nearly double the percentage in the active group. Further study of table 1 clearly shows that nurses in active

employment in 1941 possessed, on the whole, higher academic qualifications than the unemployed or inactive nurses.

An analysis of the academic background by type of position brings out some further interesting differences. It will be noted that public health nurses were in the lead in their academic attainments; private duty and industrial groups had the smallest number with advanced educational qualifications. This pattern is fairly constant throughout the analysis. Thirteen percent of the active public health nurses held college degrees. About 56 percent had had some college work but did not have college degrees. Five percent of the active institutional nurses were college graduates, and a little over 26 percent had had some postgraduate education. Approximately 10 percent of the active institutional and 9 percent of the public health nurses had not completed high school; active industrial and private duty nurses showed 17 percent in that category. Much progress has been made, however, since the Grading Committee's publication of "Nurses, Patients, and Pocketbooks." In one of its studies this committee found that only 42 percent of the private duty nurses then employed were high school graduates; further, that only 22 percent of the institutional and 20 percent of the public health nurses had completed some college work (*3*). The 1941 Survey shows that 82 percent of the active private duty nurses were high school graduates. Institutional nurses showed only a 10-percent gain since 1928 in the percentage of nurses with some postgraduate preparation, but it must be remembered that the total institutional nurses in 1941 included a much greater proportion of general staff nurses. According to "Facts about Nursing" only 27 percent of the hospitals connected with nursing schools in 1927 employed graduate nurses for general duty; in 1937, 90 percent of the hospitals connected with schools of nursing employed graduate nurses for general duty (*5*). As a general rule, the institutional graduate staff nurses are not required to have had any postgraduate education.

Figures for active and inactive nurses have also been separated into two age groups: nurses under 40 and those 40 years and over. There were 187,209 active and inactive nurses under 40 years of age and 68,318 nurses 40 years old and over. Some striking differences are apparent in the educational qualifications of these two groups. The older nurses led in the percentage of those who held college degrees or who had had some postgraduate education—34 percent as against 27 percent. But figures for this same 40-year-and-over group also show a dramatic high at the other end of the scale. There were still 33 percent of the older nurses and 9 percent of the younger members who were not high school graduates. This might be expected, of course, since even among the group under 40 years of age there were no doubt many nurses who entered schools of nursing 10

or 15 years ago. Educational opportunities for the youth of that day were far more limited than today, and fewer schools of nursing required high school graduation as a prerequisite for entrance.

These facts stand out: The educational preparation of the inactive nurses was consistently lower than for the active nurses. The older nurses had the edge on the younger ones in their advanced preparation, but 91 percent of the younger nurses were high school graduates as against 67 percent in the older group. Actually, in terms of educational progress, these are encouraging facts.

In table 2 an analysis has been made of the educational qualifications of active nurses according to the two age groups and by type of position; the same break-down has been made in table 3 for the inactive nurses.

TABLE 2.—*Distribution of active nurses under 40 years of age and 40 years of age and older in different position classifications, by academic qualifications*

Type of position and age group	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total active	159,672	100.0	4.6	26.7	56.0	11.7	1.0
Under 40	120,586	100.0	4.0	24.7	63.8	7.2	.3
40 and over	39,086	100.0	6.3	32.8	31.9	25.6	3.4
Institutional:							
Under 40	64,045	100.0	4.4	24.8	64.8	5.8	.2
40 and over	16,757	100.0	8.3	31.9	32.8	24.0	3.0
Public health:							
Under 40	10,398	100.0	13.8	57.0	24.8	4.1	.3
40 and over	7,221	100.0	11.1	54.4	18.6	14.7	1.2
Industrial:							
Under 40	3,828	100.0	1.5	22.2	66.1	9.8	.4
40 and over	1,588	100.0	1.3	26.1	37.8	30.6	4.2
Private duty:							
Under 40	34,832	100.0	1.0	15.0	73.7	10.0	.3
40 and over	11,174	100.0	1.0	20.5	38.1	34.7	5.7
Other:							
Under 40	7,483	100.0	2.9	26.4	62.7	7.8	.2
40 and over	2,346	100.0	5.9	35.2	31.7	24.5	2.7

Approximately 76 percent of the total active nurses were under 40 years of age. Among the inactive nurses about 70 percent were under 40 years. The difference in the ratio between active and inactive nurses under 40 years of age was too small to warrant the conclusion that age was the only factor accounting for the variations in academic background in the respective groups. Other factors without doubt entered into this picture; but for purposes of this study the discussion will be limited to the factors of age, type of position, and geographic location.

TABLE 3.—*Distribution of inactive nurses under 40 years of age and 40 years of age and older in different position classifications, by academic qualifications*

Type of position and age group	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total inactive	95,855	100.0	2.1	20.2	57.5	18.3	1.9
Under 40	66,623	100.0	2.1	18.5	67.0	11.9	.5
40 and over	29,232	100.0	2.2	23.9	35.9	32.9	5.1
Institutional:							
Under 40	25,610	100.0	2.6	21.7	66.4	8.9	.4
40 and over	8,584	100.0	3.7	27.6	34.8	29.7	4.2
Public health:							
Under 40	3,401	100.0	10.0	42.7	39.6	7.4	.3
40 and over	3,213	100.0	4.8	42.5	26.6	23.0	3.1
Industrial:							
Under 40	2,173	100.0	1.0	16.5	68.1	13.7	.7
40 and over	1,137	100.0	.9	19.2	38.0	36.2	5.7
Private duty:							
Under 40	30,032	100.0	.8	12.6	71.2	14.7	.7
40 and over	14,191	100.0	.8	17.3	38.6	36.9	6.4
Other:							
Under 40	5,407	100.0	2.3	22.0	62.8	12.7	.2
40 and over	2,107	100.0	2.7	27.7	34.6	32.9	3.0

It may be of interest to note that although the nurses under 40 years of age greatly outnumbered the older nurses in institutional and private duty nursing, this was not the case in public health nursing. Only about 27 percent of the total number of private duty and 22 percent of the institutional nurses were 40 years old or over; nearly 44 percent of all public health nurses were in the 40-year-and-over group. When the educational qualifications of nurses under 40 years of age and nurses 40 years old and over are studied according to type of position, a fairly consistent variation appears in the two age groups for each type of nursing. There is one significant divergence. Only in public health nursing did the younger and not the older group lead in the number who had some postgraduate education. This is true of the inactive as well as the active public health nurses. A few obvious reasons for this trend may be suggested. Public health agencies usually require some advanced educational preparation of general staff nurses. This has been especially the case for the young nurse entering the public health field. The older experienced nurse already employed is more likely to be exempt from this requirement. On the other hand, advanced nursing preparation for the institutional nurse is usually required only of nurses holding positions above the general staff level. Since institutional staff nurses outnumber the administrators, supervisors, and instructors in that field, the measure of their educational preparation heavily weights the total picture.

To follow this thought further, data for all active institutional, public health, and other nurses have been arranged by sphere of

responsibility (table 4). All nurses who listed their functions under administration, supervision, teaching, or any combination of these are designated as "administrative nurses;" all others are designated as "general staff." [3]

TABLE 4.—*Distribution of active administrative and staff nurses in different position classifications, by academic qualifications* [1]

Type of position and sphere of responsibility	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total:							
Administrative	44,017	100.0	11.1	37.6	41.4	9.3	0.6
Staff	64,233	100.0	3.0	27.0	59.4	9.8	.8
Institutional:							
Administrative	36,481	100.0	9.5	34.2	45.6	10.0	.7
Staff	44,321	100.0	1.6	19.7	68.5	9.4	.8
Public health:							
Administrative	5,867	100.0	20.7	59.1	14.8	5.1	.3
Staff	11,752	100.0	8.7	54.3	26.0	10.2	.8
Other:							
Administrative	1,669	100.0	10.2	38.2	40.0	11.0	.6
Staff	8,160	100.0	2.3	26.5	58.3	12.0	.9

[1] Private duty and industrial nurses are not included since there is but one category for the private duty nurse and since few industrial nurses hold other than staff positions.

Approximately 10 percent of the administrators, in institutional nursing, compared with 2 percent of their general staff members, held college degrees. In public health nursing 21 percent of the administrators and 9 percent of the staff were college graduates. Of the total nurses with administrative responsibilities 34 percent of the institutional nurses compared with 59 percent of the public health nurses had had some advanced educational preparation. About 20 percent of the institutional general staff nurses had taken some advanced work while 54 percent of the public health staff nurses had done so. However, it must again be emphasized that members of a public health nursing staff were, in many instances, required to have some postgraduate education; institutional general staff were not.

It may be relevant here to compare the general educational qualifications of the active institutional staff nurses with those of the private duty nurses. As noted above, 20 percent of the institutional staff nurses had had some advanced education; in private duty 16 percent of the active nurses were so prepared (table 1). Ninety percent of the institutional staff nurses, including those with college degrees or some postgraduate education, were high school graduates,

[3] Private duty and industrial nurses are not included in tables 4, 5, and 6, since there is but one category for the private duty nurse and since few industrial nurses hold other than staff positions.

while only 82 percent in the private duty group had completed high school.

Since the factor of age apparently accounts for some of the differences in educational qualifications in the various groups of nurses studied, tables 5 and 6 have been included. In table 5 active administrators have been analyzed according to the two age groups. Table 6 shows similar analysis for the general staff nurse.

TABLE 5.—*Distribution of active administrative nurses under 40 years of age and 40 years of age and older in different position classifications, by academic qualifications* [1]

Type of position and age group	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total, active administrative nurses	44,017	100.0	11.1	37.6	41.4	9.3	0.6
Under 40	30,348	100.0	9.7	36.4	48.4	5.4	.1
40 and over	13,669	100.0	14.3	40.6	25.7	17.7	1.7
Institutional:							
Under 40	26,264	100.0	8.5	33.7	51.9	5.8	.1
40 and over	10,217	100.0	12.5	35.7	29.4	20.3	2.1
Public health:							
Under 40	2,991	100.0	20.9	60.0	16.8	2.2	.1
40 and over	2,876	100.0	20.5	58.2	12.7	8.1	.5
Other:							
Under 40	1,093	100.0	8.0	36.5	48.9	6.4	.2
40 and over	576	100.0	14.6	41.3	23.8	18.9	1.4

[1] Private duty and industrial nurses are not included, since there is but one category for the private duty nurse and since few industrial nurses hold other than staff positions.

TABLE 6.—*Distribution of active staff nurses under 40 years of age, and 40 years of age and older, in different position classifications, by academic qualifications* [1]

Type of position and age group	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total, active staff nurses	64,233	100.0	3.0	27.0	59.4	9.8	0.8
Under 40	51,578	100.0	3.0	24.7	66.0	6.0	.3
40 and over	12,655	100.0	3.0	35.9	32.3	25.6	3.2
Institutional:							
Under 40	37,781	100.0	1.6	18.6	73.7	5.9	.2
40 and over	6,540	100.0	1.8	26.1	38.2	29.7	4.2
Public health:							
Under 40	7,407	100.0	11.0	55.7	28.1	4.9	.3
40 and over	4,345	100.0	4.8	51.9	22.5	19.1	1.7
Other:							
Under 40	6,390	100.0	2.1	24.6	65.0	8.0	.3
40 and over	1,770	100.0	3.0	33.2	34.4	26.3	3.1

[1] Private duty and industrial nurses are not included since there is but one category for the private duty nurse and since few industrial nurses hold other than staff positions.

With a few exceptions, the figures in tables 5 and 6 follow the same pattern as those in the earlier tables. There were more than twice as many institutional administrators under 40 years of age as there were institutional administrators 40 years old and over. In public health nursing, however, there was practically the same number of administrators in the two age groups. About 9 percent of the institutional administrators under 40 years of age were college graduates; 13 percent of the institutional administrators 40 years old and over held college degrees. In public health nursing nearly 21 percent of the administrators in both age groups were college graduates.

An analysis of the academic qualifications of general staff nurses (table 6) revealed that 2 percent of the institutional staff nurses in both age groups held college degrees. In public health nursing, however, the staff nursing group under 40 years of age had a higher proportion of college graduates (11 percent) than the public health group 40 years old and over (5 percent). The staff nurses 40 years old and over in both the public health and institutional groups showed a high percentage of nurses who had not completed high school; nearly 30 percent in institutional nursing and 20 percent in public health were not high school graduates.

Tables 5 and 6 confirm the following general impressions: Administrators in all types of nursing were better qualified, on the whole, than general staff nurses; a relatively high proportion of public health staff nurses had had advanced postgraduate education; in institutional nursing the older nurses—both administrative and staff—led the younger nurses in the percentage of those who had graduated from college or had taken some postgraduate work; in public health nursing the younger nurses—both administrative and staff—had higher academic qualifications than the older public health nurses.

The data so far presented give the total national picture of the status of nursing education in 1941. Ours is a far-flung country; the specific contribution to this national picture made by each geographic area is shown in table 7.[4] Geographic areas are those used by the Bureau of the Census.

It might be expected that the data representing the various geographic areas would follow the general pattern shown in the national totals. Several deviations, however, are apparent. The New England and Pacific areas show the highest percentage of nurses 40 years of age and over. In these areas, therefore, one would look for a higher proportion of nurses with some postgraduate education and a higher proportion who had not completed high school. This was not the case. New England showed a low percentage of nurses with some postgraduate education and a high percentage of the older nurses

[4] Nurses were included in the total count of the State in which they were working at the time of the 1941 Survey. See appendix for tabulation of data by States.

who had completed high school. The Pacific area, in spite of having the highest percentage of nurses 40 years of age and over, also had a high proportion of high school graduates and led the country in its number of nurses with higher academic qualifications.

TABLE 7.—*Distribution of active nurses in different geographic areas by academic qualifications*

Geographic area[1]	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total, active nurses	159,672	100.0	4.6	26.7	56.0	11.7	1.0
New England	18,666	100.0	3.2	24.9	59.0	12.1	.8
Middle Atlantic	39,706	100.0	4.3	26.8	53.2	14.7	1.0
East North Central	31,195	100.0	5.1	25.3	59.8	8.7	1.1
West North Central	15,301	100.0	5.2	26.2	57.7	9.6	1.3
South Atlantic	15,459	100.0	3.8	25.5	59.0	10.7	1.0
East South Central	5,873	100.0	4.0	27.0	55.5	12.5	1.0
West South Central	10,225	100.0	3.3	26.1	56.9	12.3	1.4
Mountain	6,124	100.0	5.3	29.0	54.9	10.0	.8
Pacific	15,630	100.0	7.0	32.7	48.5	10.8	1.0
Possessions	1,493	100.0	4.3	25.1	41.9	23.2	5.5

[1] The geographic areas as established by the Bureau of the Census contain the following States: New England—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut; Middle Atlantic—New York, New Jersey, Pennsylvania; East North Central—Ohio, Indiana, Illinois, Michigan, Wisconsin; West North Central—Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas; South Atlantic—Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida; East South Central—Kentucky, Tennessee, Alabama, Mississippi; West South Central—Arkansas, Louisiana, Oklahoma, Texas; Mountain—Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada; Pacific—Washington, Oregon, California; Possessions—Puerto Rico, Alaska, Territory of Hawaii.

Data for Puerto Rico present a striking contrast to the Territories of Hawaii and Alaska. There were 510 active nurses under 40 years of age and 69 nurses in the 40-year-and-over group in Puerto Rico. Despite the high proportion of younger nurses, the academic qualifications of the Puerto Rican nurses were startlingly low. Forty-four percent of the nurses under 40 years of age were high school graduates and only 29 percent of the older nurses had completed high school. The percentages for the Territories of Hawaii and Alaska were similar to those for the Pacific area.

SUMMARY

Answers to the earlier question, "How well educated were the nurses of 1941?," may now be summarized as follows:

1. Actively employed nurses had better educational qualifications than the nurses who had dropped out of the profession.

2. Eighty-seven percent of all active nurses were high school graduates. The percentage of high school graduates among nurses under 40 years of age was 93 compared with 71 for the 40-year-and-over group.

3. Twenty-seven percent of the nurses actively employed had taken some postgraduate work. This number does not include the nurses holding college degrees.

4. About 5 percent of all active nurses were college graduates. Percentages for college graduates by type of position follow: Institutional, 5 percent;[5] public health, 13 percent; industrial, 1 percent; private duty, 1 percent; other, 4 percent.

5. A larger proportion of nurses under 40 years of age held administrative, supervisory, and teaching positions in hospitals and schools of nursing than in public health nursing. However, more of the administrative nurses in the field of public health than in institutions had had some postgraduate preparation.

6. In 1941, 44 percent of the active administrators, instructors, and supervisors in institutional nursing, 69 percent of all active public health nurses, and 25 percent of the active industrial nurses had taken some postgraduate work including those with college degrees. These figures are significant when compared with the recommendations of the Committee for the Study of Nursing Education which emphasized that superintendents, supervisors, instructors, and all public health nurses (including nurses in industry) receive additional training beyond the basic nursing course (*2*).

7. Academic qualifications of nurses varied slightly with the several geographic areas in the United States. The Pacific area had the highest proportion of nurses with higher academic qualifications; New England showed the smallest percentage of nurses with advanced educational preparation.

Where then was the nursing profession on the "pathway to progress" in 1941?

Nursing has traveled far since 1928 when only 49 percent of the nurses were high school graduates. In 1941, 87 percent of the active nurses had completed high school. There can be little doubt that the nursing profession agrees with Esther Lucile Brown (*6*) that "adequate preparation constitutes one of the most important elements of successful practice." Its progress has been steadily and consistently in the direction of more "adequate preparation." However, from the figures presented it is also evident that although nursing can point with pride to its past performance, it must diligently and forever

[5] If the academic qualifications of the institutional group are analyzed by specific type of responsibility, it is found that 23 percent of the full-time instructors were college graduates.

bear in mind that this past has but paved the way for future accomplishment.

The national picture of nursing education in 1941 would truly justify the nurse of today in saying to the nurse of tomorrow:

"Whereof what's past is prologue, what to come
In yours and my discharge"(7).

REFERENCES

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Appendix

Distribution of active nurses in States, Territories, and the District of Columbia, by academic qualifications [1]

State	All nurses		Percent of nurses with designated academic qualifications				
	Number	Percent	College graduation	Postgraduate work without college graduation	High school graduation without postgraduate work	High school work without graduation	No high school work
Total, active nurses	159,672	100.0	4.6	26.7	56.0	11.7	1.0
Alabama	1,162	100.0	3.3	23.2	60.8	12.1	.6
Alaska	143	100.0	8.4	42.0	43.3	6.3	.0
Arizona	580	100.0	4.3	28.8	52.9	13.4	.5
Arkansas	867	100.0	2.3	23.8	58.2	14.4	1.3
California	10,668	100.0	6.4	34.7	47.3	10.8	.8
Colorado	2,379	100.0	6.2	29.5	54.0	9.4	.9
Connecticut	4,711	100.0	4.9	22.8	56.2	14.9	1.3
Delaware	436	100.0	1.8	24.8	64.7	8.5	.2
District of Columbia	1,706	100.0	4.9	30.7	55.6	8.0	.7
Florida	1,459	100.0	2.9	26.7	56.2	13.0	1.1
Georgia	1,671	100.0	3.5	26.6	59.1	10.0	.8
Hawaii	771	100.0	5.3	33.2	50.3	10.5	.6
Idaho	542	100.0	7.4	24.5	56.1	11.4	.6
Illinois	8,334	100.0	5.2	25.9	59.0	9.2	.7
Indiana	4,191	100.0	4.1	26.0	59.9	8.9	1.2
Iowa	3,024	100.0	4.8	23.0	60.7	10.1	1.4
Kansas	1,874	100.0	4.5	24.5	58.8	11.3	1.0
Kentucky	1,512	100.0	4.2	33.1	47.2	14.6	.9
Louisiana	3,273	100.0	2.9	22.5	63.4	10.4	.8
Maine	1,404	100.0	1.7	23.6	63.3	10.5	.9
Maryland	3,097	100.0	5.3	22.9	59.8	10.3	1.7
Massachusetts	9,722	100.0	2.9	26.9	58.8	10.9	.6
Michigan	5,252	100.0	5.6	28.1	56.2	9.0	1.0
Minnesota	4,418	100.0	5.6	26.9	58.4	8.1	1.0
Mississippi	879	100.0	1.5	23.3	64.8	9.6	.8
Missouri	4,118	100.0	5.0	27.1	54.8	11.3	1.9
Montana	1,051	100.0	3.8	24.2	60.6	10.6	.8
Nebraska	917	100.0	8.1	33.0	53.0	5.5	.4
Nevada	108	100.0	2.8	28.7	56.5	12.0	.0
New Hampshire	1,311	100.0	1.2	19.9	62.7	14.9	1.2
New Jersey	6,280	100.0	3.2	27.1	52.5	16.5	.6
New Mexico	480	100.0	5.2	33.5	48.0	12.2	1.1
New York	17,656	100.0	5.9	31.2	47.6	15.0	.3
North Carolina	2,002	100.0	3.5	28.3	60.4	7.4	.3
North Dakota	386	100.0	6.0	28.5	55.7	7.8	2.1
Ohio	9,771	100.0	5.5	22.8	62.7	8.3	.8
Oklahoma	1,432	100.0	4.5	25.3	57.8	11.5	.8
Oregon	1,892	100.0	9.1	27.8	52.3	9.9	1.0
Pennsylvania	15,769	100.0	3.1	21.7	59.8	13.6	1.8
Puerto Rico	579	100.0	1.9	10.2	30.2	44.4	13.3
Rhode Island	987	100.0	3.1	27.3	58.8	10.2	.6
South Carolina	948	100.0	2.7	23.5	66.7	6.8	.2
South Dakota	565	100.0	3.9	23.2	62.1	9.2	1.6
Tennessee	2,320	100.0	5.1	26.2	54.8	12.6	1.2
Texas	4,653	100.0	3.3	29.4	51.8	13.5	2.0
Utah	658	100.0	5.2	38.0	51.2	5.3	.3
Vermont	531	100.0	3.0	17.9	66.3	12.0	.8
Virginia	2,598	100.0	3.6	25.8	57.9	11.8	.8
Washington	3,070	100.0	7.8	28.6	50.5	11.5	1.6
West Virginia	1,542	100.0	2.0	20.4	57.6	18.1	1.9
Wisconsin	3,647	100.0	4.4	26.7	59.9	8.4	.7
Wyoming	326	100.0	4.0	22.7	61.0	10.7	1.5

[1] Based upon active nurses who participated in the 1941 survey of registered nurses.

A COMPARISON OF RABBIT AND HORSE SERUMS IN MENINGOCOCCUS INFECTIONS[1]

By SARA E. BRANHAM, *Senior Bacteriologist, United States Public Health Service*

Ever since antimeningococcic serum came into use it has been made in horses, and, in this country at least, it has been polyvalent. There have been logical reasons for both of these practices. Accurate laboratory diagnosis in meningococcus infections is often slow, and, in past years, typing usually required at least 2 days after the initial cultures were made. The prompt injection of a polyvalent serum was for many years the only specific therapy. The preparation of a good serum in horses has always been a long process, usually requiring about 2 years.

The use of the sulfonamides in the treatment of meningococcus meningitis has altered the situation considerably. The clinician now has other agents which can be given immediately upon making the clinical diagnosis.

There are some cases, however, in which other treatment is indicated. There is a great variation in susceptibility of different strains of meningococci to these drugs (*1*) and occasionally cases are encountered which are due to strains that are very resistant. This resistance seems inherent in the strain and is different, apparently, from the "drug fastness" which is also occasionally met. Some persons do not tolerate some of the sulfonamides well, and in some old people and young children large doses of these drugs are contraindicated for various reasons. Sometimes, without explainable cause, the patient merely fails to improve.

Experimental studies with mice have shown (*1*) that in these animals the combination of the sulfonamides and serum has a higher protective value than either agent alone, and that when serum is used, less of the drug is necessary. Thus it seems that the need for antimeningococcic serum, though limited, is real. It is therefore important that attention be focused upon quality rather than quantity. It seems desirable to examine data obtained by studying a number of antimeningococcus serums which were processed by the prevailing methods.

This report summarizes data obtained during recent months in the Division of Biologics Control of the National Institute of Health from samples of therapeutic antiserums submitted by manufacturers for release. These were all prepared in horses and comprise both whole and refined and concentrated serums. Also included are a number of monovalent serums, representing chiefly Group I meningococci, prepared in horses or rabbits for experimental purposes. Some of the latter were prepared by Doctor Fritz of the Gilliland Laboratories, some by Doctor Joyner of the Lederle Laboratories, some by Dr.

[1] From the Division of Biologics Control, National Institute of Health.

Margaret Pittman of the National Institute of Health, and some by the author.

These serums were compared by means of a mouse protection test (*2*) which has been previously described. The same strain of Group I meningococcus, NIH 1027, was used for testing throughout and was maintained at "maximum virulence." The usual National Institute of Health meningococcus control serum M19, an unconcentrated polyvalent horse serum, was included in all tests. In the following tables the values of the serums studied have been expressed in relation to this M19, arbitrarily taking the value 100 to represent it.

Table 1 presents the values obtained with 50 polyvalent horse serums, 25 concentrated and 25 unconcentrated. These were not selected serums but represent the first 25 of each class received at the National Institute of Health after July 1, 1941. They are arranged in order of value, beginning with the lowest.

TABLE 1.—*Comparison of concentrated and whole antimeningococcic horse serums with a control serum*

Concentrated serum		Whole serum	
Number of serum	Value, per-cent, of M19 [1]	Number of serum	Value, per-cent, of M19 [1]
1	100	1	101
2	111	2	102
3	112	3	110
4	127	4	110
5	133	5	112
6	134	6	113
7	141	7	121
8	144	8	123
9	149	9	125
10	165	10	133
11	181	11	138
12	200	12	140
13	215	13	147
14	237	14	148
15	294	15	150
16	315	16	155
17	322	17	157
18	333	18	170
19	385	19	189
20	400	20	191
21	400	21	193
22	406	22	207
23	420	23	225
24	489	24	248
25	490	25	267

[1] Control, M19=100.

Each of these represents a pool from several horses. All horses had been immunized for at least a year, and some for a number of years. Although some of each class barely reached the required minimum value, it can be seen that the best unconcentrated serums were two to three times the value of the control and the best of the concentrated were four to five times the control in protective action for mice. As would be expected, a far larger number of the concentrated serums gave these higher figures, 14 of the concentrated serums

giving more than twice the protection of the control, whereas only 4 of the whole serums showed such a value.

Table 2 presents a study of monovalent (Group I) horse serums. This gives a fair idea of the length of time necessary for immunizing horses and shows the gradual development in titer for a strain of the homologous group. Good serums were obtained from these horses (No. 481 and No. 487), though at the end of the first year neither horse gave serum with protective value equal to one-half that of the control. After 2 years' immunization one horse (No. 487) gave serum equal to the control, whereas the other serum (Horse No. 481) was approximately twice as much. Concentrated serums from these horses gave values approximately three and four times that of the control. These two monovalent serums have given excellent protection in experimental work. It is seen, therefore, that good monovalent serums can be made in horses, though the period of immunization is long.

TABLE 2.—*Development of protective antibodies in two horses immunized with single strains of Group I meningococci*

Horse No. 481				Horse No. 487			
Number bleeding	Date of bleeding	Period of immunization (months) [1]	Value, percent, of M19 [2]	Number bleeding	Date of bleeding	Period of immunization (months) [1]	Value, percent, of M19 [2]
1	Nov. 13, 1939	4	6	1	Nov. 13, 1939	4	2
2	Jan. 15, 1940	6	22	2	Jan. 15, 1940	6	9
4	Mar. 25, 1940	8½	25	5	Apr. 15, 1940	9	10
5	Apr. 15, 1940	9	38	6	May 9, 1940	10	10
6	May 9, 1940	10	42	7	July 10, 1940	12	24
7	July 10, 1940	12	63	19	Dec. 28, 1941	25	108
11	Apr. 23, 1941	21	197	20	Jan. 5, 1942	26	181
23	Concentrated pool		293	26	Concentrated pool		434

[1] Immunization of both horses began July 12, 1939.
[2] M19=100.

Table 3 shows results obtained in rabbits with monovalent (Group I) serums. More than one bleeding was studied from many of these rabbits so that 23 serums from 16 rabbits are represented in the table. These had been prepared by the four persons mentioned above.

The most conspicuous finding, brought out by this table, is the relatively short time required to produce a serum of good protective titer in a rabbit as compared with a horse. Within 4 to 6 months a protective value equal to that of the control could be obtained in most rabbits as compared with the 2 years required by the horses as shown in table 2.

Serums 1–13 in table 3 are single bleedings from individual rabbits. Results obtained with these show that different strains vary in antigenicity, and, under the circumstances of these experiments, a serum seems to protect better against its homologous strain than against

others, even of the same serological group. This is a good argument in favor of pooling serums from a number of rabbits. Serums 14 to 18 represent pools from a number of rabbits.

TABLE 3.—*Values found in monovalent (Group I) rabbit serums expressed in relation to control M19*[1]

Serial number	Serum	Immunization period (months)	Value, percent, of M19	Nature of serum
1	1209	5	444	Immunized with strain 1027 (I). Tested with homologous strain 1027 (I).
2	1210	5	288	
3	1250A	2	57	
4	1250B	4	141	
5	1251A	2	44	
6	1251B	4	160	
7	1242A	1	21	Immunized with heterologous strain 1041 (I), a poor antigen. Tested with 1027 (I).
8	1242B	4	70	
9	1243A	1	14	
10	1243B	4	35	
11	1244	4	56	Immunized with heterologous strain 1168 (I). Tested with 1027 (I).
12	1245A	1	20	
13	1245B	4	87	
14	M1A	5	87	Pools of rabbits immunized with Group I strains. Tested with 1027 (I).
15	M1B	12	132	
16	10A	1-4	116	
17	10B	1-6	225	
18	21	4-10	790	
19	16	2-6	470	Group I serums, pooled, concentrated, and refined. Tested with 1027 (I).
20	22	1-9	1,022	
21	23	4-10	326	
22	25	2-10	1,000	
23	27	2-10	426	

[1] M19=100.

When pooled rabbit serums were refined and concentrated the protective value was far better than that of the concentrated serums from horses. The concentrated monovalent horse serums shown in table 2 had values of three to four times the control, whereas these concentrated rabbit serums, Nos. 19 to 23, representing a shorter period of immunization, were four to ten times the control.

The limited data in these three tables strongly suggest that a good antimeningococcus serum can be produced more simply, quickly, and effectively in rabbits than in horses. Certainly such serums have given better protection in mice. Only monovalent serums from rabbits have been studied so far, but they have seemed superior to monovalent horse serums and have required much less time and expense to prepare. No polyvalent horse serum shown in table 1 has equaled some of the rabbit serums. The highest value obtained for a concentrated polyvalent horse serum was approximately five times the control, whereas some of the concentrated rabbit serums were more than ten times the control.

There is ample precedent for the use of refined and concentrated rabbit serum in other human infections. Horsfall, Goodner, and

their coworkers (*3*) introduced rabbit serum in the treatment of pneumonias due to various types of the pneumococcus.

The use of rabbit serum in the pneumonias is now on an established basis, as shown by numerous clinical reports (*4*). Since refined and concentrated rabbit serum has been used safely and successfully in the treatment of such infections, there seems to be no contraindication to its use in meningococcus infections. It is suggested that such rabbit serum, when it is available, be given clinical trial in those human cases of meningococcus infection in which serum is indicated.

To recommend that rabbit serum be polyvalent or monovalent would be premature at this time. Ideally, the administration of a sulfonamide would be followed when indicated, by a monovalent serum, for the serological group of meningococcus involved. Where cultures have been made from spinal fluid or blood before drug therapy has been instituted such a course would be entirely practicable. An increasing number of clinicians and institutions, as well as the United States Army, request "typing" routinely.

On the other hand, it is sometimes impossible to isolate and "type" the meningococcus even though the microorganisms have been seen in a stained smear from spinal fluid. In such cases it would seem that a polyvalent serum might be definitely indicated.

In all of the epidemics studied during the last 20 years, more than 90 percent of the cases of meningococcus infection have been due to strains of serological Group I.

SUMMARY

Horse and rabbit antimeningococcic serums, both whole serum and refined and concentrated, have been studied by means of a mouse protection test.

Refined and concentrated serums have been found better than whole serums in protecting mice.

Rabbit serum, refined and concentrated, has been found far superior to the horse serums, some samples being ten times as potent as the official control serum.

The length of time required for immunization of rabbits has been much less than that for horses.

Antimeningococcic serum can be prepared more quickly and conveniently in rabbits than in horses. When refined and concentrated it has a much higher protective value, when studied in the laboratory, than similar serum from horses.

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LOCATION AND MOVEMENT OF PHYSICIANS, 1923 AND 1938—AGE DISTRIBUTION IN RELATION TO COUNTY CHARACTERISTICS [1]

By Joseph W. Mountin, *Assistant Surgeon General*, Elliott H. Pennell, *Statistician*, and Virginia Nicolay, *United States Public Health Service*

In estimating the professional resources of a community it is of course necessary to consider the age as well as the actual number of physicians in practice. However, an appraisal of a local situation may be misleading without having in mind the national pattern. This composite, in turn, has been controlled over the years by such factors as output of medical colleges and life expectancy.

Most influential of these two factors is the variation in numbers of medical graduates preceding as well as during the period embraced by

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

This is the fourth report on the location and movement of physicians, 1923 and 1938. Previous articles are:

Mountin, Joseph W., Pennell, Elliott H., and Nicolay, Virginia: Location and movement of physicians, 1923 and 1938—general observations. Pub. Health Rep., 57:1363 (September 11, 1942). Reprint No. 2403.

Mountin, Joseph W., Pennell, Elliott H., and Nicolay, Virginia: Location and movement of physicians, 1923 and 1938—turnover as a factor affecting State totals. Pub. Health Rep., 57:1752 (November 20, 1942). Reprint No. 2422.

Mountin, Joseph W., Pennell, Elliott H., and Nicolay, Virginia: Location and movement of physicians, 1923 and 1938—effect of local factors upon location. Pub. Health Rep., 57:1945 (December 18, 1942). Reprint No. 2434.

this study, 1923 to 1938.[2] Leland, in a comprehensive report on physician distribution,[3] has presented statistics illustrating the trend in the output of medical colleges in the United States from 1880 to 1935. These data indicate a sharp increase from 3,241 graduates in 1880 to 5,214 in 1904, followed by a precipitous decline to 2,670 in 1918. This decline was coincident with many reforms in medical education. For the next 4 years the number remained at a low level, the lowest point being reached in 1922 when only 2,539 were graduated. As prospective students became adjusted to higher scholastic standards, the number of admissions to medical schools gradually rose. In close succession there followed correspondingly large but gradually diminishing annual increases in graduates until 1935 when the number reached 5,101. Material published in a late issue of the Journal of the American Medical Association[4] reveals that the numbers of graduates for each of the next 3 years were somewhat above the 1935 figure.

Naturally this marked variation in medical college output is reflected in the age distribution of physicians in both 1923 and 1938, the initial and terminal years of the study herein reported. If it may be assumed for purposes of calculation that the average age of 27 for medical graduates, as recorded by Leland, is roughly applicable at all periods, those physicians who were graduated prior to 1890 when the output of medical schools was relatively low would be 60 years of age or more in 1923. Others whose graduation had occurred between 1890 and 1910, when the output was high, would occupy a middle position in the age span. Finally, those who completed their schooling from 1910 to 1923—a second period of low production—would be, for the most part, under 40 years of age in 1923.

These disclosures explain the finding of heavy concentrations of physicians in the four 5-year age groups corresponding roughly to middle-aged physicians, with smaller totals for the 5-year age groups at the younger and older ages in the national picture for 1923 (fig. 1). The age pattern for 1938 was sharply in contrast with that for 1923. At this time, physicians surviving from the 1923 middle age groups had advanced into the higher age classifications, the unduly small number of young physicians plus some additional graduates not

[2] The data depicting age characteristics of physician groups presented in this report are available from a study of physician distribution and movement conducted by the U. S. Public Health Service with the assistance of a grant from the Work Projects Administration. The study was based upon data abstracted from American Medical Directories published by the American Medical Association over the period from 1923 to 1938. The study period represents the longest continuous series of directories available at the time the study was initiated. The age of a physician at the initial and terminal years of the study was indicated by his year of birth. The age distributions presented in this discussion represent summaries obtained from counts of physicians classified in 5-year intervals from year of birth.

[3] Leland, R. G.: Distribution of physicians in the United States. Bureau of Medical Economics, American Medical Association, Chicago, 1936.

[4] Schools, students, and graduates in the United States, 1904–1942. J. Am. Med. Assoc., 119:1281 (August 15, 1942).

listed in 1923 had advanced to the middle age category, and the young physicians in 1938 had been recruited from graduates in late years when the output of medical schools was large. This results in a strikingly large number of physicians in the young age groups, a very much smaller number in the 5-year age intervals describing the middle age groups, and a very large total in the oldest group.

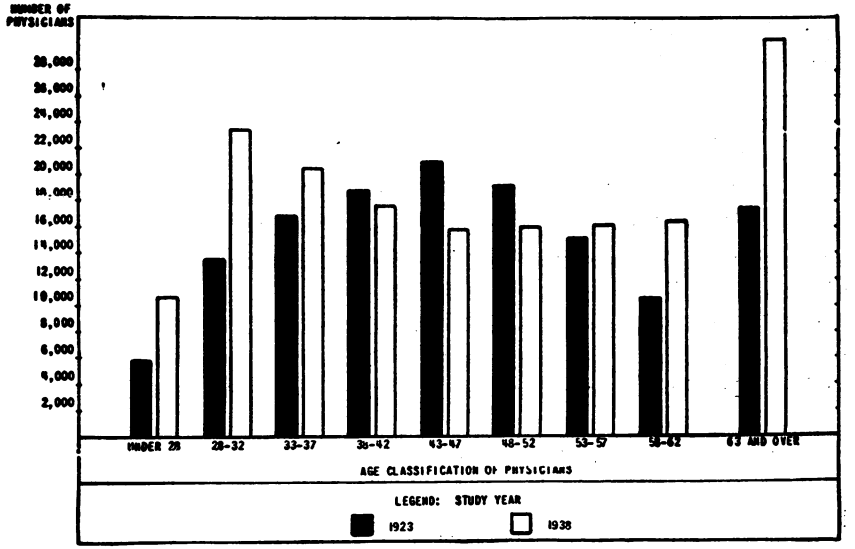

FIGURE 1.—Number of physicians in selected age groups, 1923 and 1938.

Worthy of mention in a consideration of age distribution is the mortality experience of physicians at different age levels. A gradually extending life expectancy of the general population in which physicians share with other groups assures professional resources through increased years of practice for individual physicians. Since the lengthening span of life is described by a fairly even gradient, the effect of this factor is quite uniform both in respect to time and locality.

In the presentation of data which follow, only three broad age intervals have been used to describe physician totals, namely, those under 38 years of age, others in the age interval 38 to 57, and physicians 58 years of age or older.[5] However, data for these three age groups present behavior patterns which closely parallel those shown by more detailed 5-year groups. There were large increases from 1923 to 1938 in the fraction of physicians in each of the three 5-year groups making up the first category. A large decline in the propor-

[5] The physician totals utilized in the determination of age distributions were based upon data tabulated from county summary figures showing total physicians in the county and their distribution by 5-year intervals from year of birth. Translation of these totals into corresponding age groups resulted in the somewhat unusual division-years used in this report.

tions of physicians in the age group 38 to 57 reflected the greatly diminished fractions in each of the four 5-year groups making up the group. Finally, the proportionate increase in physicians 58 years of age or older was evident for those 58 to 62 years of age and for others 63 and over. These national averages assume particular significance when the professional resources of communities are studied in relation thereto. If an unduly high proportion of physicians is in the advanced age brackets, rapid depletion is in prospect. Furthermore it is a well-known fact, supported by such statistics as are presented in a recent study by Ciocco and Altman[6] that the patient-load carried by physicians is reduced as physicians advance to the older age groups.

It may be recalled that discussion in previous papers of this series emphasized the importance of wealth as a factor in determining the availability of professional services in local areas. Data at hand indicate that differences in wealth as reflected by 1940 per capita income [7] effect considerable distortion in the age pattern of physicians residing in counties. As contrasted with the national average in 1923, the age distribution of physicians in poor counties reveals the fact

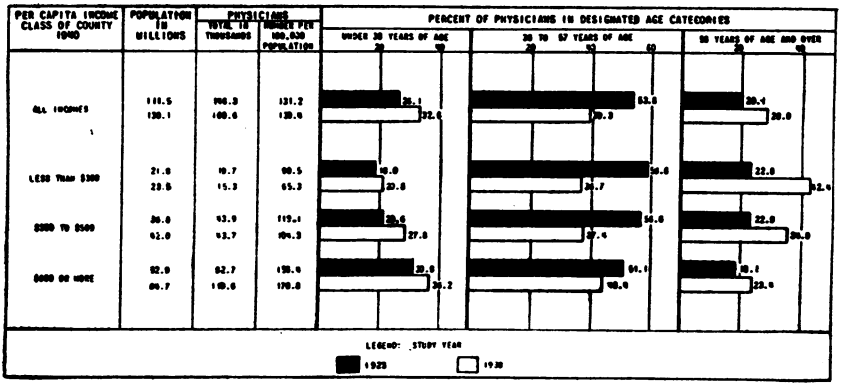

FIGURE 2.—Percent of physicians in counties of different income classification who were in selected age groups, 1923 and 1938.

that the fraction in the age group under 38 was hardly more than two-thirds as large as that which prevailed in the country as a whole (fig. 2). Balancing this low figure in the youngest age group the proportion in the middle and older age groups was slightly above those for all counties combined. Wealthy counties, on the other

[6] Ciocco, A., and Altman, I.: Statistics on the patient-load of physicians in private practice. J. Am. Med. Assoc., 121:506 (Feb. 13, 1943).

[7] In this study the 1940 per capita income figure used for classifying counties was obtained by dividing the effective buying income reported for the county in the April 10, 1941, issue of Sales Management by its population as revealed in the 1940 U. S. Census reports.

The classification of counties as poor, moderately wealthy, and wealthy is based upon an arbitrary division in terms of average per capita income. The first group includes those counties with average per capita incomes of less than $300, the next those with per capita incomes from $300 to $599, while the group referred to as wealthy realized incomes of $600 or more.

hand, realized a percentage of young physicians which was somewhat above that for the country as a whole, and the fractions in the middle and older age groups were slightly below the national average. In moderately wealthy counties the percentage of physicians in the three age groups occupied intermediate positions between those with low and those with high per capita incomes.

By the end of the 15-year period spectacular changes had taken place in the age distributions for all counties. At each of the three income levels for which county data are presented there were increases in the fraction of physicians who were under 38 and those 58 years of age or older. In the former age category the increase was only moderate, but the change in the fraction of older physicians, particularly in poor counties, was arresting. For counties with per capita incomes of less than $300 the proportion of physicians in the older age group increased from 23 to 42 percent, an increase from 23 to 35 percent occurred in this physician group in counties occupying intermediate positions on the income scale, while in wealthy counties the increase was only from 18 to 23 percent. The increased fractions of both young and old physicians were balanced by declines in the proportions in the middle age group.

The association between the number of graduates and the age composition of the physician group in subsequent periods was discussed early in this report for the country as a whole. Data presented in figure 2, however, clinch the fact that the changes which have taken place over the 15-year study period have most seriously affected poor counties. In these counties the provisions for professional care were especially meager in 1923, and by 1938 the number of physicians per 100,000 population had declined from 91 to 65. This was the result of a relatively large numerical loss in the total number of physicians located in these counties. Coupled with this loss of nearly one-fourth in the physician-population ratio, the shift to the older age group becomes particularly noteworthy. The proportion of physicians in this group (58 years of age or older) exceeded by one-half the national average in 1938. A condition such as this suggests the need for an energetic replacement program if these limited professional resources are to be maintained or augmented. It is highly probable that the losses through death will be accelerated in subsequent years because of the increasingly large fraction of physicians in that age category where high death rates may be expected.

In wealthy counties, on the other hand, the provisions for professional service at the onset of the study period were much more generous than in poor counties, and there was a numerical increase of nearly 30,000 physicians by 1938. The particularly favorable situation of these counties is indicated by the data which show that

nearly two-thirds of the physicians but only one-half of the population were located in wealthy counties in 1938. These counties realized much larger proportions of young physicians and much smaller proportions in the group 58 years of age and over than did any other income classification of county.

It is a common belief that the opportunities found in urban centers are both numerous and propitious. This attractiveness of urban counties [8] to physicians in their selection of locality for medical practice is reflected in the ratios of physicians to population in such counties as contrasted with rural counties. In 1923 there were 159 physicians per 100,000 persons in counties with cities of 50,000 or more inhabitants, while rural counties reported only 92 physicians per 100,000 persons (fig. 3). By 1938 the contrast in favor of urban

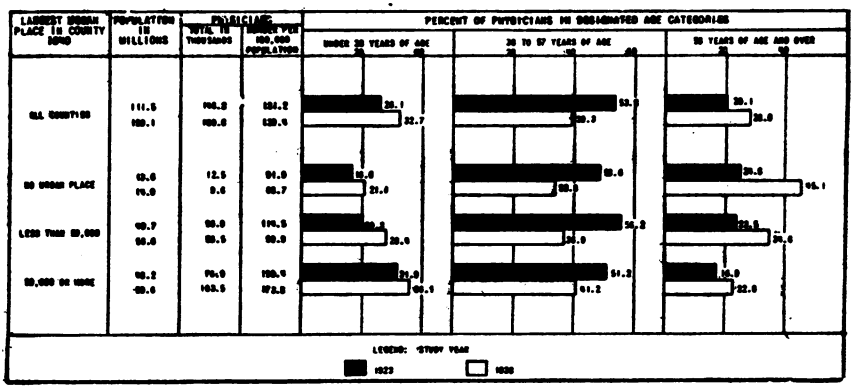

FIGURE 3.—Percent of physicians in counties of different urban classification who were in selected age groups, 1923 and 1938.

counties was even more enhanced through an increase in the ratio to 174 in these places and a decline to 69 in rural counties. In urban counties nearly one-third of all physicians were in the youngest age group, about one-half were from 38 to 57 years of age, and one-sixth were over 57 years old. Age distributions in rural counties were much less favorable. The age of physicians establishing locations in these counties prior to 1923 resulted in a distribution showing only one-sixth under 38 years of age, about three-fifths in the middle age group, and one-fourth over 57 years of age. Data for counties with urban places of less than 50,000 inhabitants revealed intermediate fractions of physicians in each age group.

The change in the age distribution pattern of physicians over the study period was relatively small in urban as contrasted with rural counties. The proportions in the three age groups for urban counties

[8] The urban character of a county was determined on the basis of the largest urban place located therein as revealed in the 1940 U. S. Census. As a result all comparisons between 1923 and 1938 for a given income class of county are based upon data for identical counties.

also were more favorable insofar as they reflected above-average proportions of young physicians and below-average fractions in the higher age category. Rural counties, on the other hand, registered only a small proportionate gain in young physicians. A large decline occurred in the middle age which was balanced for the most part by a large gain in physicians over 57 years of age. The percentage of physicians in the oldest group in rural counties actually increased from 25 percent in the early year to 45 percent in 1938.

Because of the physician's desire for continued association with a hospital after completing his internship, the presence of these institutions is significant in determining the availability of professional services. Counties with relatively numerous hospital beds in 1923 realized 153 physicians per 100,000 persons, as contrasted with 94 physicians in places with no hospital beds. Data presented in figure 4 reveal the important contribution of relatively generous hospital facilities [9] upon the age distribution of physicians. In 1923 the percentage of young physicians enlarged greatly as county classification revealed expanded hospital facilities, while the proportions in the middle and older age groups showed consistent declines.

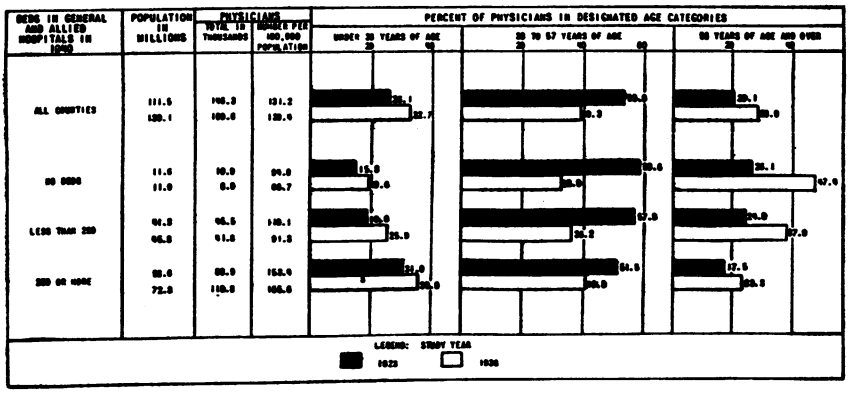

FIGURE 4.—Percent of physicians in counties with different hospital facilities who were in selected age groups, 1923 and 1938.

By the end of the 15-year period the distribution of physicians had been greatly altered. In counties with no beds the physician-population ratio had markedly declined while some increase was evident in those counties where hospital beds were relatively numerous. In each classification of hospital facilities the fraction of young physicians was greater than the corresponding figure for 1923. While as a general rule an increase or decrease in the proportion of physicians in any particular age group would represent a corresponding change in

[9] The amount of hospital facilities in a county was determined on the basis of data published in 1940 by the U. S. Department of Commerce. As a result all comparisons between 1923 and 1938 for a given group of counties are based upon data for identical counties.

the number of physicians, exception exists in counties without hospital facilities. Actually, the total number of young physicians in these counties declined from 1,524 to 1,502. In the intermediate age group the percentage of physicians varied from 33 in counties with no hospital beds to 41 in counties having generous accommodations for medical care. In contrast, the proportion of physicians in the group 58 years of age and over tended to expand in counties with no hospital beds or limited accommodations. The percentage of these physicians in 1938 was 47 in counties with no beds; counties with generous hospital facilities realized less than half as great a proportion.

The comparisons presented on the basis of urban character and hospital facilities are somewhat modified when income differences are taken into account, and this influence of income is consistent throughout the several comparisons. Both in rural counties and in counties without hospital facilities, high per capita income is reflected by much more favorable fractions of young physicians than are manifest in these counties when income is low. In a similar fashion but at a consistently higher level did income differences affect physician distribution in highly urbanized counties and in those with generous hospital facilities.

SUMMARY

Annual per capita income of residents of communities not only reflects itself in the number of physicians located therein, but also in the age distribution of these physicians. Physician-population ratios were higher and the fractions of young physicians were greater in wealthy than in poor counties. This favored status of wealthy counties was enhanced by the end of the study period, while provisions for care in poor counties revealed a severe decline and an unfavorable shift to the higher age classification.

Investigation reveals a strong tendency for physicians, particularly those graduating in recent years, to establish medical practice in urban places. Rural counties not only realized fewer physicians but failed to maintain throughout the period a number as great as that describing the physician totals in 1923.

Physician-population ratios and also the fraction of young physicians were lowest in counties without hospitals. In contrast, those counties with the most liberal provisions for hospital service realized the most abundant share of physicians in 1923, and the additions to their physician totals throughout the study period resulted in considerable expansion by 1938.

While the amount of hospital facilities, degree of urbanization, and level of income in counties are intimately related, each in isolation would appear to exercise a significant influence upon the age distribution of physicians.

AMBLYOMMA AMERICANUM A VECTOR OF ROCKY MOUNTAIN SPOTTED FEVER

Recovery of the rickettsia of Rocky Mountain spotted fever from nymphs of the tick *Amblyomma americanum* has been reported by R. R. Parker, G. M. Kohls, and E. A. Steinhaus of the Rocky Mountain Laboratory of the National Institute of Health. The nymphs, 114 in number, were collected September 11, 1942, at Weathers, Okla., from vegetation in close proximity to the home of a patient convalescing from spotted fever.

For the past decade *A. americanum* has been suspected of being a vector of Rocky Mountain spotted fever, but this finding of the rickettsia is proof that *A. americanum* is infected in nature with the causative agent of the disease.

PREVALENCE OF MENINGOCOCCUS MENINGITIS IN THE UNITED STATES DURING 1942 AND FIRST 9 WEEKS OF 1943

During the latter part of 1942 and the early weeks of 1943, the reported incidence of meningococcus meningitis has approached the epidemic proportions of 1929. In the early summer of 1942, in the weekly summaries of reports of the important communicable diseases published in the PUBLIC HEALTH REPORTS, attention was called to the fact that the incidence of the disease each week was exceeding the 5-year (1937–41) median. This excess incidence began during February and continued throughout the remainder of the year. In some of the weeks of November the numbers of reported cases were twice the 5-year median expectancy, in December they were about three times the median, while in January and February they were four to nine times the median figures. In 1942 a total of 3,774 cases was reported in the United States. (These figures are based on the weekly telegraphic reports and are preliminary, but will probably closely approximate the final figures.) To March 13, 1943, a total of 4,040 cases has been reported.

Following are the numbers of cases reported by weeks during the current year up to and including the week ended March 13:

	Week ended—										
	January					February				March	
	2	9	16	23	30	6	13	20	27	6	13
Number of cases	187	278	309	354	339	330	[1] 446	398	[2] 503	[3] 556	525

[1] Including 43 delayed reports from Virginia.
[2] Including 19 delayed reports from Virginia.
[3] Including 15 delayed reports from Virgina and 10 from Arizona.

The highest incidence rates so far this year have apparently been in the New England, South Atlantic, and Pacific States. The largest numbers of cases are being reported from the South Atlantic, Middle Atlantic, Pacific, and New England areas.

The accompanying tables show the incidence, by principal geographic divisions and States, for the first 9 weeks of 1942 (to March 6) and the numbers of cases and deaths reported each year in the United States, with case and death rates, beginning with 1929, the year in which the highest rates were recorded since 1918.[1]

Total cases of meningococcus meningitis reported, by geographic divisions and States, during the first 9 weeks of 1943 (Jan. 3–Mar. 6)

Geographic division and State	Cases	Percent of total cases	Percent of total population [1]	Geographic division and State	Cases	Percent of total cases	Percent of total population [1]
New England	452	12.9	6.4	South Atlantic—Con.			
Maine	108			North Carolina	89		
New Hampshire	7			South Carolina	115		
Vermont	3			Georgia	27		
Massachusetts	121			Florida	38		
Rhode Island	178			East South Central	255	7.3	8.2
Connecticut	35			Kentucky	49		
Middle Atlantic	704	20.0	20.5	Tennessee	52		
New York	353			Alabama	88		
New Jersey	167			Mississippi	66		
Pennsylvania	184			West South Central	193	5.5	9.9
East North Central	299	8.5	20.6	Arkansas	22		
Ohio	53			Louisiana	62		
Indiana	49			Oklahoma	15		
Illinois	80			Texas	94		
Michigan	61			Mountain	132	3.8	3.0
Wisconsin	56			Montana	4		
West North Central	244	6.9	9.9	Idaho	11		
Minnesota	18			Wyoming	11		
Iowa	8			Colorado	15		
Missouri	137			New Mexico	9		
North Dakota	3			Arizona	26		
South Dakota	6			Utah	46		
Nebraska	20			Nevada	10		
Kansas	52			Pacific	510	14.5	7.6
South Atlantic	726	20.7	13.8	Washington	113		
Delaware	5			Oregon	126		
Maryland	136			California	271		
Dist. of Col.	28						
Virginia	272			Total	3,515		
West Virginia	16						

[1] Estimated population, 1942.

Number of cases of meningococcus meningitis and deaths from the same cause, with rates per 100,000 population, reported in the United States, 1929 to 1942

Year	Number of States reporting	Cases	Cases per 100,000 population	Deaths	Deaths per 100,000 population
1929	46	10,551	8.7	5,171	4.5
1930	44	8,384	7.0	4,171	3.6
1931	40	5,426	4.7	2,806	2.4
1932	41	3,102	2.8	1,651	1.4
1933	44	2,913	2.4	1,482	1.2
1934	45	2,500	2.0	1,272	1.0
1935	43	5,736	4.7	2,657	2.1
1936	44	7,320	5.9	3,020	2.4
1937	44	5,484	4.3	2,208	1.7
1938	47	2,919	2.3	1,024	.8
1939	47	1,993	1.5	863	.7
1940	48	1,665	1.3	694	.5
1941	48	2,039	1.5	713	.5
1942	48	[1] 3,774	2.9	[2]	[2]

[1] Preliminary reports. [2] Not available.

Cases are those reported to the Public Health Service.
Deaths and death rates are taken from Bureau of the Census publications.

[1] See also pp. 494 and 496.

PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

January 31–February 27, 1943

The accompanying table summarizes the prevalence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State are published in the PUBLIC HEALTH REPORTS under the section "Prevalence of disease." The table gives the number of cases of these diseases for the 4-week period ended February 27, 1943, the number reported for the corresponding period in 1942, and the median number for the years 1938–42.

DISEASES ABOVE MEDIAN PREVALENCE

Meningococcus meningitis.—The number of cases of meningococcus meningitis rose from 1,267 for the preceding 4-week period to 1,679 during the 4 weeks ended February 27. The current figure was about six times that recorded for 1942 and more than seven times the 1938–42 median incidence for the corresponding period. For the country as a whole the number of cases was the largest reported during this period in the 15 years for which these data are available.

Each geographic region reported a very significant increase over the corresponding period in 1942 and also over the 5-year median incidence. The greatest increases were reported from the New England and Pacific regions. In the former area the number of cases (203) was about seventeen times the median, while in the latter area the number (222) was more than eighteen times the median. In the North Central and South Atlantic regions the numbers of cases were approximately eight times the median figures and in other regions the increases ranged from three to seven times the normal seasonal expectancy.

The table shows by geographic regions the number of cases reported for recent weeks in comparison with the experience of the 2 preceding years. While the incidence of meningococcus meningitis was relatively high throughout the year 1942, the data show a sharp upturn during the month of December and the weekly number of cases has continued to increase since that time, the figures in each region being the highest in the 3 years included. With the exception of the Mountain region the current incidence is the highest in all regions since 1930.

Meningococcus meningitis cases reported in each geographic region during recent weeks of 1942–43, with comparative data for corresponding weeks of the two preceding years

Division	Week ended—													
	1942				1943									
	Dec. 5	Dec. 12	Dec. 19	Dec. 26	Jan. 2	Jan. 9	Jan. 16	Jan. 23	Jan. 30	Feb. 6	Feb. 13	Feb. 20	Feb. 27	Mar. 6
All regions:														
1942–43	88	103	103	92	187	278	309	354	339	330	446	398	503	556
1941–42	35	43	28	37	47	45	68	52	65	60	42	84	87	70
1940–41	22	34	31	28	28	41	38	61	53	48	46	46	44	56
New England:														
1942–43	16	19	13	13	23	35	55	46	50	42	49	60	52	61
1941–42	6	3	3	7	2	8	7	2	6	5	5	5	14	17
1940–41	1	2	4	2	2	4	0	1	3	1	3	3	3	2
Middle Atlantic:														
1942–43	27	26	30	16	37	54	47	68	57	67	94	92	108	117
1941–42	9	6	9	9	9	12	10	8	19	17	10	18	16	14
1940–41	3	4	5	2	2	6	12	9	9	7	13	13	8	11
East North Central:														
1942–43	6	8	12	13	21	21	10	34	39	38	26	46	41	44
1941–42	4	6	2	4	1	5	9	3	4	5	5	3	7	4
1940–41	2	8	3	3	3	7	3	7	3	5	4	4	2	8
West North Central:														
1942–43	3	2	4	3	12	19	35	21	24	27	19	22	34	43
1941–42	3	6	3	1	3	4	3	2	2	3	3	1	4	2
1940–41	2	1	5	3	3	0	4	3	0	6	3	3	1	5
South Atlantic:														
1942–43	14	20	21	27	29	65	57	68	68	71	116	72	[1] 104	[2] 105
1941–42	6	7	2	6	10	7	15	12	19	13	7	17	20	14
1940–41	5	4	6	6	6	10	2	19	19	5	7	7	17	10
East South Central:														
1942–43	4	3	0	1	12	15	21	24	22	16	35	13	64	45
1941–42	4	6	6	3	6	2	6	4	7	7	3	3	10	3
1940–41	2	6	3	6	6	6	4	7	10	14	12	12	8	9
West South Central:														
1942–43	5	3	6	3	6	14	14	23	21	16	3	18	29	27
1941–42	3	4	2	4	8	2	8	11	3	7	4	31	10	8
1940–41	3	6	3	4	4	4	7	10	8	7	2	2	1	8
Mountain:														
1942–43	5	4	4	4	19	18	10	16	10	7	17	11	18	[3] 25
1941–42	0	2	0	1	3	1	4	1	1	2	1	2	3	1
1940–41	0	0	0	0	0	1	0	1	0	0	1	1	2	0
Pacific:														
1942–43	8	18	13	12	28	37	60	54	48	46	59	64	53	89
1941–42	0	3	1	2	1	4	6	9	4	1	4	4	3	7
1940–41	4	3	2	2	2	3	6	4	1	3	1	1	2	3

[1] Delayed report of 19 cases in Virginia included.
[2] Delayed report of 15 cases in Virginia included.
[3] Delayed report of 10 cases in Arizona included.

States in the various regions reporting the largest number of cases in comparison with preceding years were New York, 167; New Jersey, 102; Pennsylvania, 92; Rhode Island, 87; Maine, 43; Virginia, 154; Maryland, 56; Texas, 58; California, 124; Oregon, 50; and North Carolina, South Carolina, Alabama, Illinois, and Washington approximately 45 cases each.

DISEASES BELOW MEDIAN PREVALENCE

Diphtheria.—For the 4 weeks ended February 27 there were 1,125 cases of diphtheria reported, as compared with 1,116 in 1942 and a median of 1,365 cases recorded for the corresponding period in 1938–42. In the Mountain and Pacific regions the incidence was slightly higher than the normal seasonal expectancy, but all other regions reported a relatively low incidence.

Influenza.—The number of cases of influenza was also comparatively low, approximately 19,000 cases, as compared with approximately 22,000 cases in 1942, which figure also represents the 1938–42 median incidence for the corresponding period. In each section of the country the incidence was below the normal seasonal level.

Measles.—The number of cases of this disease rose from approximately 36,000 cases during the preceding 4 weeks to 59,483 cases during the current 4-week period. Compared with recent years the number of cases reported for the country as a whole was slightly lower than the 1938–42 median incidence. The distribution among the geographic regions was not so favorable, however, for in all regions except the West North Central and South Atlantic the disease was considerably above the normal expectancy.

Poliomyelitis.—The incidence of poliomyelitis was about normal, 97 cases being reported, as compared with 101 cases for the corresponding period in 1942. The 1938–42 median for this period was also 101 cases. Significant increases over the median were reported from the West North Central, Mountain, and Pacific regions, while in other regions the number of cases either closely approximated the median or fell below it.

Scarlet fever.—While the number (16,261) of cases of scarlet fever was slightly above the number reported during the corresponding period in 1942, it was only about 85 percent of the 1938–42 median number for the same 4-week period. The disease was relatively high in the New England, South Atlantic, West South Central, and Mountain regions, but all other regions reported a decline from the normal seasonal incidence, the largest decreases being reported from the Middle Atlantic and East North Central regions.

Smallpox.—A total of 104 cases of smallpox was reported for the current period, as compared with 87 cases in 1942 and with a 5-year (1938–42) median of 257 cases. Of the total cases, Indiana reported 31, Arkansas 17, Texas 13, Kansas 8, Oklahoma 6, and Illinois 5. No more than 4 cases were reported from any other State. The current incidence was slightly above the all-time low level recorded for this period in 1942 (87 cases).

Typhoid and paratyphoid fever.—For the 4 weeks ended February 27 there were 208 cases of this disease reported, as compared with 330, 248, and 292 cases for the corresponding periods in 1942, 1941, and 1940, respectively, and with a 1938–42 median incidence of 330 cases. For the country as a whole the current incidence is the lowest on record for this period. Each section of the country shares in the favorable situation of this disease that now exists.

Number of reported cases of 9 communicable diseases in the United States during the 4-week period January 31–February 27, 1943, the number for the corresponding period in 1942, and the median number of cases reported for the corresponding period 1938–42

Division	Diphtheria			Influenza [1]			Measles [2]		
	Current period	1942	5-year median	Current period	1942	5-year median	Current period	1942	5-year median
United States	1,125	1,116	1,565	18,933	22,139	22,139	59,483	61,149	61,149
New England	18	23	23	32	29	76	5,731	4,084	3,191
Middle Atlantic	116	173	265	118	137	285	21,714	7,860	7,860
East North Central	133	163	304	477	495	5,016	6,603	4,209	5,799
West North Central	97	76	106	235	209	833	4,196	5,732	5,732
South Atlantic	163	237	266	6,738	6,557	9,184	2,476	12,552	9,968
East South Central	106	104	139	1,372	2,825	2,825	3,578	1,269	1,494
West South Central	247	218	286	7,853	9,254	9,254	2,785	10,565	2,117
Mountain	89	62	86	1,566	1,999	1,999	5,233	3,209	2,628
Pacific	156	60	115	542	634	675	7,167	11,669	5,804
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States	1,677	273	227	97	101	101	16,261	16,160	19,277
New England	203	29	12	0	9	2	2,602	1,835	1,539
Middle Atlantic	361	61	51	8	19	7	3,798	3,945	5,100
East North Central	151	20	19	9	17	17	4,179	4,801	6,368
West North Central	102	11	13	12	2	4	1,602	1,880	1,880
South Atlantic	363	57	45	16	11	17	1,159	1,293	1,087
East South Central	128	23	43	9	14	14	596	687	687
West South Central	94	52	22	11	13	11	452	383	439
Mountain	53	8	9	11	7	6	1,008	647	647
Pacific	222	12	12	21	9	10	865	689	990
	Smallpox			Typhoid and paratyphoid fever			Whooping cough [2]		
United States	104	87	257	208	330	330	15,061	15,121	15,898
New England	0	0	0	7	19	16	1,293	1,758	1,256
Middle Atlantic	0	0	0	33	46	46	3,307	3,652	3,652
East North Central	41	8	72	28	39	44	3,549	3,625	3,151
West North Central	17	15	102	11	15	18	729	669	669
South Atlantic	2	3	3	43	132	74	2,001	1,981	2,347
East South Central	4	22	22	21	26	30	587	580	580
West South Central	36	36	36	38	37	50	1,856	610	610
Mountain	4	2	67	11	5	14	469	769	769
Pacific	0	1	11	16	11	23	1,270	1,477	1,477

[1] Mississippi, New York, and Pennsylvania excluded; New York City included.
[2] Mississippi excluded.

Whooping cough.—The incidence of whooping cough was comparatively low, the current incidence (15,061 cases) being slightly below the number reported during this period in 1942 and also below the 1938–42 median figure. In the New England, North Central, and South Central regions the disease was more prevalent than in recent years, but in the Middle and South Atlantic, Mountain, and Pacific regions the numbers of cases were below the expectancy.

MORTALITY, ALL CAUSES

The number of deaths from all causes in large cities for the 4 weeks ended February 27, based on data received from the Bureau of the Census, was 40,270, as compared with an average of 37,738 cases for the corresponding period in the years 1940–42—an increase of approximately 6 percent.

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 MARCH 13, 1943

Summary

Although current reports show increases over figures for the preceding week for influenza, measles, poliomyelitis, scarlet fever, and smallpox, reports of the nine common communicable diseases included in the following table show the incidence of only measles, meningococcus meningitis, and poliomyelitis to be above the corresponding 5-year (1938–42) medians.

A total of 525 cases of meningococcus meningitis was reported for the current week, as compared with 531 for the preceding week. The accumulated total for the first 10 weeks of the year is 4,040. The peak of incidence of this disease was reached before the end of March in 9 of the past 16 years, during April in 5, and as late as May in 2 of those years. For the current week, increases were shown in only the East North Central, East South Central, and West South Central groups of States. States reporting the largest numbers were New York (57), California (36), Massachusetts (29), Virginia (29), Pennsylvania (26), Texas (23), and New Jersey (21).

Other reports for the week include the following: Dysentery, 441 cases; infectious encephalitis, 14; leprosy, 1; tularemia, 21; and endemic typhus fever, 32.

During the current week 10,105 deaths were recorded in 90 large cities of the United States as compared with 9,725 for the preceding week and with an average of 9,251 for the corresponding weeks of the 3 preceding years. The accumulated figure for the first 10 weeks of the current year is 101,721, as compared with 93,632 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended March 13, 1943, and comparison with corresponding week of 1942 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, 1938–42	Week ended		Median, 1938–42	Week ended		Median, 1938–42	Week ended		Median, 1938–42
	Mar. 13, 1943	Mar. 14, 1942		Mar. 13, 1943	Mar. 14, 1942		Mar. 13, 1943	Mar. 14, 1942		Mar. 13, 1943	Mar. 14, 1942	
NEW ENG.												
Maine	0	0	1	2	------	6	3	205	205	7	2	1
New Hampshire	0	1	0	------	------	------	18	21	26	0	1	0
Vermont	0	0	0	------	------	------	372	9	17	1	0	0
Massachusetts	0	5	4	------	------	------	1,243	615	594	29	7	1
Rhode Island	0	0	0	17	------	------	38	210	9	11	0	0
Connecticut	0	0	1	3	2	9	443	307	238	8	0	0
MID. ATL.												
New York	19	28	28	[1] 12	[1] 12	[1] 40	1,941	578	1,482	57	12	7
New Jersey	3	3	7	9	14	19	1,417	384	384	21	4	1
Pennsylvania	4	10	35	2	------	------	2,709	925	925	26	3	5
E. NO. CEN.												
Ohio	10	9	17	7	21	21	450	299	299	11	4	2
Indiana	5	4	12	1	32	52	342	71	71	8	2	1
Illinois	14	16	23	34	8	34	887	505	505	16	1	2
Michigan [2]	5	5	7	8	32	28	630	248	373	12	2	1
Wisconsin	1	2	2	41	44	175	1,053	719	781	11	0	0
W. NO. CEN.												
Minnesota	5	1	1	------	1	6	45	823	240	5	0	0
Iowa	2	3	4	1	13	28	329	323	290	0	0	0
Missouri	2	2	7	7	8	22	467	465	86	15	0	0
North Dakota	0	1	1	------	9	30	102	128	9	0	0	0
South Dakota	3	4	1	------	------	1	152	5	5	3	0	0
Nebraska	3	2	2	3	48	14	292	167	33	1	0	1
Kansas	4	8	4	17	21	21	374	460	460	1	2	1
SO. ATL.												
Delaware	0	0	0	------	------	------	54	7	7	2	0	0
Maryland [2]	6	2	2	10	20	53	73	611	104	18	3	1
District of Columbia	0	0	1	1	2	2	72	51	30	2	2	1
Virginia	10	12	12	696	637	1,016	650	282	401	29	10	2
West Virginia	1	6	8	9	40	71	13	443	338	6	2	2
North Carolina	3	5	14	137	16	116	58	1,459	1,088	16	0	1
South Carolina	1	3	4	1,017	705	766	59	225	194	13	3	2
Georgia	1	5	5	181	119	267	108	320	320	9	0	0
Florida	1	0	5	3	10	10	48	207	207	10	1	1
E. SO. CEN.												
Kentucky	4	10	9	12	20	80	1,433	73	102	15	2	1
Tennessee	8	5	5	155	123	261	330	118	118	17	2	1
Alabama	6	6	9	212	354	401	132	110	279	10	1	1
Mississippi [2]	4	70	5	------	------	------	------	------	------	12	1	1
W. SO. CEN.												
Arkansas	4	7	7	94	280	501	72	353	152	2	0	0
Louisiana	2	4	7	11	27	42	206	136	21	13	1	2
Oklahoma	3	8	7	49	94	253	36	515	83	7	1	1
Texas	40	57	38	1,653	1,712	1,167	1,261	2,815	745	23	13	2
MOUNTAIN												
Montana	0	0	2	14	38	19	204	80	80	2	1	0
Idaho	0	0	0	3	------	2	139	85	58	3	0	0
Wyoming	0	0	0	14	197	8	192	59	39	0	0	0
Colorado	6	6	12	42	88	61	622	256	213	2	0	0
New Mexico	1	2	1	2	3	4	13	118	89	0	0	0
Arizona	2	0	2	123	182	182	47	170	42	1	0	0
Utah [2]	0	1	1	29	4	8	357	178	178	5	0	0
Nevada	0	0	------	------	------	------	25	18	------	7	0	------
PACIFIC												
Washington	2	3	3	------	7	3	845	253	253	14	2	0
Oregon	0	1	1	27	10	42	434	97	97	8	0	0
California	16	23	23	86	148	148	721	4,867	417	36	3	3
Total	201	340	348	4,744	5,101	7,725	21,511	21,373	21,373	525	88	55
10 weeks	2,951	3,249	4,064	45,417	49,622	69,182	136,443	136,092	136,092	4,040	661	533

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended March 13, 1943, and comparison with corresponding week of 1942 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended		Median 1938–42	Week ended		Median 1938–42	Week ended		Median 1938–42	Week ended		Median 1938–42
	Mar. 13, 1943	Mar. 14, 1942		Mar. 13, 1943	Mar. 14, 1942		Mar. 13, 1943	Mar. 14, 1942		Mar. 13, 1943	Mar. 14, 1942	
NEW ENG.												
Maine	0	0	0	18	30	17	0	0	0	0	3	0
New Hampshire	0	0	0	5	58	9	0	0	0	0	0	0
Vermont	0	0	0	5	3	15	0	0	0	0	0	0
Massachusetts	2	0	0	439	381	219	0	0	0	0	0	1
Rhode Island	0	0	0	28	15	15	0	0	0	0	0	0
Connecticut	0	0	0	81	49	69	0	0	0	2	1	1
MID. ATL.												
New York	0	1	1	491	536	747	0	0	0	5	4	4
New Jersey	0	1	0	161	208	208	0	0	0	0	2	3
Pennsylvania	2	1	1	346	649	649	0	0	0	2	7	7
E. NO. CEN.												
Ohio	2	2	0	248	758	471	4	0	0	2	8	4
Indiana	0	0	0	114	127	161	4	0	2	1	1	1
Illinois	0	1	1	218	289	543	1	4	4	0	0	3
Michigan [2]	0	1	0	192	359	359	0	0	0	3	0	5
Wisconsin	0	0	0	323	170	170	0	1	3	0	0	0
W. NO. CEN.												
Minnesota	0	1	0	87	110	110	0	0	7	0	0	0
Iowa	1	0	0	67	58	65	0	0	5	1	1	1
Missouri	0	0	0	148	123	123	0	1	8	0	1	2
North Dakota	0	0	0	16	26	14	0	0	0	0	0	0
South Dakota	0	0	0	22	41	26	1	1	1	0	0	0
Nebraska	1	0	0	40	34	34	2	0	1	1	0	0
Kansas	0	0	0	90	130	127	0	1	1	1	0	0
SO. ATL.												
Delaware	0	0	0	14	58	13	0	0	0	0	0	0
Maryland [2]	0	0	0	88	70	57	0	0	0	6	0	0
District of Columbia	0	0	0	15	16	24	0	0	0	0	0	0
Virginia	0	0	0	53	50	36	0	0	0	1	0	3
West Virginia	0	0	0	25	48	48	0	0	0	0	1	3
North Carolina	0	0	0	35	43	57	0	0	0	2	1	1
South Carolina	3	3	0	10	2	5	0	2	0	1	0	0
Georgia	0	0	0	15	22	22	0	0	0	0	5	2
Florida	0	0	0	6	10	10	0	0	0	2	6	3
E. SO. CEN.												
Kentucky	0	1	1	57	98	98	0	1	1	0	1	3
Tennessee	0	2	0	53	38	49	0	0	0	2	1	1
Alabama	1	0	1	11	22	19	0	0	0	2	1	1
Mississippi [2]	0	0	0	22	15	7	0	0	0	1	0	1
W. SO. CEN.												
Arkansas	0	0	0	5	10	10	2	0	2	2	3	3
Louisiana	1	0	0	13	0	14	0	0	0	0	3	3
Oklahoma	0	0	0	28	5	22	2	1	16	1	0	1
Texas	1	0	0	76	49	58	1	1	2	3	2	3
MOUNTAIN												
Montana	0	0	0	13	19	40	0	2	0	0	0	0
Idaho	0	0	0	8	2	15	0	0	1	0	0	0
Wyoming	0	0	0	45	23	11	0	0	0	0	0	0
Colorado	0	1	0	21	49	44	0	1	2	1	0	0
New Mexico	1	0	0	0	9	11	0	0	0	0	0	0
Arizona	3	1	0	17	2	4	1	0	0	0	1	1
Utah [2]	1	0	0	64	27	27	0	0	0	0	1	1
Nevada	0	0	------	4	2	------	0	0	------	0	0	------
PACIFIC												
Washington	2	0	0	39	33	35	0	0	0	0	1	1
Oregon	1	1	1	6	11	23	1	0	2	2	2	2
California	7	1	1	197	149	156	0	0	5	9	1	3
Total	29	18	17	4,079	5,036	5,036	19	16	94	53	58	104
10 weeks	278	250	250	38,233	39,658	45,937	266	206	734	518	779	779

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended March 13, 1943, and comparison with corresponding week of 1942 and 5-year median—Con.

Division and State	Whooping cough			Week ended Mar. 13, 1943								
	Week ended		Median 1938–42	Anthrax	Dysentery			Encephalitis, infectious	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
	Mar. 13, 1943	Mar. 14, 1942			Amebic	Bacillary	Unspecified					
NEW ENG.												
Maine	51	30	53	0	0	0	0	0	0	0	0	0
New Hampshire	1	6	6	0	0	0	0	0	0	0	0	0
Vermont	35	34	25	0	0	0	0	0	0	0	0	0
Massachusetts	197	235	187	0	0	1	0	0	0	0	0	0
Rhode Island	38	43	29	0	0	0	0	0	0	0	0	0
Connecticut	49	82	76	0	0	1	0	0	0	0	0	0
MID. ATL.												
New York	417	487	451	0	26	2	0	3	0	0	0	1
New Jersey	244	243	219	0	0	0	0	1	0	0	0	0
Pennsylvania	314	211	320	0	0	0	0	0	0	0	0	0
E. NO. CEN.												
Ohio	150	341	188	0	0	0	0	2	0	0	1	0
Indiana	36	27	27	0	0	0	0	0	0	0	0	0
Illinois	139	146	138	0	0	1	0	2	0	0	0	0
Michigan [1]	295	164	206	0	0	4	0	0	0	0	0	0
Wisconsin	225	189	145	0	0	0	0	0	0	0	0	0
W. NO. CEN.												
Minnesota	89	59	55	0	1	0	0	0	0	0	0	0
Iowa	23	55	25	0	0	0	0	0	0	0	0	0
Missouri	14	22	27	0	0	0	0	0	0	0	1	0
North Dakota	10	5	8	0	0	0	0	0	0	0	0	0
South Dakota	1	6	6	0	0	0	0	0	0	0	0	0
Nebraska	6	8	8	0	0	0	0	0	0	0	0	0
Kansas	35	55	55	0	0	0	0	1	0	0	1	0
SO. ATL.												
Delaware	2	0	3	0	0	0	0	0	0	0	0	0
Maryland [2]	98	45	45	0	0	1	0	0	0	[3] 1	0	0
Dist. of Col.	26	26	24	0	0	0	0	0	0	0	0	0
Virginia	95	74	74	0	0	0	40	0	0	0	1	0
West Virginia	31	41	50	0	0	0	0	0	0	0	0	0
North Carolina	125	100	272	0	0	0	0	0	0	0	0	0
South Carolina	48	80	80	0	0	7	0	0	0	0	0	1
Georgia	28	33	38	0	1	0	0	0	0	0	5	14
Florida	14	40	14	0	0	0	0	0	0	0	0	2
E. SO. CEN.												
Kentucky	32	76	50	0	0	5	0	0	0	0	0	0
Tennessee	106	34	36	0	0	0	1	0	0	0	7	0
Alabama	37	22	22	0	0	0	0	0	0	0	2	3
Mississippi [2]	----	----	----	0	0	0	0	0	0	0	2	0
W. SO. CEN.												
Arkansas	20	19	19	0	0	0	0	0	0	0	0	0
Louisiana	1	10	10	0	1	0	0	1	0	0	0	2
Oklahoma	25	9	9	0	0	0	0	0	0	0	0	0
Texas	383	217	217	0	56	259	0	1	0	0	0	6
MOUNTAIN												
Montana	10	6	6	0	1	0	0	0	0	0	0	0
Idaho	0	19	5	0	0	0	0	0	0	0	0	0
Wyoming	0	3	3	0	0	0	0	0	0	0	1	0
Colorado	22	55	45	0	0	0	0	1	1	0	0	0
New Mexico	17	59	24	0	0	0	0	0	0	0	0	0
Arizona	12	20	42	0	0	0	25	0	0	0	0	0
Utah [2]	37	69	69	0	0	0	0	0	0	0	0	0
Nevada	6	8	----	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	31	89	78	0	0	0	0	0	0	0	0	0
Oregon	5	37	16	0	0	0	0	0	0	0	0	0
California	331	277	277	0	2	6	0	2	0	0	0	3
Total	3,911	3,916	4,232	0	88	287	66	14	1	1	21	32
10 weeks	38,789	40,078	40,631									

[1] New York City only. [2] Period ended earlier than Saturday. [3] Delayed report.

WEEKLY REPORTS FROM CITIES

City reports for week ended February 27, 1943

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

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Atlanta, Ga	0	0	31	2	11	0	0	0	11	0	0	3
Baltimore, Md	3	0	1	1	17	12	18	0	56	0	0	73
Billings, Mont	0	0	------	0	0	0	0	0	1	0	0	3
Birmingham, Ala	0	0	12	0	1	0	3	0	2	0	0	4
Boise, Idaho	0	0	------	0	1	0	0	0	2	0	0	0
Boston, Mass	0	0	------	0	152	5	22	0	145	0	0	22
Bridgeport, Conn	0	0	2	0	6	0	6	0	7	0	0	1
Brunswick, Ga	0	0	------	0	1	0	4	0	0	0	0	0
Buffalo, N. Y	0	0	------	2	143	1	8	0	6	0	0	17
Camden, N. J	0	0	------	0	29	0	0	0	1	0	0	14
Charleston, S. C	1	0	92	0	0	0	5	0	0	0	0	0
Charleston, W. Va	0	0	------	0	0	0	0	0	0	0	0	0
Chicago, Ill	11	0	4	3	323	4	36	0	62	0	1	47
Cincinnati, Ohio	0	0	4	0	45	0	6	0	33	0	0	0
Cleveland, Ohio	0	0	2	1	7	0	16	0	52	0	0	49
Columbus, Ohio	1	0	------	0	6	0	12	0	8	0	0	0
Concord, N. H	0	0	------	2	0	0	0	0	2	0	0	0
Cumberland, Md	0	0	------	0	0	0	0	0	0	0	0	2
Dallas, Tex	2	0	------	0	1	0	2	0	3	0	0	13
Denver, Colo	3	0	31	0	248	0	9	0	12	0	0	3
Detroit, Mich	0	0	------	5	140	2	16	0	31	0	0	68
Duluth, Minn	1	0	------	0	1	0	0	0	5	0	0	3
Fall River, Mass	0	0	------	0	3	0	1	0	3	0	0	14
Fargo, N. Dak	0	0	------	0	0	0	0	0	1	0	0	0
Flint, Mich	1	0	------	0	3	1	0	0	2	0	0	4
Fort Wayne, Ind	0	0	------	0	1	0	3	0	12	0	0	0
Frederick, Md	1	0	------	0	0	0	0	0	0	0	0	0
Galveston, Tex	1	0	------	0	0	0	2	0	1	0	0	0
Grand Rapids, Mich	0	0	1	0	8	0	1	0	2	0	0	11
Great Falls, Mont	0	0	------	0	14	1	1	0	3	0	0	4
Hartford, Conn	0	0	1	0	11	0	0	0	2	0	0	1
Helena, Mont	0	0	------	0	10	0	0	0	1	0	0	0
Houston, Tex	3	0	------	1	2	0	15	0	7	0	0	5
Indianapolis, Ind	0	0	------	0	110	0	13	0	15	0	0	16
Kansas City, Mo	0	0	------	2	93	2	10	0	50	0	0	7
Kenosha, Wis	0	0	------	0	1	0	0	0	4	0	0	0
Little Rock, Ark	0	0	3	0	0	0	2	0	1	0	0	0
Los Angeles, Calif	3	0	21	2	61	2	5	1	25	0	1	21
Lynchburg, Va	0	0	------	0	1	0	0	0	1	0	0	1
Memphis, Tenn	0	0	------	2	9	1	4	0	6	0	0	18
Milwaukee, Wis	0	0	------	0	235	2	0	0	110	0	0	14
Minneapolis, Minn	0	0	------	0	5	0	7	1	15	0	0	9
Missoula, Mont	1	0	------	0	2	0	0	0	0	0	0	2
Mobile, Ala	0	0	5	2	0	1	3	0	1	0	0	0
Nashville, Tenn	0	0	------	0	87	0	7	0	2	0	0	8
Newark, N. J	0	0	1	0	14	2	10	0	16	0	0	16
New Haven, Conn	0	0	------	0	4	2	1	0	7	0	0	1
New Orleans, La	1	1	5	1	59	3	17	0	8	0	3	2
New York, N. Y	21	1	10	3	320	29	96	0	468	0	4	57
Omaha, Nebr	1	0	------	0	4	0	9	0	0	4	0	2
Philadelphia, Pa	1	0	2	3	1,014	10	37	0	119	0	0	69
Pittsburgh, Pa	1	0	1	1	3	6	23	0	13	0	0	21
Portland, Maine	0	0	------	0	0	3	3	0	1	0	0	17
Providence, R. I	0	0	1	0	11	4	8	0	5	0	0	24

City reports for week ended February 27, 1943—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
Pueblo, Colo.	0	0	------	0	2	1	3	0	0	0	0	1
Racine, Wis.	0	0	------	0	7	0	0	0	68	0	0	0
Reading, Pa.	0	0	------	0	114	0	2	0	2	0	0	9
Richmond, Va.	0	0	7	1	8	5	3	0	3	0	0	1
Roanoke, Va.	1	0	------	1	2	0	3	0	1	0	0	0
Rochester, N. Y.	0	0	------	0	15	0	6	0	8	0	0	21
Sacramento, Calif.	4	0	------	0	12	3	0	4	4	0	0	0
St. Joseph, Mo.	0	0	------	0	2	1	7	0	1	0	0	0
St. Louis, Mo.	0	0	3	2	26	10	22	0	17	0	0	2
St. Paul, Minn.	0	0	------	0	7	0	3	0	8	0	0	45
Salt Lake City, Utah	0	0	------	0	116	0	5	1	19	0	0	11
San Antonio, Tex.	1	0	1	1	4	0	11	0	0	0	0	2
San Francisco, Calif.	1	0	3	3	51	8	18	0	18	0	0	19
Savannah, Ga.	0	0	19	5	0	0	4	0	1	0	0	0
Seattle, Wash.	0	0	------	0	64	0	5	0	6	0	0	9
Shreveport, La.	0	0	------	1	0	0	9	0	0	0	0	0
South Bend, Ind.	0	0	------	0	2	0	0	0	0	0	0	3
Spokane, Wash.	0	0	------	0	175	0	2	0	2	0	0	0
Springfield, Ill.	0	0	------	0	2	0	3	0	2	0	0	21
Springfield, Mass.	0	0	------	0	2	0	0	0	100	0	0	0
Superior, Wis.	0	0	------	0	1	0	0	0	0	0	0	4
Syracuse, N. Y.	0	0	------	1	11	3	4	0	7	0	0	18
Tampa, Fla.	0	0	------	0	1	1	7	1	1	0	0	0
Terre Haute, Ind.	0	0	------	0	2	0	3	0	0	0	0	0
Topeka, Kans.	0	0	------	0	73	0	3	0	3	0	0	4
Trenton, N. J.	0	0	------	0	28	0	3	0	6	0	0	0
Washington, D. C.	0	0	------	2	94	2	14	0	35	0	0	26
Wheeling, W. Va.	0	0	------	0	1	1	1	0	3	0	1	4
Wichita, Kans.	0	0	------	0	23	0	4	0	3	0	0	4
Wilmington, Del.	0	0	------	0	10	1	5	0	3	0	0	4
Wilmington, N. C.	0	0	------	0	4	0	2	0	2	0	0	5
Winston-Salem, N. C.	0	0	1	0	1	1	1	0	2	0	0	25
Worcester, Mass.	0	0	------	0	175	2	8	0	11	0	0	10
Total	64	2	264	50	4,252	132	600	8	1,675	4	10	914
Corresponding week 1942	70	2	273	40	3,573	43	484	3	1,470	0	12	1,012
Average, 1938-42	105	------	765	[1] 84	[2] 4,249	------	[1] 594	------	1,523	19	19	1,065

Anthrax.—Cases: Camden, 1.
Dysentery, amebic.—Cases: New York, 2.
Dysentery, bacillary.—Cases: Baltimore, 1; Charleston, S. C., 1; Detroit, 1; Los Angeles, 1; New York, 5.
Dysentery, unspecified.—Cases: San Antonio, 2.
Tularemia.—Cases: New Orleans, 2.
Typhus fever.—Cases: Houston, 1.

[1] 3-year average, 1940-42.
[2] 5-year median.

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (rodent).—During the week ended February 20, 1943, 15 rats proved positive for plague were reported in Hamakua District, Island of Hawaii, T. H., as follows: 1 rat in Honokaa, 3 rats in Kapulena area, and 11 rats in Paauhau area.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended February 13, 1943.—During the week ended February 13, 1943, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		34		142	349	43	45	18	42	673
Diphtheria	3	18	1	22		9		1		54
Dysentery (bacillary)				7						7
German measles				10	16		9		10	45
Influenza		35	9		7	16			31	98
Measles		64	3	95	158	28	151	4	66	569
Meningitis, meningococcus	1	1		1	1	2			1	7
Mumps	6	103	5	37	1,025	173	82	90	156	1,677
Poliomyelitis						1				1
Scarlet fever		15	11	90	98	30	20	66	14	344
Tuberculosis (all forms)	1	8	6	84	44	17		18	15	193
Typhoid and paratyphoid fever				10						10
Whooping cough		3		123	112	41	7	38	10	334

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.)

Cholera

Ceylon.—During the week ended January 30, 1943, 24 cases of cholera with 22 deaths were reported in Ceylon.

Plague

Madagascar.—For the period January 11–21, 1943, 11 cases of plague with 10 deaths were reported in Madagascar.

Smallpox

Algeria.—For the period February 1–10, 1943, 57 cases of smallpox were reported in Algeria, including 5 cases in Algiers, and 4 cases in Oran.

Indochina.—For the period December 21–31, 1942, 72 cases of smallpox were reported in Indochina.

Typhus Fever

Algeria.—For the period February 1–10, 1943, 419 cases of typhus fever were reported in Algeria, including 11 cases in Algiers, 5 cases in Bone, 1 case in Mostaganem, and 33 cases in Oran.

Hungary.—For the 2 weeks ended February 20, 1943, 25 cases of typhus fever were reported in Hungary.

Rumania.—For the period February 16–28, 1943, 633 cases of typhus fever were reported in Rumania, as compared with 349 cases reported for the period February 2–15, 1943.

Slovakia.—For the period January 24 to February 6, 1943, 15 cases of typhus fever were reported in Slovakia.

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DEATHS DURING WEEK ENDED MARCH 6, 1943

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

	Week ended Mar. 6, 1943	Corresponding week, 1942
Data from 87 large cities of the United States:		
Total deaths	9,567	9,210
Average for 3 prior years	9,171	
Total deaths, first 9 weeks of year	90,310	82,930
Deaths under 1 year of age	698	621
Average for 3 prior years	536	
Deaths under 1 year of age, first 9 weeks of year	6,335	5,024
Data from industrial insurance companies:		
Policies in force	65,417,553	64,951,480
Number of death claims	14,235	13,466
Death claims per 1,000 policies in force, annual rate	11.3	10.8
Death claims per 1,000 policies, first 9 weeks of year, annual rate	10.7	10.2