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—Editorial—

In this issue of PUBLIC HEALTH REPORTS the Division of Tuberculosis presents a discussion of tuberculosis beds based chiefly on questionnaires sent to hospitals in order to prepare an annual Tuberculosis Bed Index. The authors compare four issues of the Index and discuss other statistics concerning tuberculosis beds.

The source of all the data in the Index is the hospitals and sanatoria themselves, and it is to the cooperation of individuals in each of the 605 reporting institutions that the completeness of the Index is due. To get the necessary information, a double post card questionnaire was sent to every hospital and sanatorium that could be located. Replies were received from a record 100 percent.

We know that most hospitals are understaffed and that it is a real effort for a busy administrator to find time to fill out even a short form like this. Yet the response was uniformly gracious and prompt. We think the completed Index will justify in general usefulness any inconvenience it may have occasioned.

Each year, as our list of tuberculosis hospitals grows, the Index becomes a more reliable census. The following article points out that our original sources for the names and addresses of hospitals with tuberculosis beds in the United States and Territories were such standard lists as those of the American Hospital Association, American Medical Association, and National Tuberculosis Association. But information volunteered by people in all parts of the country has increased the original lists with the names of many new or previously unlisted hospitals. Our readers can do us a great service if they will continue to let us know about new hospitals and sanatoria so that the Index may record every new development from year to year.

Again we want to thank all the people and institutions who have contributed information to this year's edition. We will be happy to receive comments, criticisms, and suggestions about the Index from them as well as from the other readers of PUBLIC HEALTH REPORTS.

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Tuberculosis Beds in the United States

BY ELEANOR HANNA, M. A. AND STANLEY GLASER*

The problem of obtaining hospitalization has been a subject of particular importance in the treatment and control of tuberculosis ever since Trudeau set forth his theory that a regimen of rest is the proper treatment of tuberculosis. In 1884 the opening of "The Little Red" at Trudeau, New York, with two beds (1) was the beginning in the United States of specific hospitalization for tuberculous persons.

At that time tuberculosis took a heavy toll. The population was about 55,000,000 (2), and at least 100,000 persons died of tuberculosis every year.¹ Yet there were only the two beds at Trudeau for treatment in the whole United States. By January 1, 1949, there were 103,819 tuberculosis beds (3) and 48,064 deaths (4).

In 1926, 42 years after the opening of "The Little Red" there were some 54,000 "civilian" beds for tuberculosis patients in all the States. Drolet at that time presented a comprehensive study of tuberculosis hospitalization to the twenty-second annual meeting of the National Tuberculosis Association (5), and in 1931, Jessamine Whitney, statistician for the National Tuberculosis Association, compiled another report (6) designed to obtain a 5-year comparison with Drolet's information. Her report in 1931 showed an increase of 20 percent in "civilian" beds, bringing the total to 64,377 beds. After adding the tuberculosis beds for Federal patients, the insane and prisoners, she arrived at a total for the United States of 82,974 beds. The ratio of tuberculosis deaths in 1931, which totaled 85,000, to the tuberculosis beds then existent, gave almost one bed per death, the standard then recommended.

The formulation of a standard for determining the number of tuberculosis beds necessary to care for the tuberculosis patients has long been a topic for the particular attention of committees of the National Tuberculosis Association, the American Trudeau Society, and others interested in evaluating community programs for the control of tuberculosis.

The standard of a given ratio between beds and deaths from tuberculosis, while not an efficient index in every way, has been used for many years because the factors required to compute the ratio are readily available. A conclusion drawn from the Framingham Demonstration, 1917-23, was that "one bed per death" might be enough

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¹ The tuberculosis rate in 1900 was 194.6 per 100,000 population. Applying a minimum rate of 200 per 100,000 to a population of 55 million gives an estimate of 100,000 deaths from tuberculosis yearly.

to care for all tuberculous patients (7). In 1933, Henry D. Chadwick reported at the National Tuberculosis Association Annual Meeting that experiences in studying the tuberculosis problem in Detroit indicated that a standard of "two beds per death" was necessary (8). During the following years, this standard served many communities. Some communities, slightly below the standard but with a declining number of tuberculosis deaths, as time passed, met the standard automatically, even though the beds remained constant and the number of patients may even have increased.

In spite of this inconsistency, the standard is a rule-of-thumb method which has served to focus the attention of tuberculosis workers on the need for beds, and has given impetus to obtaining new beds in many communities. In January 1944, the American Trudeau Society approved a minimum standard of two and one-half beds per annual tuberculosis death and recommended an even higher standard of three beds per annual tuberculosis death (9). Subsequently, the Hospital Survey and Construction Act (August 13, 1946), included in its text the standard of two and one-half beds per tuberculosis death (10). Public Health Service regulations for grants-in-aid to the States under this law specify that the Federal allowance is to be no more than the amount necessary to bring the number of tuberculosis beds to 2.5 times the average number of annual deaths from tuberculosis in the State over the 5-year period from 1940 to 1944, inclusive.

The Tuberculosis Control Division,² Public Health Service, was created in July 1944, and one of its first tasks was to obtain an accurate count of the number of beds actually existing in the United States for treatment of tuberculosis. The Division of Hospital Facilities, organized in August 1946, assumed responsibility for the administration of the Hospital Survey and Construction Act, but the Division of Tuberculosis continued to collect data about the number of beds available for tuberculosis treatment, since these data were necessary for its program.

To gather these data the Division of Tuberculosis sent a post card questionnaire to every hospital known to care for tuberculosis and to all tuberculosis sanatoria. Every source was used to obtain as nearly complete a count as possible. The annual result of the effort has been the Index of Hospitals and Sanatoria with Tuberculosis Beds in the United States and Territories, the first edition of which contained information as of January 1, 1946.

In comparing the Index with other publications giving information about tuberculosis beds, fundamental differences between the various reports should be noted. The Index is an annual report, prepared by a Federal agency to which hospitals supply information voluntarily. It gives only the rated bed capacity as reported by the institution,

² Now called the Division of Tuberculosis.

shows the city and State in which each institution is located and lists every institution which replies, regardless of how few beds there are for tuberculosis. It does not evaluate the adequacy of either the beds or the services given. Data on the number of adequate beds in the United States are referred to in the last section, "The Construction Program."

The main reports which may be compared to the Index are the annual Hospital Number of the Journal of the American Medical Association, the Tuberculosis Hospital and Sanatorium Directory of the National Tuberculosis Association and the American Hospital Directory of the American Hospital Association. The names of some hospitals appear in all three sources but no single source shows as many specific locations of tuberculosis beds as does the Index.

The Journal of the American Medical Association reports annually the official list of all types of hospitals registered by the Association in accordance with standards formulated by the Association Council on Medical Education and Hospitals. Tuberculosis service is indicated, as well as type of ownership or control, number of beds, average census and the number of admissions. The number of hospitals listed is limited by the conditions imposed for obtaining registration.

The Directory of the National Tuberculosis Association classifies institutions by type of ownership. It gives the capacity, rates, type of person admitted and stage of disease admitted, diagnostic and treatment facilities, resident staff, out-patient service, and the name of the medical director. The last two editions of the Directory were published in 1942 and 1948.

The American Hospital Directory is published annually and is based on information obtained by questionnaire from hospitals and other available sources. The names of all institutional members of the American Hospital Association are included in the Directory as well as non-members. This source shows hospitals classified by type of ownership, type of hospital, and facilities such as occupational therapy department, social service department and X-ray diagnostic department. The number of beds, census, admissions, fixed assets, payroll, and personnel by name and title are also reported.

Analysis of the Index

Four editions of the Index have been prepared to date by the Division of Tuberculosis. A comparison of the totals for each edition follows:

| <i>Index as of</i> | <i>Rated Bed capacity</i> | | | <i>Number of hospitals</i> | | |
|--------------------|---------------------------|--------------|----------------|----------------------------|--------------|----------------|
| | <i>Total</i> | <i>Local</i> | <i>Federal</i> | <i>Total</i> | <i>Local</i> | <i>Federal</i> |
| Jan. 1, 1946..... | 86,429 | 86,429 | Not obtained. | 594 | 594 | Not obtained. |
| Jan. 1, 1947..... | 86,795 | 86,795 | Not obtained. | 574 | 574 | Not obtained. |
| Jan. 1, 1948..... | 84,925 | 84,925 | Not obtained. | 575 | 575 | Not obtained. |
| Jan. 1, 1949..... | 103,819 | 88,279 | 15,540. | 726 | 605 | 121. |

The institutions counted as "local" are the kind of institutions which, in the first three editions, were the entire subject matter of the Index. The local data give the rated beds capacity of State, city, county, district and private hospitals, hospitals of the Indian Service, and all hospitals in Alaska, Hawaii, and Puerto Rico. The Federal hospitals, included for the first time in the 4th edition of the Index, are Veterans Administration hospitals, for which the number of operating tuberculosis beds is shown; Naval hospitals, for which the number of beds occupied is shown; and Army hospitals, Public Health Service Marine hospitals, and Federal penitentiaries for all of which rated tuberculosis bed capacity is shown. There are 15,540 tuberculosis beds in these 121 Federal institutions, most of which are under the control of the Veterans' Administration. This article deals with an analysis of local tuberculosis beds only.

In order to obtain the local data which appear in the Index, this Division mails a post card questionnaire to all hospitals and sanatoria which offer tuberculosis service. The mailing list contains the names of hospitals which have previously participated and any new or old hospitals which were not previously listed. We have obtained information about unlisted tuberculosis hospitals from other hospital listings, from tuberculosis consultants of the Division of Tuberculosis, State tuberculosis control officers, the Division of Hospital Facilities, newspaper and magazine clippings, and many interested tuberculosis workers.

The post card questionnaire, figure 1, requests five items in addition to identifying information. The Index presents only the official rated tuberculosis bed capacity. The other items concerning occupancy, availability and construction have been used each year for administrative purposes. This article publishes for the first time an analysis of the questionnaire in full.

The item "official rated bed capacity" may differ in the report of the Index from the number of "beds" shown in other sources. Comparison of the Index with other sources shows that for most tuberculosis hospitals there is close agreement between "rated bed capacity for tuberculosis" and "beds." In other kinds of hospitals, on the other hand, the "rated tuberculosis bed capacity" shown in the Index may be considerably lower, particularly when the hospital is classified as "general" or as "general and tuberculosis." If tuberculosis is a sufficiently important part of the hospital's operations, the whole capacity of the hospital is likely to be reported for tuberculosis; on the other hand, if tuberculosis service comprises a relatively small part of the hospital's function, there is likely to be no mention of the number of tuberculosis beds. Some hospitals, dealing with tuberculosis among other types of service, may not have a definable rated tuber-

THE POSTCARD QUESTIONNAIRE

Budget Bureau No. 68-R215.3
Approval Expires 11-30-50

HOSPITAL City Tuberculosis Hospital CITY Small City
1728 New Haven Avenue STATE Illinois

Is this the official name and address of your organization? YES NO

| TUBERCULOSIS BEDS ONLY - AS OF JANUARY 1, 1949 | NUMBER OF BEDS |
|---|----------------|
| 1. OFFICIAL RATED CAPACITY. 1-1-49 | |
| 2. NUMBER OCCUPIED BY PATIENTS. 1-1-49 | |
| 3. NUMBER NOT AVAILABLE FOR IMMEDIATE USE. 1-1-49 (Beds permanently or temporarily closed for whatever reason) | |
| 4. NEW BEDS ACTUALLY UNDER CONSTRUCTION. 1-1-49 | |
| 5. NEW BEDS PROPOSED. 1-1-49 | |

REMARKS _____

PHS-697(TB)
REV. 11-48

Signature of Reporting Officer

Budget Bureau No. 68-R24 .3
Approval Expires 11/30/50

In order that we may prepare an accurate current Index of Tuberculosis Hospital Beds in the United States and Territories as of January 1, 1949 will you please supply us with the information requested on the attached card and return the card promptly to us? A copy of the Index will be sent to each respondent.

PHS-697(TB)
REV. 11-48

Figure 1.

culosis bed capacity, but rather a varying number of beds which are used for tuberculosis as required. Other variations between the Index and other sources occur because of different reporting bases, actual changes in the number of beds reported at different times and a variety of other reasons.

As might be expected, some hospitals did not supply all the information requested; seven did not answer the fundamental question—

rated tuberculosis bed capacity—and are assigned zero beds in the tables which follow.

In addition some hospitals did not report the number of beds "not available for immediate use" or the "number occupied by patients." Where the number of beds available or occupied was not stated by the hospital, even in response to follow-up inquiries, figures have been supplied by assuming that beds available were 90 percent and beds occupied were 80 percent of rated bed capacity. The following additions have been made in accordance with the above rule:

| State | Number of sanatoria | Rated bed capacity (given) | Beds available (estimated at 90 percent) | Beds occupied (estimated at 80 percent) |
|------------------|---------------------|----------------------------|--|---|
| Texas..... | 1 | 11 | 10 | 9 |
| Alaska..... | 1 | 10 | 9 | 8 |
| Puerto Rico..... | 4 | 765 | 689 | 612 |

The tables which follow have been adjusted so that the number of institutions is the same in all tables, in spite of the fact that six institutions reporting did not supply all the information requested. The tables have footnotes showing where the differences are, so that the tables may be reconstructed on a different basis.

Table 1. *Use of tuberculosis beds in 605 hospitals, United States and Territories, Jan. 1, 1949*

| Stat us of tuberculosis beds | Number of local beds | Percent of | |
|---|----------------------|----------------|----------------|
| | | Rated capacity | Beds available |
| 1. Rated tuberculosis bed capacity ¹ | 88,279 | 100.0 | 100.0 |
| 2. Beds available ² | 82,767 | 93.8 | 100.0 |
| 3. Beds not available ¹ | 5,512 | 6.2 | ----- |
| 4. Beds occupied ³ | 73,398 | ----- | 83.1 |
| 5. Beds not occupied ³ | 14,881 | ----- | 16.9 |
| 6. Beds available but not occupied ⁴ | 9,369 | ----- | 11.3 |

¹ Data obtained from questionnaire, fig. 1.

² Arithmetical difference between line 1 and line 3.

³ Arithmetical difference between line 1 and line 4.

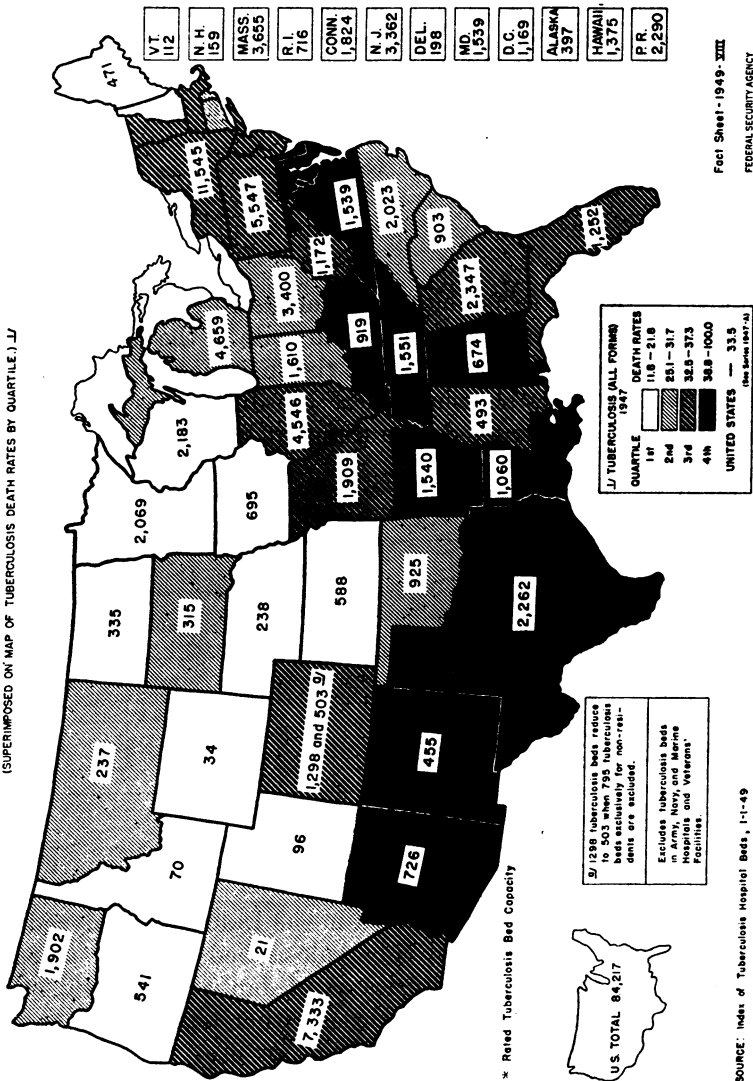
⁴ Arithmetical difference between line 2 and line 4.

Reports from 605 hospitals listed in the Index are analyzed in table 1. They show a total rated tuberculosis bed capacity of 88,279 in the United States and Territories as of January 1, 1949. Of these beds, 5,512 or 6.2 percent were closed either temporarily or permanently and therefore were not available for use. Beds are closed for such reasons as lack of personnel, remodeling programs, lack of operating funds and, in some States, lack of patients.

When the unavailable beds are subtracted from the total rated capacity, there remain 82,767 beds available to patients—93.8 percent of the total. On January 1, 1949, 73,398 of these—83.1 percent of the total rated capacity and 88.7 percent of the available beds—were

**TUBERCULOSIS BEDS* IN HOSPITALS AND SANATORIA
UNITED STATES AND TERRITORIES, JANUARY 1, 1949**

(SUPERIMPOSED ON MAP OF TUBERCULOSIS DEATH RATES BY QUARTILE.)



Fact Sheet - 1949 - VIII
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
BUREAU OF TUBERCULOSIS

Figure 2.

SOURCE: Index of Tuberculosis Hospital Beds, 1-1-49

occupied; 9,369—11.3 percent of the available beds—were vacant. Many of these vacancies are probably caused by such factors as rules concerning the admission of patients, residence laws, the means test, administration of the means test which may be a lengthy procedure, or temporary lack of patients. A few are caused by the cleaning and administrative routines necessary between patients.

The figures on occupancy given in this table correspond closely with the 1948 figures published in the Hospital Number (11) of The Journal of the American Medical Association, although the former are based on census for a given day and the latter on average daily census. The Journal showed that in 1948, 85.5 percent of the beds in all hospitals and 81.1 percent of the tuberculosis beds were occupied.

The distribution of tuberculosis beds by States is shown in figure 2.

Table 2 gives an analysis by States of the rated capacity, beds available, and beds occupied in the 605 reporting hospitals. It also gives the ratios (as percentages) for each State of (1) beds occupied to rated capacity; (2) beds occupied to beds available; and (3) beds available to rated capacity.

For example, to illustrate the meaning of the ratios—in Georgia 61.4 percent of rated tuberculosis beds were occupied on January 1, 1949. This appears to be a low ratio, but the table shows that only 68.9 percent of the rated tuberculosis bed capacity was actually available, and of the available beds 89 percent were occupied. In Georgia, although a relatively low percentage of the rated tuberculosis bed capacity is available (the average for the United States is 94 percent), the use of the available beds is about average.

The percentage of the rated tuberculosis bed capacity which is actually available varies from Georgia's 68.9 to 100 for Idaho, Mississippi, Montana, Nevada, Utah, Vermont, and Wyoming, and 100.7 for New York State.

The data on relationship of occupancy to rated capacity ranges from a low of 61 and 63 percent respectively for Georgia and Tennessee to 100 percent for Idaho and Wyoming. In 24 States and Territories the percentage falls between 85 and 100.

The occupancy of available beds, on the other hand, ranges from 76.7 in Pennsylvania to 100 percent in Idaho, New Hampshire, and Wyoming.

States in which a very high percentage of the available beds are occupied—90 percent or more—probably need more beds. Those in which a low percentage of the available beds are occupied are obviously not making full use of the beds which exist. Some of the reasons may be inefficient administration, lack of funds, or personnel deficiencies.

Table 3 summarizes the material in table 2 by showing the number of States which fall in the various percentage groups for each of the

Table 2. Tuberculosis beds: Number of hospitals and factors related to the usage of tuberculosis beds in hospitals, by States and Territories, Jan. 1, 1949

| Area | Number of hospitals | Rated bed capacity | Beds available | Beds occupied | Beds occupied as a percent of rated capacity | Beds occupied as a percent of beds available | Beds available as a percent of rated capacity |
|----------------------------|---------------------|--------------------|----------------------|----------------------|--|--|---|
| | (1) | (2) | (3) | (4) | (4)+(2) | (4)+(3) | (3)+(2) |
| U. S. and Territories..... | ^a 605 | 88, 279 | ^b 82, 767 | ^c 73, 398 | 83.1 | 88.7 | 93.8 |
| Continental U. S..... | ^a 582 | 84, 217 | ^d 79, 011 | ^e 69, 985 | 83.1 | 88.6 | 93.8 |
| Territories..... | 23 | 4, 062 | ^f 3, 756 | ^g 3, 413 | 84.0 | 90.9 | 92.5 |
| Alabama..... | 8 | 674 | 658 | 617 | 91.5 | 93.8 | 97.6 |
| Arizona..... | 16 | 726 | 722 | 657 | 90.5 | 91.0 | 99.4 |
| Arkansas..... | 3 | 1, 540 | 1, 367 | 1, 358 | 88.2 | 99.3 | 88.8 |
| California..... | ^h 71 | 7, 333 | 7, 030 | 6, 473 | 88.3 | 92.1 | 95.9 |
| Colorado..... | 17 | 1, 298 | 1, 263 | 1, 005 | 77.4 | 79.6 | 97.3 |
| Connecticut..... | 9 | 1, 824 | 1, 546 | 1, 422 | 78.0 | 92.0 | 84.8 |
| Delaware..... | 2 | 198 | 181 | 156 | 78.8 | 86.2 | 91.4 |
| District of Columbia..... | 4 | 1, 169 | 1, 069 | 1, 031 | 88.2 | 96.4 | 91.4 |
| Florida..... | 7 | 1, 252 | 1, 222 | 1, 081 | 86.3 | 88.5 | 97.6 |
| Georgia..... | 4 | 2, 347 | 1, 618 | 1, 440 | 61.4 | 89.0 | 68.9 |
| Idaho..... | 1 | 70 | 70 | 70 | 100.0 | 100.0 | 100.0 |
| Illinois..... | ⁱ 35 | 4, 546 | 4, 123 | 3, 612 | 79.5 | 87.6 | 90.7 |
| Indiana..... | 11 | 1, 610 | 1, 477 | 1, 398 | 86.8 | 94.7 | 91.7 |
| Iowa..... | 6 | 695 | 614 | 596 | 86.0 | 97.4 | 88.3 |
| Kansas..... | 4 | 588 | 502 | 455 | 77.4 | 90.6 | 85.4 |
| Kentucky..... | 6 | 919 | 739 | 701 | 76.3 | 94.9 | 80.4 |
| Louisiana..... | 7 | 1, 060 | 945 | 750 | 70.8 | 79.4 | 89.2 |
| Maine..... | 5 | 471 | 439 | 373 | 79.2 | 85.0 | 93.2 |
| Maryland..... | 7 | 1, 539 | 1, 465 | 1, 356 | 88.1 | 92.6 | 95.2 |
| Massachusetts..... | ^j 26 | 3, 655 | 3, 089 | 2, 602 | 71.2 | 84.2 | 84.5 |
| Michigan..... | 26 | 4, 659 | 4, 469 | 4, 203 | 90.2 | 94.0 | 95.9 |
| Minnesota..... | 17 | 2, 069 | 1, 980 | 1, 652 | 79.8 | 83.4 | 95.7 |
| Mississippi..... | 3 | 493 | 493 | 415 | 84.2 | 84.2 | 100.0 |
| Missouri..... | 9 | 1, 909 | 1, 736 | 1, 599 | 83.8 | 92.1 | 90.9 |
| Montana..... | ^k 4 | 237 | 237 | 226 | 95.4 | 95.4 | 100.0 |
| Nebraska..... | 2 | 238 | 214 | 198 | 83.2 | 92.5 | 89.9 |
| Nevada..... | 1 | 21 | 21 | 20 | 95.2 | 95.2 | 100.0 |
| New Hampshire..... | 2 | 159 | 123 | 123 | 77.4 | 100.0 | 77.4 |
| New Jersey..... | 20 | 3, 362 | 3, 241 | 2, 737 | 81.4 | 84.4 | 96.4 |
| New Mexico..... | 6 | 455 | 444 | 386 | 84.8 | 86.9 | 97.6 |
| New York..... | 62 | 11, 545 | 11, 631 | 10, 370 | 89.8 | 89.2 | 100.7 |
| North Carolina..... | 23 | 2, 023 | 1, 949 | 1, 756 | 86.8 | 90.1 | 96.3 |
| North Dakota..... | 1 | 335 | 310 | 255 | 76.1 | 82.3 | 92.5 |
| Ohio..... | ^l 25 | 3, 400 | 3, 280 | 3, 065 | 90.1 | 93.4 | 96.5 |
| Oklahoma..... | 6 | 925 | 885 | 748 | 80.9 | 84.5 | 95.7 |
| Oregon..... | 5 | 541 | 480 | 459 | 84.8 | 95.6 | 88.7 |
| Pennsylvania..... | ^m 27 | 5, 547 | 5, 364 | 4, 116 | 74.2 | 76.7 | 96.7 |
| Rhode Island..... | 3 | 716 | 543 | 509 | 71.1 | 93.7 | 75.8 |
| South Carolina..... | 6 | 903 | 839 | 702 | 77.7 | 83.7 | 92.9 |
| South Dakota..... | 2 | 315 | 310 | 240 | 76.2 | 77.4 | 98.4 |
| Tennessee..... | 10 | 1, 551 | 1, 243 | 979 | 63.1 | 78.8 | 80.1 |
| Texas..... | 22 | 2, 262 | ^d 2, 239 | ⁿ 1, 942 | 85.9 | 86.7 | 99.0 |
| Utah..... | 1 | 96 | 96 | 80 | 83.3 | 83.3 | 100.0 |
| Vermont..... | 2 | 112 | 112 | 103 | 92.0 | 92.0 | 100.0 |
| Virginia..... | 9 | 1, 539 | 1, 489 | 1, 293 | 84.0 | 86.8 | 96.8 |
| Washington..... | 12 | 1, 902 | 1, 866 | 1, 743 | 91.6 | 93.4 | 98.1 |
| West Virginia..... | 5 | 1, 172 | 1, 132 | 1, 014 | 86.5 | 89.6 | 96.6 |
| Wisconsin..... | 21 | 2, 183 | 2, 112 | 1, 863 | 85.3 | 88.2 | 96.7 |
| Wyoming..... | 1 | 34 | 34 | 34 | 100.0 | 100.0 | 100.0 |
| Alaska..... | 9 | 397 | ^j 389 | ^k 389 | 97.7 | 99.7 | 98.0 |
| Hawaii..... | 4 | 1, 375 | 1, 225 | 996 | 72.4 | 81.3 | 89.1 |
| Puerto Rico..... | 10 | 2, 290 | ^l 2, 142 | ^m 2, 029 | 88.6 | 94.7 | 93.5 |
| Medians: | | | | | | | |
| Continental U. S..... | | | | | 84.2 | 90.1 | 95.9 |
| U. S. and Territories..... | | | | | 84.5 | 90.4 | 95.8 |

^a Includes 7 hospitals for which the rated tuberculosis bed capacity was not stated and 2 hospitals (of 15 and 116 beds rated tuberculosis capacity) which were closed for alterations.

^b Includes 708 beds, the estimated number of beds available in 6 hospitals which did not report the number of beds not available for use.

^c Includes 629 beds the estimated number of beds occupied in 6 hospitals which did not report the number of beds occupied.

^d Includes 10 beds (90 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds not available for use.

^e Includes 9 beds (80 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds occupied.

^f Includes 698 beds, the estimated number of beds available in 5 hospitals which did not report the number of beds not available for use.

three ratios described above. It is interesting to see that with respect to the ratio of beds occupied to rated tuberculosis bed capacity, most of the States and Territories fall between 75 and 90 percent. But for the ratio of beds available to rated capacity more than half the States were above 95 percent. And for the ratio of beds occupied to beds available more than half the States were above 90 percent.

Table 3. *Frequency distribution of States by three ratios of factors related to the usage of tuberculosis beds in hospitals, United States and Territories, Jan. 1, 1949*

| Percent range | Number of States and Territories | | |
|----------------------------------|--|--|---|
| | Beds occupied as a percent of rated capacity | Beds occupied as a percent of beds available | Beds available as a percent of rated capacity |
| Total U. S. and Territories..... | 52 | 52 | 52 |
| Over 95.0 percent..... | • 5 | • 10 | • 29 |
| 90.0-94.9 percent..... | 6 | • 17 | • 9 |
| 85.0-89.9 percent..... | • 13 | 11 | • 7 |
| 80.0-84.9 percent..... | 9 | • 9 | 4 |
| 75.0-79.9 percent..... | 12 | 5 | 2 |
| 70.0-74.9 percent..... | • 5 | | |
| 65.0-69.9 percent..... | | | 1 |
| 60.0-64.9 percent..... | 2 | | |

• Includes one Territory.

Table 4 shows the number of hospitals and the number of beds in each State and Territory by rated tuberculosis bed capacity. Six hospitals in the United States and Territories have rated tuberculosis bed capacities of more than 1,000, the largest having 2,200 beds.

The largest group of hospitals has tuberculosis units with a rated tuberculosis bed capacity of less than 50. The 191 hospitals in this size group were 31.6 percent of all the hospitals. The hospitals with a rated tuberculosis bed capacity of 100-249 account for the largest number of tuberculosis beds—there are almost 25,000 beds in hospitals of this size—28.1 percent of the total rated bed capacity. Figure 3 graphically summarizes this material.

Table 5 presents data for the rated bed capacity, beds available and beds occupied, by size, for the 605 hospitals in the United States and Territories and shows the percent distribution of each factor. Twenty-eight and one-tenth percent of the rated tuberculosis bed

^a Includes 620 beds, the estimated number of beds available in 5 hospitals which did not report the number of beds occupied.

^b Includes 2 hospitals for which the rated tuberculosis bed capacity was not stated and 2 hospitals (of 15 and 116 beds rated tuberculosis capacity) which were closed for alterations.

^c Includes 1 hospital for which the rated tuberculosis bed capacity was not stated.

^d Includes 9 beds (90 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds not available for use.

^e Includes 8 beds (80 percent of rated capacity) for 1 hospital which did not report the number of beds occupied.

^f Includes 689 beds (90 percent of rated tuberculosis bed capacity) for 4 hospitals which did not report the number of beds not available for use.

^g Includes 612 beds (80 percent of rated capacity) for 4 hospitals which did not report the number of beds occupied.

| | | | | | | | | | | | | | | | | | |
|---------------------|----|--------|----|-----|-----|-------|----|-------|----|-------|---|-------|---|-------|---|-------|---|
| Nebraska..... | 2 | 238 | 1 | 32 | 0 | 0 | 1 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nevada..... | 1 | 21 | 1 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| New Hampshire..... | 1 | 159 | 0 | 0 | 169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| New Jersey..... | 20 | 3,362 | 5 | 141 | 0 | 0 | 9 | 1,406 | 3 | 1,101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| New Mexico..... | 6 | 455 | 0 | 0 | 5 | 0 | 1 | 100 | 0 | 0 | 1 | 561 | 0 | 0 | 0 | 0 | 0 |
| New York..... | 62 | 11,545 | 14 | 413 | 15 | 1,055 | 16 | 2,615 | 13 | 4,269 | 3 | 1,589 | 0 | 0 | 1 | 1,604 | 0 |
| North Carolina..... | 23 | 2,923 | 15 | 396 | 2 | 114 | 4 | 623 | 1 | 300 | 1 | 600 | 0 | 0 | 0 | 0 | 0 |
| North Dakota..... | 1 | 285 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 335 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ohio..... | 25 | 3,400 | 6 | 152 | 6 | 420 | 8 | 1,168 | 3 | 1,077 | 1 | 583 | 0 | 0 | 0 | 0 | 1 |
| Oklahoma..... | 6 | 925 | 1 | 30 | 0 | 0 | 4 | 595 | 1 | 300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oregon..... | 5 | 541 | 2 | 81 | 1 | 80 | 2 | 380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pennsylvania..... | 27 | 5,547 | 7 | 118 | 5 | 336 | 9 | 1,336 | 2 | 817 | 0 | 0 | 2 | 1,560 | 1 | 1,380 | 0 |
| Rhode Island..... | 3 | 716 | 1 | 38 | 1 | 65 | 0 | 0 | 0 | 0 | 1 | 613 | 0 | 0 | 0 | 0 | 0 |
| South Carolina..... | 6 | 903 | 0 | 0 | 5 | 353 | 0 | 0 | 0 | 0 | 1 | 550 | 0 | 0 | 0 | 0 | 0 |
| South Dakota..... | 2 | 315 | 0 | 0 | 0 | 0 | 2 | 315 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tennessee..... | 10 | 1,551 | 4 | 118 | 1 | 54 | 2 | 319 | 3 | 1,060 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Texas..... | 22 | 2,262 | 11 | 278 | 5 | 326 | 5 | 708 | 0 | 0 | 0 | 0 | 1 | 955 | 0 | 0 | 0 |
| Utah..... | 1 | 96 | 0 | 0 | 1 | 96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vermont..... | 1 | 112 | 1 | 47 | 1 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Virginia..... | 9 | 1,539 | 4 | 130 | 0 | 0 | 2 | 370 | 3 | 1,039 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Washington..... | 12 | 1,902 | 1 | 45 | 4 | 232 | 6 | 743 | 0 | 0 | 0 | 0 | 1 | 882 | 0 | 0 | 0 |
| West Virginia..... | 3 | 1,172 | 1 | 37 | 1 | 32 | 1 | 125 | 1 | 298 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wisconsin..... | 21 | 2,153 | 4 | 145 | 13 | 921 | 3 | 521 | 0 | 0 | 1 | 596 | 0 | 0 | 0 | 0 | 0 |
| Wyoming..... | 1 | 34 | 1 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Alaska..... | 9 | 387 | 7 | 105 | 0 | 0 | 2 | 292 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hawaii..... | 4 | 1,375 | 0 | 0 | 0 | 0 | 3 | 437 | 0 | 0 | 0 | 0 | 1 | 888 | 0 | 0 | 0 |
| Puerto Rico..... | 10 | 2,280 | 1 | 25 | 2 | 165 | 4 | 600 | 2 | 700 | 0 | 0 | 1 | 900 | 0 | 0 | 0 |

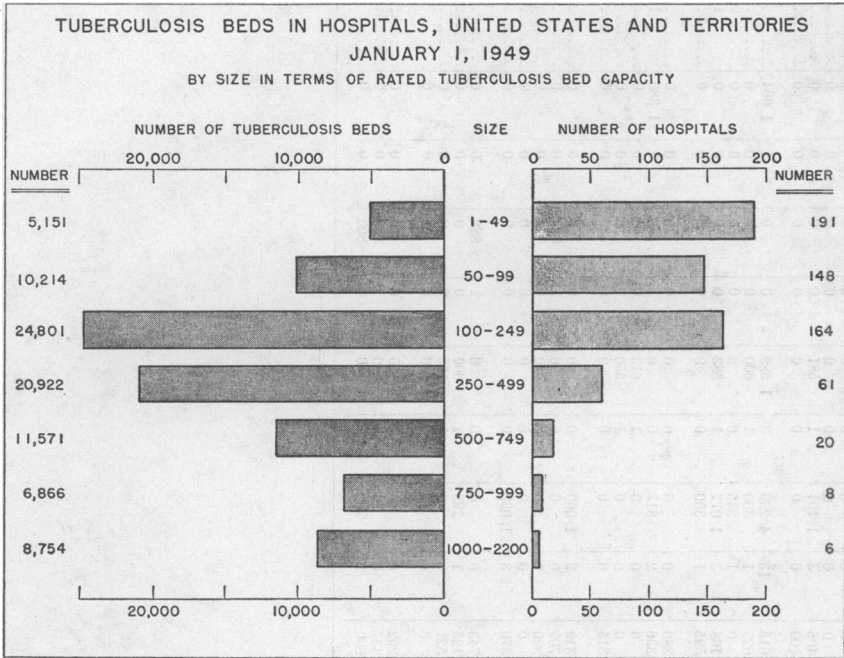


Figure 3.

capacity is found in hospitals of 100-249 tuberculosis beds; the same size hospitals account for 28.9 percent of the 73,398 occupied beds. Of the 82,767 available tuberculosis beds, 6.1 percent were in hospitals with less than 50 tuberculosis beds, whereas these same hospitals comprise 31.5 percent of all of the tuberculosis hospitals in the United States and Territories. It is also notable that while 6.1 percent of the tuberculosis beds available were in hospitals with less than 50 tuberculosis beds, only 5.8 percent of the rated tuberculosis bed

Table 5. *Percent distribution of hospitals and beds, by size, showing rated tuberculosis bed capacity, beds available and beds occupied, United States and Territories, Jan. 1, 1949*

| Size of hospital (in terms of tuberculosis beds) | Hospitals | | Rated bed capacity | | Beds available | | Beds occupied | |
|--|-----------|---------|--------------------|---------|----------------|---------|---------------|---------|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Total..... | 605 | 100.0 | 88,279 | 100.0 | 82,767 | 100.0 | 73,398 | 100.0 |
| 1-49..... | 191 | 31.6 | 5,151 | 5.8 | 5,019 | 6.1 | 4,109 | 5.6 |
| 50-99..... | 148 | 24.5 | 10,214 | 11.6 | 9,769 | 11.8 | 8,435 | 11.5 |
| 100-249..... | 164 | 27.1 | 24,801 | 28.1 | 23,501 | 28.4 | 21,182 | 28.9 |
| 250-499..... | 61 | 10.1 | 20,922 | 23.7 | 19,121 | 23.1 | 17,314 | 23.6 |
| 500-749..... | 20 | 3.3 | 11,571 | 13.1 | 10,809 | 13.0 | 9,866 | 13.4 |
| 750-999..... | 8 | 1.3 | 6,866 | 7.8 | 6,506 | 7.9 | 5,560 | 7.6 |
| 1,000-2,200..... | 6 | 1.0 | 8,754 | 9.9 | 8,042 | 9.7 | 6,932 | 9.4 |
| Not stated..... | 7 | 1.1 | | | | | | |

capacity was in hospitals of this size showing that overcrowding is probably more frequent here than in hospitals of larger size.

Table 6 gives data for tuberculosis beds by size-intervals of 50 beds, a break-down into smaller segments than is used in tables 4 and 5. The rated tuberculosis bed capacity, beds available, beds occupied and selected ratios for these factors are given. A low ratio of beds available to rated capacity indicates that a considerable number of beds are closed. If at the same time the ratio of beds occupied to beds available is low, the most obvious interpretation is that facilities are not being efficiently used.

Table 6. Tuberculosis beds: Number of hospitals, rated capacity, beds available and beds occupied by size in terms of rated tuberculosis bed capacity, United States and Territories, Jan. 1, 1949

| Size of hospital (in terms of tuberculosis beds) | Number of hospitals | Rated bed capacity | Beds available | Beds occupied | Beds occupied as a percent of rated capacity | Beds occupied as a percent of beds available | Beds available as a percent of rated capacity |
|--|---------------------|--------------------|----------------------|----------------------|--|--|---|
| | (1) | (2) | (3) | (4) | (4) ÷ (2) | (4) ÷ (3) | (3) ÷ (2) |
| Total | ^a 605 | 88, 279 | ^b 82, 767 | ^c 73, 398 | 83. 1 | 88. 7 | 93. 8 |
| 1-49 | ^d 191 | 5, 151 | ^e 5, 019 | ^f 4, 109 | 79. 8 | 81. 9 | 97. 4 |
| 50-99 | 148 | 10, 214 | ^g 9, 769 | ^h 8, 435 | 82. 6 | 86. 3 | 95. 6 |
| 100-149 | ⁱ 94 | 11, 153 | 10, 565 | 9, 317 | 83. 5 | 88. 2 | 94. 7 |
| 150-199 | 34 | 5, 729 | 5, 605 | 5, 151 | 89. 9 | 91. 9 | 97. 8 |
| 200-249 | 36 | 7, 919 | ^j 7, 331 | ^k 6, 714 | 84. 8 | 91. 6 | 92. 6 |
| 250-299 | 14 | 3, 731 | 3, 501 | 3, 145 | 84. 3 | 89. 8 | 93. 8 |
| 300-349 | 16 | 5, 016 | 4, 646 | 4, 292 | 85. 6 | 92. 4 | 92. 6 |
| 350-399 | 18 | 6, 596 | 5, 908 | 5, 387 | 81. 7 | 91. 2 | 89. 6 |
| 400-449 | 11 | 4, 608 | ^l 4, 135 | ^m 3, 751 | 81. 4 | 90. 7 | 89. 7 |
| 450-499 | 2 | 971 | 931 | 739 | 76. 1 | 79. 4 | 95. 9 |
| 500-549 | 5 | 2, 533 | 2, 347 | 2, 154 | 85. 0 | 91. 8 | 92. 7 |
| 550-599 | 8 | 4, 547 | 4, 415 | 3, 849 | 84. 6 | 87. 2 | 97. 1 |
| 600-649 | 2 | 1, 213 | 1, 040 | 1, 021 | 84. 2 | 98. 2 | 85. 7 |
| 650-699 | 5 | 3, 278 | 3, 007 | 2, 842 | 86. 7 | 94. 5 | 91. 7 |
| 700-749 ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 750-799 | 2 | 1, 560 | 1, 498 | 986 | 63. 2 | 65. 8 | 98. 0 |
| 800-849 | 2 | 1, 633 | 1, 485 | 1, 455 | 89. 1 | 98. 0 | 90. 9 |
| 850-899 | 2 | 1, 780 | 1, 780 | 1, 674 | 94. 0 | 94. 0 | 100. 0 |
| 900-949 | 1 | 838 | 788 | 602 | 64. 2 | 76. 4 | 84. 0 |
| 950-999 | 1 | 955 | 955 | 843 | 88. 3 | 88. 3 | 100. 0 |
| 1,000 and over | 6 | 8, 754 | 8, 042 | 6, 932 | 79. 2 | 86. 2 | 91. 9 |
| Not stated | 7 | ..... | ..... | ..... | ..... | ..... | ..... |

^a Includes 7 hospitals for which the rated tuberculosis bed capacity was not stated, 2 hospitals (of 15 and 116 beds rated tuberculosis capacity) which were closed for alterations.

^b Includes 708 beds, the estimated number of beds available in 6 hospitals which did not report the number of beds available for use.

^c Includes 629 beds, the estimated number of beds occupied in 6 hospitals which did not report the number of beds occupied.

^d Includes one institution of 15 beds rated capacity which was closed for alterations.

^e Includes 19 beds (90 percent of rated tuberculosis bed capacity) for 2 hospitals which did not report the number of beds not available for use.

^f Includes 17 beds (80 percent of rated tuberculosis bed capacity) for 2 hospitals which did not report the number of beds occupied.

^g Includes 149 beds (90 percent of rated tuberculosis bed capacity) for 2 hospitals which did not report the number of beds not available for use.

^h Includes 132 beds (80 percent of rated tuberculosis bed capacity) for 2 hospitals which did not report the number of beds occupied.

ⁱ Includes 1 hospital of 116 beds rated tuberculosis capacity which was closed for redecoration.

^j Includes 180 beds (90 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds not available for use.

^k Includes 160 beds (80 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds occupied.

^l Includes 360 beds (90 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds not available for use.

^m Includes 320 beds (80 percent of rated tuberculosis bed capacity) for 1 hospital which did not report the number of beds occupied.

Comparison of the Index for Different Years

Up to this point we have presented an analysis of the data obtained from the questionnaire for the Index, 4th edition. Table 7 makes a comparison between the 1st and 4th editions of the Index and shows

Table 7. Comparisons of the Index for Jan. 1, 1946, with the Index for Jan. 1, 1949, showing changes in the number of hospitals listed and changes in the number of tuberculosis beds in the listed hospitals, United States and Territories

| States and Territories | Hospitals with same number beds, 1946 and 1949 | | Hospitals with more beds in 1949 than 1946 | | Hospitals with fewer beds in 1949 than 1946 | | Hospitals in 1946 Index, but not in 1949 Index | | Hospitals in 1949 Index, but not in 1946 Index | |
|---------------------------|--|----------------|--|--------------------|---|--------------------|--|---------------------|--|---------------------|
| | Number hospitals | Number of beds | Number hospitals | Difference in beds | Number hospitals | Difference in beds | Number hospitals | Number beds in 1946 | Number hospitals | Number beds in 1949 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Total | 194 | 25,809 | 130 | 3,100 | 212 | 5,144 | 54 | 2,820 | 69 | 6,567 |
| Alabama..... | 2 | 135 | 4 | 95 | 2 | 2 | ----- | ----- | ----- | ----- |
| Arizona..... | 6 | 255 | 4 | 18 | 5 | 67 | 6 | 188 | 1 | 82 |
| Arkansas..... | 1 | 1,165 | 1 | 171 | 1 | 10 | ----- | ----- | ----- | ----- |
| California..... | 12 | 1,165 | 19 | 401 | 16 | 353 | 6 | 380 | 24 | 847 |
| Colorado..... | 5 | 288 | 4 | 39 | 8 | 146 | 3 | 109 | ----- | ----- |
| Connecticut..... | 3 | 587 | 1 | 4 | 4 | 61 | 1 | 16 | 1 | 72 |
| Delaware..... | 1 | 68 | 1 | 6 | ----- | ----- | ----- | ----- | ----- | ----- |
| District of Columbia..... | 2 | 376 | ----- | ----- | 1 | 8 | ----- | ----- | 1 | 125 |
| Florida..... | 3 | 143 | ----- | ----- | 2 | 40 | 7 | 257 | 2 | 705 |
| Georgia..... | 1 | 50 | 1 | 12 | ----- | ----- | 3 | 920 | 2 | 2,247 |
| Idaho..... | ----- | ----- | ----- | ----- | ----- | ----- | 2 | 47 | 1 | 70 |
| Illinois..... | 16 | 1,371 | 3 | 122 | 14 | 148 | ----- | ----- | 2 | 12 |
| Indiana..... | 4 | 567 | ----- | ----- | 7 | 113 | 1 | 50 | ----- | ----- |
| Iowa..... | 2 | 495 | 1 | 3 | 3 | 125 | ----- | ----- | ----- | ----- |
| Kansas..... | ----- | ----- | 1 | 2 | 2 | 17 | 1 | 30 | 1 | 42 |
| Kentucky..... | ----- | ----- | 3 | 152 | 2 | 76 | ----- | ----- | 1 | 8 |
| Louisiana..... | 2 | 149 | 3 | 20 | 1 | 11 | ----- | ----- | 1 | 98 |
| Maine..... | 2 | 42 | ----- | ----- | 3 | 51 | ----- | ----- | ----- | ----- |
| Maryland..... | 2 | 340 | ----- | ----- | 5 | 353 | ----- | ----- | ----- | ----- |
| Massachusetts..... | 11 | 1,911 | 6 | 84 | 7 | 140 | ----- | ----- | 2 | 20 |
| Michigan..... | 4 | 364 | 8 | 42 | 14 | 216 | 2 | 69 | ----- | ----- |
| Minnesota..... | 8 | 685 | 4 | 31 | 5 | 29 | ----- | ----- | ----- | ----- |
| Mississippi..... | 1 | 425 | ----- | ----- | 2 | 15 | ----- | ----- | ----- | ----- |
| Missouri..... | 3 | 895 | 1 | 7 | 5 | 88 | ----- | ----- | ----- | ----- |
| Montana..... | ----- | ----- | 2 | 18 | 3 | 134 | ----- | ----- | 1 | 6 |
| Nebraska..... | ----- | ----- | 1 | 9 | ----- | ----- | ----- | ----- | ----- | ----- |
| Nevada..... | ----- | ----- | ----- | ----- | 2 | 81 | ----- | ----- | ----- | ----- |
| New Hampshire..... | ----- | ----- | ----- | ----- | 7 | 366 | ----- | ----- | 1 | 20 |
| New Jersey..... | 7 | 591 | 5 | 68 | 1 | 4 | ----- | ----- | ----- | ----- |
| New Mexico..... | 5 | 378 | ----- | ----- | ----- | ----- | 1 | 15 | ----- | ----- |
| New York..... | 26 | 3,596 | 14 | 320 | 20 | 556 | 4 | 261 | 2 | 183 |
| North Carolina..... | 9 | 1,266 | 6 | 29 | 5 | 16 | 1 | 21 | 3 | 80 |
| North Dakota..... | ----- | ----- | ----- | ----- | 1 | 15 | ----- | ----- | ----- | ----- |
| Ohio..... | 8 | 492 | 6 | 287 | 11 | 328 | ----- | ----- | ----- | ----- |
| Oklahoma..... | 1 | 100 | ----- | ----- | 4 | 102 | 2 | 29 | 1 | 120 |
| Oregon..... | 1 | 80 | 1 | 5 | 3 | 43 | ----- | ----- | ----- | ----- |
| Pennsylvania..... | 6 | 1,258 | 7 | 131 | 8 | 550 | 5 | 112 | 6 | 166 |
| Rhode Island..... | ----- | ----- | 1 | 25 | 2 | 32 | ----- | ----- | ----- | ----- |
| South Carolina..... | 1 | 550 | 1 | 9 | 4 | 62 | ----- | ----- | ----- | ----- |
| South Dakota..... | 1 | 192 | ----- | ----- | 1 | 7 | ----- | ----- | ----- | ----- |
| Tennessee..... | 5 | 569 | ----- | ----- | 3 | 113 | 2 | 20 | 2 | 416 |
| Texas..... | 5 | 1,255 | 8 | 53 | 5 | 60 | 1 | 5 | 4 | 69 |
| Utah..... | 1 | 96 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Vermont..... | 1 | 47 | ----- | ----- | 1 | 19 | ----- | ----- | ----- | ----- |
| Virginia..... | 5 | 1,203 | 1 | 7 | 2 | 21 | ----- | ----- | 1 | 30 |
| Washington..... | 2 | 170 | 6 | 465 | 3 | 103 | ----- | ----- | 1 | 58 |
| West Virginia..... | 2 | 177 | ----- | ----- | 3 | 183 | ----- | ----- | ----- | ----- |
| Wisconsin..... | 9 | 847 | 2 | 5 | 9 | 143 | 1 | 40 | 1 | 24 |
| Wyoming..... | 1 | 34 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Alaska..... | 2 | 30 | 2 | 8 | 2 | 11 | 4 | 191 | 3 | 302 |
| Hawaii..... | 1 | 212 | 1 | 451 | 2 | 114 | 1 | 60 | ----- | ----- |
| Puerto Rico..... | 4 | 1,200 | 1 | 1 | 1 | 12 | ----- | ----- | 4 | 765 |

the distribution of these changes by States. The first two columns show that 194 hospitals with 25,809 beds have the same rated tuberculosis capacity in 1949 as they had in 1946. This involves approximately one-third of the hospitals and somewhat less than one-third of the rated tuberculosis bed capacity shown in the most recent Index. One hundred and thirty hospitals increased their rated bed capacity by 3,100 beds, or an average of about 40 beds per hospital in the period between the first and fourth report. Two hundred and twelve hospitals had fewer beds in 1949 than in 1946; these hospitals were responsible for a decrease of 5,144 beds. Fifty-four hospitals which were listed in 1946 with a total of 2,820 beds do not appear in the 1949 Index. This decrease is more than offset by the 69 hospitals with 6,567 beds, which were not listed in the 1946 Index, but which appear in the 1949 Index.

Some of the changes in columns 3 through 6 may be due to what might be termed "random variations in reporting," but undoubtedly most of them are real changes in the rated tuberculosis bed capacities of institutions. While it is not possible to determine accurately which of the variations in columns 7 through 10 are the result of more efficiency in locating the hospitals and better discrimination in discontinuing the listings of nontuberculosis hospitals, it is safe to assume that the majority of the changes noted are real changes.

The Construction Program

The subject of how many beds for tuberculosis are actually new to the tuberculosis hospital program in the United States and Territories revolves around a topic which is basically important—replacements for obsolete beds. If all the existing beds were adequate, any construction program would result in an increase in the number of tuberculosis beds. Unfortunately, some construction is undertaken to replace inadequate or obsolete beds. This gives rise to two further complementary questions. How many of the existing tuberculosis beds are inadequate and how much of the construction proposed or in process of construction is aimed at replacing inadequate beds rather than at adding to the total?

Although the Division of Tuberculosis does not obtain information about the adequacy of the beds reported for the Index, there is available one source of information concerning adequacy. The Division of Hospital Facilities receives from the State agencies administering the hospital program a State Plan which includes inventories of hospital facilities of the State. The number of tuberculosis beds needed is part of the State Plan and is based on minimum standards prescribed by the Hospital Survey and Construction Act. The States determine

whether the beds that they have are acceptable or unacceptable on the basis of their own criteria. A summary of the State Plans indicated that there were 12,906 unacceptable beds in the United States and Territories included in the total of 85,466 tuberculosis beds, as reported for December 31, 1948 (12). Another report from the Division of Hospital Facilities shows that by May 31, 1949, 28 *approved* project applications for 2,809 tuberculosis beds in 16 States and Territories had been received; these provided for new facilities, additions, alterations or replacements to existing facilities. The total cost involved was estimated at \$27,388,267 (13).

It should be noted that construction is sometimes undertaken without Federal assistance. In such instances, except for additions to hospitals already listed in the Index, there is no formal means of receiving notification about the new facilities. We must depend upon news releases and voluntary communications sent to this Division.

Although the main function of the post card questionnaire is to collect information on capacity and occupancy, two questions on construction were asked. Replies to question 4 and 5 on the card sent to each hospital by the Division of Tuberculosis indicated that there were 3,271 tuberculosis beds under construction and that hospitals and sanatoria in continental United States proposed to construct 4,837 additional tuberculosis beds as of January 1, 1949. Figure 4 shows the distribution by States of these statistics. It is important to remember that the data were collected from existing hospitals. Therefore completely new hospitals are not included in these figures.

An analysis of the data shown in figure 5 for the Index as of January 1, 1948 indicated that the 1,674 tuberculosis beds under construction and the 8,766 tuberculosis beds proposed were not reflected as increases in rated bed capacity in the current Index for January 1, 1949. This conclusion was obtained from an analysis of January 1, 1948 and January 1, 1949 data for only the hospitals which reported a construction program on January 1, 1948. The analysis indicated that in the aggregate no substantial increase in rated tuberculosis bed capacity resulted from the new construction reported to us the previous year. The reported data amounted to an excess of only 152 over the losses experienced from decreased rated tuberculosis bed capacities for the matched hospitals. Some institutions may be replacing obsolete beds with their current and proposed building construction programs.

In reviewing this phase of the construction program, it must be concluded that there are still an insufficient number of local beds for tuberculosis patients. Construction programs have succeeded only in "holding the line." They have not afforded a material increase in the number of tuberculosis beds.

TUBERCULOSIS BEDS UNDER CONSTRUCTION AND PROPOSED CONSTRUCTION,
UNITED STATES, JANUARY 1, 1949

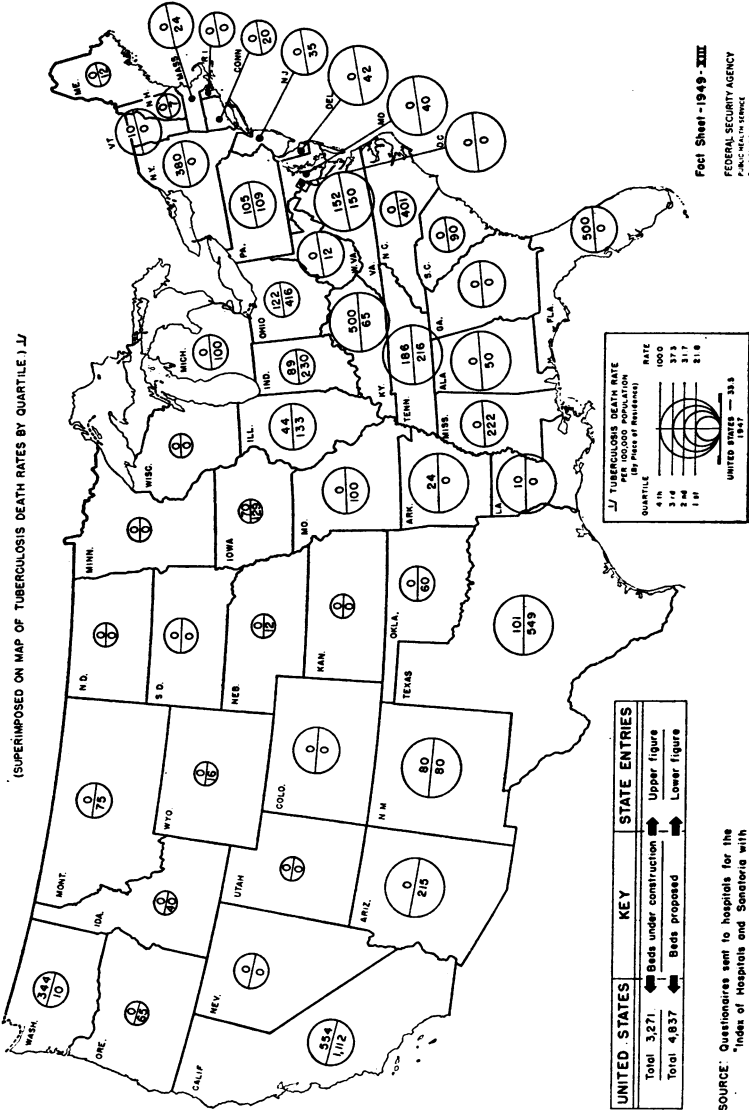
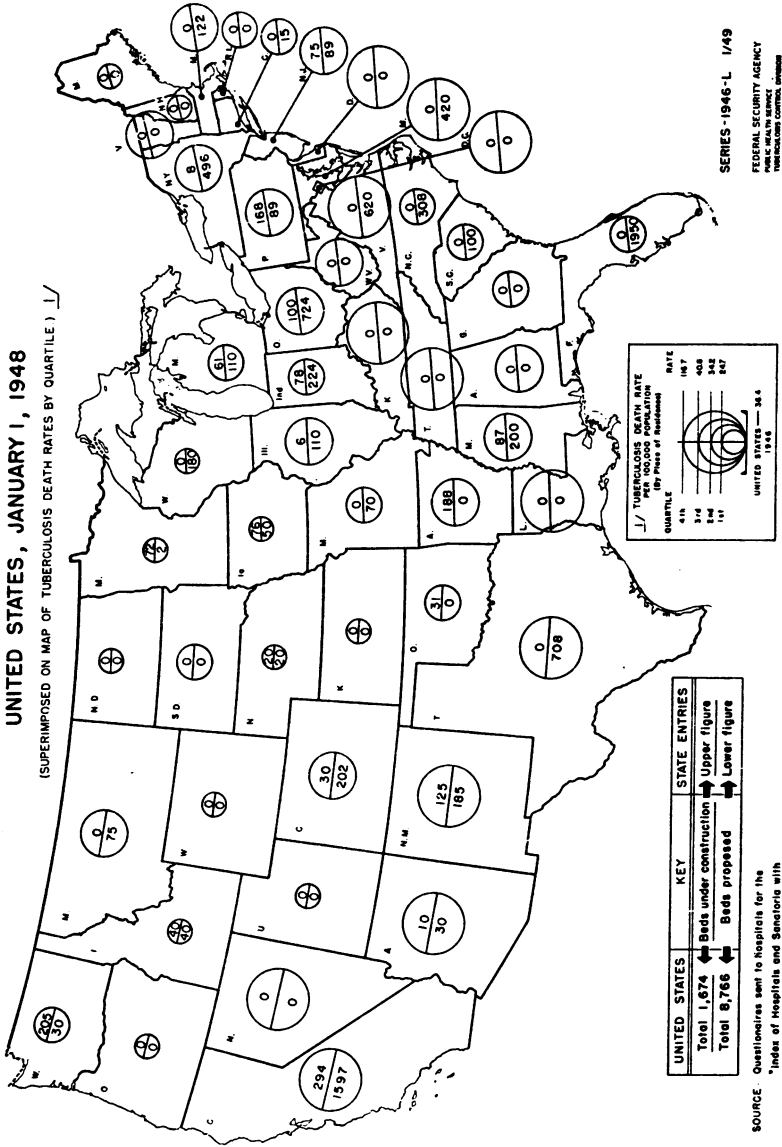


Figure 4.

SOURCE: Questionnaires sent to hospitals for the "Index of Hospitals and Sanatoria with Tuberculosis Beds, January 1, 1949."

TUBERCULOSIS BEDS UNDER CONSTRUCTION AND PROPOSED CONSTRUCTION, UNITED STATES, JANUARY 1, 1948
(SUPERIMPOSED ON MAP OF TUBERCULOSIS DEATH RATES BY QUARTILE)



SERIES -1946-L 1/49
FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
TUBERCULOSIS CONTROL DIVISION

Figure 5.

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World Health Organization Tuberculosis Program for 1950

The Problem and Its Significance

The world-wide nature of the tuberculosis problem requires no emphasis. The Interim Commission placed tuberculosis with malaria, venereal diseases, and maternal and child health for priority of practical endeavor. During the period of the Interim Commission, data was collected from many countries concerning the incidence of infection, morbidity, and mortality from tuberculosis, and it was found that in just over 30 countries it was possible to be reasonably confident in the official statistics when appraising the severity of the problem. * * *

It has not been possible to classify countries into those with assumed low, medium, or high prevalence rates. Nevertheless, there is evidence on morbidity and infection from many areas and these admittedly slender guides have been of some value in estimating what the toll of the disease may be in countries in which official mortality rates

are not available, or are unreliable. Several authors have in the past made attempts to evaluate the tuberculosis deaths in the world. Ferrara, for example, calculated that among the inhabitants of the globe, numbering nearly 2,000 million, the annual deaths from tuberculosis amounted to over 1,600,000. Douill has stated that, for a large part of the world's population, tuberculosis deaths are unrecognized, uncounted, or both. "It is impossible," he says, "to make more than the roughest estimate of the toll which the disease exacts. It is safe to say, however, that each year in the world, more than 3 million deaths from all forms of tuberculosis occur, and that the total probably exceeds 5 millions."

Drolet has estimated that in the United States alone since 1900 almost 5 million people have succumbed prematurely to the tubercle bacillus. For 20 countries for which he had reliable statistics during the 40-year period from 1881 to 1921, it was medically certified that altogether 18½ million people died from pulmonary tuberculosis. Drolet estimated further that, even with the present comparatively low rates in many countries, tuberculosis causes more than 2 million deaths a year throughout the world.

It is not only the absence of data, but also the unreliability of much of the existing data, that makes estimates of the death rates of many countries purely speculative. In many areas in Africa and Asia there is little information of any kind to be obtained. A number of countries add almost nothing to our knowledge. But even in certain European, and in a number of Latin American and Asiatic countries, deaths from unspecified causes, defects in death certification, and the absence of a population census make such figures as may be forthcoming of meager value. There is little to be gained by publishing official death rates for countries in which as many as 50 percent of the deaths are not medically certified, where as many as 15 to 20 percent are registered as being due to unknown causes, and which may show only 1 to 2 percent of all deaths as being due to tuberculosis, when it is common knowledge that the results of tuberculin testing in these or similar population groups show a moderately high degree of infectivity under environmental conditions which leave much to be desired, and where poverty, with all its prejudicial consequences, is present to an extreme degree. In more than one country in the world, in recent years, carefully planned studies into infection and morbidity rates have shown clearly that the incidence of clinically significant tuberculosis is far in excess of that which is compatible with the death rates as returned officially by the same communities.

Mortality rates alone can lead to highly erroneous conclusions. The time may not yet have arrived when it is possible to correlate death rates with tuberculin reactions, or with the results of mass

radiological surveys in representative age, sex, and social groups of the population, and to use those clinical procedures as a guidance to more approximate death rates. It is submitted, however, that when, in addition to such surveys, an analysis is also made of the economic life, habits, nutritional standards, and other environmental factors, and when the racial composition of any community is studied in the light of the known behavior of the more susceptible races under modern and social conditions, then there may be ample guides to vindicate the acceptance of an authoritative medical opinion of the tuberculosis morbidity and mortality rates in these communities. It required the introduction of mass radiology in England to prove that the opinion of many experienced tuberculosis physicians on tuberculosis morbidity was right and that the previous dispensary records of notifications were wrong.

It will still be necessary for teams of experts to undertake epidemiological surveys and demonstrations in certain areas, not merely with the object of reducing morbidity, but in order that mortality rates may be more precisely ascertained. Mortality rates which are obviously erroneous are not merely a source of confusion in attempting international comparisons, but they may even tend to retard the progress of antituberculosis in countries in which they originate, since they produce a false impression as to the severity of the problem and mislead administrators who tend to base both administrative and financial plans for future action on the information which they may receive from their own statistical authority.

The data concerning mortality, morbidity and infection from most countries in the world has been considered. In addition, the observations of many reliable administrative and clinical workers in undeveloped countries have also been considered. It is, however, impossible within the scope of this note to produce all the evidence on which the general findings have been made. * * *

Work Previously Accomplished

Prior to the Second World War there was no attempt made to deal with tuberculosis from the international standpoint, except in a few very limited instances. The League of Nations, between two wars, published a number of documents on the subject.

There was, however, no practical field work in the program of the League. The only other international body in the tuberculosis field was the International Union against Tuberculosis with its headquarters in Paris, but this body was largely academic in function and confined its activities almost entirely to the holding of conferences, and the publication of a quarterly bulletin.

Shortly after the Second World War began, it was appreciated that

the devastation brought about as a result of the conflict necessitated the setting-up of some kind of temporary organization to cope with the emergency, and in 1943 the United Nations Relief and Rehabilitation Administration came into being, with tuberculosis as an important priority in its plan for action. There is no doubt that the scope of UNRRA's interests in tuberculosis was broader than that of any previous international organization; its aim was indeed "to equalize opportunities for the restoration of health in the various countries."

However, UNRRA's assistance was originally intended for countries which had been invaded and seriously damaged, and which lacked foreign exchange to purchase necessary supplies. Such countries were Albania, Byelorussia, China, Czechoslovakia, Ethiopia, Greece, Poland, Ukraine and Yugoslavia. Later, Italy, Austria, and a few other countries were added to the list.

In tuberculosis, UNRRA made valuable contribution, especially in Poland, Czechoslovakia, China, and Greece, into which countries considerable consignments of supplies (X-ray and hospital equipment and surgical instruments) were sent. In Greece, in particular, a complete team of specialists worked for over 2 years and succeeded in restoring the prewar tuberculosis services, and indeed, in adding to them, despite difficulties of transport, civil war, and political disturbances.

Toward the end of 1946, however, UNRRA's programs virtually ceased, and its duties in most fields were handed over to the Interim Commission of WHO, together with a sum of 1½ million dollars to complete certain of the health and medical relief work which had been initiated by UNRRA. The training which the UNRRA officers obtained even in a limited geographical area has been of the greatest value in the much wider field which has now to be covered.

The steps which WHO has taken to fulfill its functions as adviser in tuberculosis to the world are given in the Director-General's report for 1948.

Since the spring of 1948, WHO has been in close contact with the United Nation's International Children's Emergency Fund, particularly with regard to the mass tuberculin testing and BCG vaccination scheme, which was originally sponsored by the latter organization. The Secretariat has been represented at all the medical subcommittee meetings of UNICEF, and has advised on the technical level since the inception of the scheme. A WHO Tuberculin Testing and BCG Vaccination Panel has also been formed and met with representatives of UNICEF to discuss matters of detail in connection with techniques, etc. The culminating point in 1948 in the WHO-UNICEF cooperation was the formation of the Joint Health Policy

Committee, UNICEF-WHO, when it was agreed that all present and future medical projects sponsored by UNICEF should be approved by the Joint Committee.

Objectives

The immediate objective of WHO in tuberculosis has been to continue much of the work started by UNRRA in countries most in need, but from the brief survey of the epidemiology of tuberculosis given above, it will be seen that there are many countries in great need and which were not included in the UNRRA plan. It has therefore been thought advisable to invite all countries to submit to WHO their requests for 1949, in order that some idea may be forthcoming of the nature of the field services required, especially with regard to demonstrations in X-ray work, tuberculin testing, BCG vaccination, special forms of therapy, and in fellowships.

There will, no doubt, be need for such emergency or "immediate" services for a year or two, but acting on the advice of the Expert Committee on Tuberculosis, these emergency demonstration services should be planned in such a way that they will form the beginnings of a long-term program for each country requesting such services. For example, if demonstrations are requested for tuberculin testing and BCG vaccination, the object of WHO will be to begin this work and train the necessary local personnel so that, after a comparatively short time, the country itself will be in a position to carry on the work initiated by WHO, and to extend it.

In other words, WHO will point the way and will lead some of the less-developed States some steps on the journey, but the final goal must always be reached by the endeavor and continued efforts of nationals in their own lands, assisted, it may be, from time to time, by international agencies, but never substituted by them.

Few will dispute the need for guidance in tuberculosis from an authoritative governing body which can initiate a policy to be applied discriminately to the varying conditions which are to be found in many parts of the world. This body can gather and sift the results of observations extending through and beyond the lifetime of more than one generation. Such a body must, in the course of time, if it is to justify its existence, accomplish valuable work in the field in order to impress governments with the necessity of devoting adequate resources to the task before them.

It would appear that the transition from short-term to long-term policy in tuberculosis must be gradual, for it would be unreasonable to expect the underdeveloped areas to succeed where many of the more advanced countries have failed. The richness of our knowledge about tuberculosis today is such, however, that many of the errors of the past can be rectified in the early stages of antituberculosis campaigns,

and it must be the function of WHO to see that countries which have still to make much progress in this field are spared the bitter experiences of the pioneers, so that the long-term policies may be attained in a shorter period of time.

Work To Be Accomplished in 1950

Article 2 of the Constitution of WHO reads: "to assist Governments, upon request, in strengthening health services."

The first World Health Assembly approved that the program, as laid down in Official Records of WHO, No. 10, page 8, should in general be accepted.

It was decided to establish an Expert Committee on Tuberculosis and a Tuberculosis Section.

The Executive Board, at its first session, approved most of the recommendations of the report of the second session of the Expert Committee on Tuberculosis of the Interim Commission. The Executive Board at its second meeting accepted responsibility for the promotion of medical research in the BCG campaigns, and allocated \$100,000 for this purpose.

It is planned to make as many contacts as possible with governments during 1949 in order that WHO will have a more precise idea of the possibilities for 1950 and onwards. It is not possible to ascertain these needs by correspondence alone with that degree of accuracy which is necessary for long-term planning.

Consequently, it will not be before the middle of 1950 that we shall be in a position to know what the reaction of many countries may be to the services which WHO is in a position to provide. But there are, even now, broad indications that a large number of countries are in grave need of equipment, personnel, and instruction in prevention, diagnosis, and treatment. Experience has shown that it is not absence of knowledge so much as absence of the necessary capital to put this knowledge into practical application which is at the root of many of the troubles in tuberculosis administration in large areas of the world. Evidence is available to the effect that leadership in tuberculosis is too often absent or defective; that no provision is made for the establishment of tuberculosis departments for the coordination of schemes, and that there is too great a tendency to concentrate on the erection of relatively expensive institutions and dispensaries without taking the necessary preliminary step of forming a central nuclear group of administrators and clinicians to insure that the campaign can be conducted according to some uniform plan of procedure.

Therefore, in 1950 there may be many demands for consultative services on the administrative side, and there will likewise be increasing need for material assistance in all branches of the antituberculosis

campaigns. It is indeed difficult to conceive of WHO's tackling this problem from the financial aspect without its being in possession of ways and means to supply countries with essentials to a much greater extent than is ever likely to be possible with the relatively limited budget resources now at its disposal.

The first World Health Assembly agreed to the setting-up of a joint committee of WHO and UNICEF representatives. It is possible that much of the UNICEF program may have to be maintained and supervised by WHO in 1950. This applies in particular to the work in connection with tuberculin testing and BCG vaccination as at present being conducted by UNICEF; no financial provision has been made to continue this work on the scale on which it is being conducted at present, although there is financial provision for supplying individual teams to demonstrate tuberculin testing and BCG techniques in individual countries. The streptomycin research project will have to be continued and provision is made in the 1950 budget for this to be done on a scale which aims at no more than the collection of scientific data under controlled conditions in countries which are prepared to follow out the plan laid down by the subcommittee on streptomycin of the WHO Expert Committee on Tuberculosis. The provision of laboratory facilities and fellowships also will be increasingly necessary in 1950 if the work is to proceed in many areas.

The method by which the work in 1950 will be conducted will be by the provision of consultative services and by sending demonstration teams into countries on their request.

In 1950 also, the headquarters staff will continue with the work of collecting data on recent advances and will continue to send to governments and other interested bodies such information as may enable them to improve their services and add to their knowledge.

Characteristics of Commercial X-Ray Screens and Films—IX

By WILLARD W. VAN ALLEN*

This is the ninth in a series of reports on the characteristics of commercial X-ray film-screen-developer combinations. The following tables represent the accumulated and revised findings of the Electronics Laboratory to date. An earlier report in this journal¹ described the technical details of this investigation.

Table 1. Speed of fluoroscopic screen-film-developer combinations^{1,2}

| Film and developer ³ | Screens | | | | | | | | |
|-----------------------------------|------------|------------|------------|---------------|---------------|-----|------------|------------|-----|
| | D sample 1 | D sample 2 | D sample 3 | 666D sample 1 | 666D sample 2 | E-2 | B sample 1 | B sample 2 | B-2 |
| Anscoc Fluorapid: | | | | | | | | | |
| Anscoc Liquadol..... | 105 | 125 | 140 | 75 | 100 | | | | |
| Buck X-ray..... | 115 | 125 | 140 | 75 | 100 | | | | |
| Eastman Liquid..... | 90 | 95 | 105 | 65 | 75 | | | | |
| Eastman Rapid..... | 135 | 145 | 165 | 85 | 110 | | | | |
| Eastman X-ray..... | 120 | 150 | 155 | 100 | 125 | | | | |
| G. E. Supermix..... | 155 | 170 | 200 | 100 | 130 | | | | |
| DuPont Fluorofilm: | | | | | | | | | |
| Anscoc Liquadol..... | 90 | 110 | 120 | 65 | 85 | | | | |
| Buck X-ray ⁴ | | | | | | | | | |
| Eastman Liquid ⁴ | | | | | | | | | |
| Eastman Rapid..... | 100 | 110 | 125 | 65 | 85 | | | | |
| Eastman X-ray..... | 95 | 115 | 130 | 80 | 100 | | | | |
| G. E. Supermix..... | 130 | 145 | 165 | 90 | 110 | | | | |
| Eastman Blue Photofluore: | | | | | | | | | |
| Anscoc Liquadol..... | 85 | 105 | 115 | 65 | 85 | | | | |
| Buck X-ray..... | 140 | 150 | 175 | 90 | 115 | | | | |
| Eastman Liquid..... | 160 | 165 | 195 | 100 | 130 | | | | |
| Eastman Rapid..... | 105 | 110 | 130 | 75 | 90 | | | | |
| Eastman X-ray..... | 95 | 115 | 130 | 75 | 100 | | | | |
| G. E. Supermix..... | 110 | 120 | 145 | 75 | 95 | | | | |
| Eastman Green Photofluore: | | | | | | | | | |
| Anscoc Liquadol..... | | | | | | 120 | 55 | 55 | 85 |
| Buck X-ray..... | | | | | | 110 | 50 | 55 | 75 |
| Eastman Liquid..... | | | | | | 135 | 60 | 65 | 90 |
| Eastman Rapid..... | | | | | | 115 | 50 | 55 | 80 |
| Eastman X-ray..... | | | | | | 140 | 60 | 70 | 95 |
| G. E. Supermix..... | | | | | | 155 | 75 | 75 | 110 |

¹ Speeds are determined with film and screen in direct contact and therefore do not represent the over-all speed of the same combinations when used in a photofluorograph.

² Subsequent reports will contain data on additional developers used in combination with the screens and films shown in this table: these will include DuPont developers.

³ Development time (as recommended by the manufacturer of the developer): Anscoc Liquadol, 4 minutes; Buck X-ray, 8 minutes except Green Photofluore, 7 minutes; Eastman Liquid, 8 minutes except Green Photofluore, 7 minutes; Eastman Rapid, 8 minutes except Green Photofluore, 7 minutes; Eastman X-ray, 8 minutes; G. E. Supermix, 8 minutes. All development at 68° F.

⁴ DuPont Fluorofilm reported currently unavailable.

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¹ Pub. Health Rep. 64: 581 (1949). For a complete discussion of the sensitometry of X-ray materials, see The Sensitometry of Roentgenographic Films and Screens by Morgan and Van Allen. Radiology 52: 532 (June 1949).

Table 2. *Speed of intensifying screen-film-developer combinations*¹

| Film and developer ² | Screens | | | | | | | | |
|-------------------------------------|------------|-----------|------------|-------------|------------|------------|------------|-----------|--------|
| | Buck | | | Eastman | | | Patterson | | |
| | Xtra Speed | Mid-speed | Definition | Ultra speed | Fine grain | Definition | High speed | Par-speed | Detail |
| Anso High Speed:³ | | | | | | | | | |
| Anso Liquadol..... | 70 | 60 | 50 | 110 | 85 | 60 | 115 | 60 | 20 |
| Buck X-ray..... | 65 | 50 | 45 | 100 | 75 | 50 | 100 | 55 | 20 |
| Eastman Liquid..... | 50 | 45 | 40 | 85 | 60 | 45 | 85 | 45 | 15 |
| Eastman Rapid..... | 65 | 55 | 45 | 100 | 75 | 55 | 100 | 55 | 20 |
| G. E. Supermix..... | 75 | 60 | 50 | 110 | 85 | 60 | 115 | 65 | 20 |
| DuPont No. 408: | | | | | | | | | |
| Anso Liquadol..... | 50 | 45 | 40 | 85 | 65 | 45 | 85 | 50 | 15 |
| Buck X-ray..... | 50 | 40 | 35 | 75 | 60 | 40 | 75 | 45 | 15 |
| Eastman Liquid..... | 40 | 35 | 30 | 65 | 45 | 35 | 60 | 35 | 15 |
| Eastman Rapid..... | 45 | 40 | 30 | 65 | 55 | 40 | 65 | 40 | 15 |
| Eastman X-ray..... | 55 | 50 | 40 | 90 | 70 | 50 | 80 | 55 | 20 |
| G. E. Supermix..... | 55 | 45 | 40 | 80 | 65 | 45 | 80 | 60 | 15 |
| Eastman Blue Brand: | | | | | | | | | |
| Anso Liquadol..... | 90 | 75 | 65 | 145 | 110 | 75 | 130 | 80 | 25 |
| Buck X-ray..... | 85 | 70 | 60 | 140 | 105 | 70 | 130 | 80 | 25 |
| Eastman Liquid..... | 85 | 75 | 65 | 135 | 105 | 75 | 125 | 75 | 25 |
| Eastman Rapid..... | 75 | 65 | 55 | 120 | 90 | 65 | 105 | 60 | 25 |
| Eastman X-ray..... | 85 | 70 | 60 | 140 | 110 | 80 | 120 | 90 | 25 |
| G. E. Supermix..... | 90 | 75 | 65 | 145 | 105 | 75 | 135 | 80 | 25 |

¹ Subsequent reports will contain data on additional developers used in combination with the films and screens shown in this table; these will include DuPont developers.

² Development time (as recommended by the manufacturer of the developer): Anso Liquadol, 3 minutes; Buck X-ray, 3 minutes; Eastman Liquid, 3 minutes; Eastman Rapid, 3 minutes; Eastman X-ray, 4½ minutes; G. E. Supermix, 3 minutes. All development at 68° F.

³ Speeds with Eastman X-ray developer to be reported in a subsequent issue.

Table 3. *Average value of fog and contrast (gamma)*¹

| Film | Fog densities | | | | | | Contrast (gamma) | | | | | |
|--------------------------------------|------------------------|------------|----------------|---------------|---------------|----------------|------------------------|------------|----------------|---------------|---------------|----------------|
| | Developer ² | | | | | | Developer ² | | | | | |
| | Anso-Liquidol | Buck X-ray | Eastman Liquid | Eastman Rapid | Eastman X-ray | G. E. Supermix | Anso-Liquidol | Buck X-ray | Eastman Liquid | Eastman Rapid | Eastman X-ray | G. E. Supermix |
| Photofluorographic: | | | | | | | | | | | | |
| Anso Fluorapid..... | 0.09 | 0.25 | 0.23 | 0.12 | 0.08 | 0.23 | 1.8 | 1.9 | 1.7 | 2.0 | 2.1 | 2.1 |
| DuPont Fluorofilm ³ | .15 | ----- | ----- | .20 | .21 | .40 | 2.0 | ----- | ----- | 1.9 | 1.9 | 2.1 |
| Eastman Blue Photo- flure..... | .04 | .15 | .07 | .05 | .07 | .09 | 1.8 | 1.8 | 2.0 | 1.7 | 1.8 | 1.9 |
| Eastman Green Photo- flure..... | .11 | .26 | .15 | .09 | .10 | .28 | 2.1 | 2.4 | 2.3 | 2.2 | 2.0 | 2.3 |
| Röntgenographic: | | | | | | | | | | | | |
| Anso High Speed..... | .10 | .07 | .11 | .04 | ----- | .10 | 2.8 | 2.3 | 2.6 | 2.3 | ----- | 2.8 |
| DuPont No. 408..... | .20 | .07 | .07 | .04 | .18 | .04 | 2.7 | 2.2 | 2.1 | 2.2 | 2.6 | 2.6 |
| Eastman Blue Brand..... | .08 | .07 | .08 | .05 | .06 | .06 | 3.0 | 2.9 | 3.0 | 3.2 | 2.8 | ----- |

¹ Values obtained with open-tank development and continuous mechanical agitation at 68° F. Values for fog densities obtained in open tank without agitation have been found generally lower.

² Development times as given in tables 1 and 2. Similar data for other developers will appear in subsequent issues.

³ DuPont Fluorofilm reported currently unavailable.

INCIDENCE OF DISEASE

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

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED AUGUST 13, 1949

A total of 3,157 cases of poliomyelitis was reported (an increase of 29 percent) as compared with 2,449 cases last week, a 5-year (1944-48) median of 1,016, and 1,409 for the corresponding week last year (an increase of 14 percent). Currently, increases were recorded in all of the 9 geographic divisions except the East South Central. Reports of the New England, Middle Atlantic, and North Central areas, reporting 2,335 cases (74 percent of the total and accounting for 85 percent of the increase) are as follows (last week's figures in parentheses): New England 274 (158), Middle Atlantic 681 (500), East North Central 868 (645), West North Central 512 (427). The 32 States reporting more than 18 cases each are as follows: *Increases*—Maine 56 (21), New Hampshire 24 (9), Massachusetts 139 (82), Connecticut 45 (32), New York 539 (390), New Jersey 101 (81), Pennsylvania 41 (29), Ohio 134 (99), Indiana 126 (96), Illinois 299 (250), Michigan 225 (147), Wisconsin 84 (53), Minnesota 142 (94), Missouri 123 (110), North Dakota 58 (48), Nebraska 36 (31), Kansas 56 (46), West Virginia 39 (26), Florida 25 (8), Mississippi 23 (22), Louisiana 29 (4), Oklahoma 92 (75), Idaho 44 (33), Colorado 50 (33), Washington 38 (24); *decreases*—Iowa 81 (84), Virginia 26 (27), Kentucky 33 (35), Tennessee 26 (36), Arkansas 60 (64), Texas 109 (121), California 106 (112). The total to date is 13,900, corresponding period last year, 8,430, 5-year median 5,008.

During the week 1 case of smallpox was reported in Idaho, 1 case of relapsing fever in California, and 3 cases of anthrax were reported in Pennsylvania. Massachusetts reported 69 cases of salmonella infection, and New York 2 cases.

Deaths recorded during the week in 94 large cities in the United States totaled 8,813, as compared with 8,854 last week, 7,934 and 8,896, respectively, for the corresponding weeks of 1948 and 1947, and a 3-year (1946-48) median of 7,934. The total for the year to date is 299,285, as compared with 299,865 for the corresponding period last year. Infant deaths during the week totaled 741, as compared with 737 last week, 619 for the same week last year, and a 3-year median of 686. The cumulative figure is 20,910, same period last year 21,507.

Telegraphic case reports from State health officers for week ended August 13, 1949

[Leaders indicate that no cases were reported]

| Division and State | Diphtheria | Encephalitis | Influenza | Measles | Men- ingitis meningo- coccal | Pneu- monia | Polio- myelitis | Rocky Mt. spotted fever | Scarlet fever | Smallpox | Tula- remia | Typhoid and para- typhoid fever | Whoop- ing cough | Rabies in animals |
|----------------------------------|------------|--------------|--------------------|---------|---------------------------------------|----------------|--------------------|----------------------------------|------------------|----------|----------------|--|------------------------|----------------------|
| NEW ENGLAND STATES | | | | | | | | | | | | | | |
| Maine..... | | | 2 | 9 | | 6 | 56 | | 3 | | | | 10 | |
| New Hampshire..... | | | | 1 | | | 24 | | | | | | 2 | |
| Vermont..... | | | | 1 | | | 3 | | 2 | | | | 1 | |
| Massachusetts..... | 5 | | | 52 | 1 | | 139 | | 20 | | | | 113 | |
| Rhode Island..... | | | | | | 6 | 7 | | 1 | | | | 8 | |
| Connecticut..... | | 1 | | 17 | | 16 | 45 | | 1 | | | 5 | 20 | |
| MIDDLE ATLANTIC STATES | | | | | | | | | | | | | | |
| New York..... | 4 | 3 | (^o) 2 | 134 | 3 | 125 | 539 | | d 21 | | | 4 | 242 | 5 |
| New Jersey..... | 2 | 1 | (^o) | 61 | 2 | 20 | 101 | 1 | 5 | | | | 74 | 1 |
| Pennsylvania..... | 3 | | | 73 | | | 41 | | 8 | | | | 152 | |
| EAST NORTH CENTRAL STATES | | | | | | | | | | | | | | |
| Ohio..... | 2 | | 2 | 54 | 1 | 34 | 134 | 2 | 12 | | | 6 | 108 | 9 |
| Indiana..... | 6 | 1 | | 6 | | 1 | 126 | | 9 | | | | 16 | |
| Illinois..... | 1 | 2 | | 73 | 2 | 44 | 299 | | 11 | | | 7 | 146 | |
| Michigan..... | 3 | | | 63 | 1 | 24 | 225 | | 12 | | | 3 | 100 | 1 |
| Wisconsin..... | | | 6 | 82 | 1 | | 84 | | 9 | | | | 105 | 1 |
| WEST NORTH CENTRAL STATES | | | | | | | | | | | | | | |
| Minnesota..... | 1 | | | 9 | 3 | 13 | 142 | | 4 | | | | 2 | |
| Iowa..... | | 1 | | 11 | | | 81 | | | | | | 3 | |
| Missouri..... | 3 | | | | 2 | 6 | 123 | | 4 | | | | 8 | |
| North Dakota..... | | 14 | | 3 | 3 | | 58 | | 2 | | | 4 | 8 | |
| South Dakota..... | | | | 1 | 3 | | 16 | | 1 | | | | 8 | |
| Nebraska..... | | | | 1 | | | 36 | | 11 | | | | 1 | |
| Kansas..... | 4 | | | 4 | 1 | 3 | 56 | | 1 | | | 2 | 8 | |
| SOUTH ATLANTIC STATES | | | | | | | | | | | | | | |
| Delaware..... | 1 | | | 2 | | | 4 | | 2 | | | 1 | | |
| Maryland..... | 2 | | 1 | 9 | | 20 | 7 | 7 | 2 | | | 2 | 42 | |
| District of Columbia..... | | | | 9 | 1 | 20 | 8 | | 2 | | | | 2 | |
| Virginia..... | 4 | 1 | 74 | 45 | 2 | 37 | 26 | 8 | 1 | | | 4 | 18 | 2 |
| West Virginia..... | 2 | | 7 | 12 | | 6 | 30 | | 3 | | | 3 | 28 | |
| North Carolina..... | 6 | | | 17 | | | 14 | 5 | 10 | | | 3 | 36 | |
| South Carolina..... | 2 | | 2 | 6 | 1 | 11 | 12 | | 3 | | | 6 | 3 | 6 |
| Georgia..... | 8 | | 6 | 6 | | 15 | 11 | 3 | 3 | | | 4 | 8 | |
| Florida..... | 1 | | 6 | 29 | | 9 | 25 | | 3 | | | 2 | 2 | |

Telegraphic case reports from State health officers for week ended August 13, 1949—Continued

| Division and State | Diphtheria | Encephalitis | Influenza | Measles | Men- ingitis coccal | Pneu- monia | Polio- myelitis | Rocky Mt. spotted fever | Scarlet fever | Smallpox | Tulsa- remia | Typhoid* para- typhoid fever | Whoop- ing cough | Rabies in animals |
|----------------------------------|------------|--------------|-----------|---------|---------------------------|----------------|--------------------|----------------------------------|------------------|----------|-----------------|---------------------------------------|------------------------|----------------------|
| EAST SOUTH CENTRAL STATES | | | | | | | | | | | | | | |
| Kentucky | 1 | | | 45 | 3 | | 33 | 4 | | | | 1 | 23 | 6 |
| Tennessee | 3 | | 19 | 10 | 2 | 47 | 26 | | | | 2 | 3 | 27 | |
| Alabama | 4 | | | 5 | 1 | 23 | 13 | | | | | 8 | 9 | 6 |
| Mississippi * | 9 | 1 | | 2 | | 10 | 23 | | | | | 2 | 3 | |
| WEST SOUTH CENTRAL STATES | | | | | | | | | | | | | | |
| Arkansas | 1 | | 17 | 1 | | 10 | 60 | 1 | 3 | | 4 | 4 | 28 | 1 |
| Louisiana | 1 | | 2 | 2 | | 24 | 29 | | 4 | | 1 | 5 | | 2 |
| Oklahoma | | 1 | 13 | 2 | 1 | 1 | 92 | 1 | 2 | | | 1 | | 2 |
| Texas | 13 | 1 | 355 | 42 | 4 | 152 | 109 | 2 | 5 | | 2 | 11 | | 12 |
| MOUNTAIN STATES | | | | | | | | | | | | | | |
| Montana | 1 | 2 | 3 | 12 | | 2 | 5 | | 3 | | 2 | | 1 | |
| Idaho | | | 9 | 21 | | 2 | 44 | | 8 | 1 | | 2 | 6 | |
| Wyoming | | | | | | 3 | 13 | 2 | | | | | 1 | |
| Colorado | 1 | | 3 | 15 | 3 | 10 | 50 | | 2 | | | 1 | 4 | |
| New Mexico | | | | 14 | 1 | 11 | 11 | | 1 | | | 2 | 3 | |
| Arizona | 1 | | 10 | 1 | | 7 | 18 | | 6 | | | 2 | 11 | |
| Utah * | | | | 23 | | 4 | | | | | | | 17 | |
| PACIFIC STATES | | | | | | | | | | | | | | |
| Washington | 1 | | 2 | 31 | | | 38 | | 10 | | | | 21 | |
| Oregon | | | | 16 | | 11 | 6 | | 2 | | | | 36 | |
| California | 6 | 1 | 2 | 75 | 5 | 23 | 106 | | 28 | | | 4 | 60 | 5 |
| Total | 98 | 32 | 538 | 1,106 | 48 | 804 | 3,157 | 36 | 253 | 1 | 23 | 111 | 1,904 | |
| Median, 1944-49 | 196 | 18 | 580 | 1,139 | 67 | | 1,016 | 20 | 555 | 2 | 17 | 140 | 2,488 | |
| Year to date, 32 weeks | 4,232 | 365 | 76,913 | 586,480 | 2,228 | 54,943 | 13,900 | 413 | 58,280 | 40 | 781 | 2,188 | 36,710 | |
| Median, 1944-49 | 6,980 | 309 | 191,217 | 547,953 | 4,398 | | 5,008 | 371 | 86,295 | 265 | 612 | 2,379 | 62,414 | |
| Seasonal low week ends | (27th) | July 9 | (30th) | (35th) | (37th) | Sept. 18 | Mar. 19 | Aug. 14 | (32nd) | (35th) | Sept. 5 | (11th) | (9th) | |
| Since seasonal low week | July 9 | July 9 | July 31 | Sept. 4 | Sept. 18 | Sept. 18 | Mar. 19 | Aug. 14 | Aug. 14 | Sept. 5 | Sept. 5 | Mar. 19 | Oct. 2 | |
| Median, 1943-48 b | 364 | | 1,033 | 582,890 | 5,902 | | 12,978 | | 124,866 | 348 | | | 46,743 | |

* Period ended earlier than Saturday.
 b The median of the 5 preceding weeks, respectively.
 c New York City and Philadelphia, respectively.
 d Including cases reported as streptococcal infection and septic sore throat.
 e Including paratyphoid fever; currently reported separately as follows: South Carolina 1, Alabama 2, Arkansas 2, California 1. Cases reported as Salmonella infection, not included in the table, were as follows: Massachusetts 69, New York 2.
 Corrections—Cases reported—Polio-myelitis: Georgia, week ended July 23, 13 (instead of 14), July 30, 8 (instead of 9); North Carolina, week ended July 23, 16 (instead of 17).
 Anthrax: Pennsylvania 3. Relapsing fever: California 1. Alaska: Influenza 1. Hawaii Territory: Measles 5, meningitis meningococcal 1.

**PLAGUE INFECTION IN PARK COUNTY, COLO., AND THOMAS COUNTY,
KANS.**

Under date of August 12, 1949, plague infection was reported proved in a pool of 20 fleas from 6 ground squirrels, *Citellus richardsonii elegans*, trapped on July 29 at a location approximately 4.4 miles southwest of Fairplay, Park County, Colo., in a pool of tissue from 2 prairie dogs, *Cynomys ludovicianus*, found dead July 27 on a ranch 11 miles north of Levant, Thomas County, Kans., and in a pool of 119 fleas from the same 2 prairie dogs.

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague infection in fleas.—Under date of August 4, 1949, plague infection was reported proved on July 15, 1949, in a mass inoculation of 15 fleas collected from rats trapped in District 1A, Kukuiahae, Island of Hawaii, T. H.

Panama Canal Zone

Notifiable diseases—June 1949.—During the month of June 1949, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

| Disease | Residence ¹ | | | | | | | | | |
|---------------------------|------------------------|--------|-------|--------|------------|--------|--------------------------------------|--------|-------|--------|
| | Panama City | | Colon | | Canal Zone | | Outside the zone and terminal cities | | Total | |
| | Cases | Deaths | Cases | Deaths | Cases | Deaths | Cases | Deaths | Cases | Deaths |
| Chagas disease | | | | | | 1 | 1 | | 1 | 1 |
| Chickenpox | 30 | | 2 | | 13 | | 6 | | 51 | |
| Diphtheria | 5 | | 2 | | | | 1 | 2 | 8 | 2 |
| Dysentery: | | | | | | | | | | |
| Amebic | 1 | 1 | 1 | | | | 3 | | 5 | 1 |
| Bacillary | | | | | | | 1 | | 1 | |
| German measles | | | | | 1 | | | | 1 | |
| Hepatitis, infectious | | | | | 2 | | | | 2 | |
| Influenza | | | | | 1 | | | | 1 | |
| Malaria ² | 4 | | | | 20 | | 28 | 3 | 52 | 3 |
| Measles | | | | | 7 | | | | 7 | |
| Meningitis, meningococcal | | | 2 | | | | | 2 | 2 | 2 |
| Mumps | 1 | | | | 1 | | | | 2 | |
| Pneumonia | | 6 | | 2 | 16 | 1 | | 3 | 16 | 12 |
| Poliomyelitis | 1 | | | | | | | | 1 | |
| Streptococcal throat | | | 1 | | | | | | 1 | |
| Tetanus | 1 | | | | | | | | 1 | |
| Tuberculosis | | 13 | | 6 | 3 | | | 11 | 3 | 30 |
| Typhus fever | | | | | 1 | | | | 1 | |
| Whooping cough | | | | | 1 | | | | 1 | |
| Yaws | | | | | | | 3 | | 3 | |

¹ If place of infection is known, cases are so listed instead of by residence.

² 6 recurrent cases.

³ Reported in the Canal Zone only.

Puerto Rico

Notifiable diseases—5 weeks ended July 29, 1949.—Cases of certain notifiable diseases were reported in Puerto Rico as follows:

| Disease | Cases | Disease | Cases |
|-----------------------------|-------|-------------------------------|-------|
| Chickenpox..... | 22 | Syphilis..... | 82 |
| Diphtheria..... | 24 | Tetanus..... | 16 |
| Dysentery, unspecified..... | 4 | Tetanus, infantile..... | 2 |
| Gonorrhoea..... | 122 | Tuberculosis (all forms)..... | 685 |
| Influenza..... | 177 | Typhoid fever..... | 15 |
| Malaria..... | 22 | Typhus fever (murine)..... | 7 |
| Measles..... | 7 | Whooping cough..... | 141 |
| Poliomyelitis..... | 2 | | |

FOREIGN REPORTS

CANADA

Provinces—Notifiable diseases—Week ended July 23, 1949.—Cases of certain notifiable 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..... | | 13 | 2 | 18 | 77 | 13 | 53 | 38 | 51 | 265 |
| Diphtheria..... | | | | 1 | | 1 | | | | 2 |
| Dysentery, bacillary..... | | | | 1 | | | | | | 1 |
| Encephalitis, infectious..... | | | | | | | 1 | | | 1 |
| German measles..... | | 3 | | 6 | 4 | | 26 | 18 | | 57 |
| Influenza..... | | 6 | | | 3 | 2 | 2 | | | 13 |
| Measles..... | | 27 | | 76 | 90 | 42 | 202 | 125 | 220 | 782 |
| Meningitis, meningococcal..... | | | | | | 3 | | | | 3 |
| Mumps..... | | 24 | 1 | 10 | 63 | 6 | 7 | 7 | 42 | 160 |
| Poliomyelitis..... | | | | 34 | 66 | 2 | | 2 | 18 | 122 |
| Scarlet fever..... | | | | 15 | 17 | | 3 | 8 | 3 | 46 |
| Tuberculosis (all forms)..... | | 3 | 29 | 138 | | 21 | 15 | 18 | 17 | 241 |
| Typhoid and paratyphoid fever..... | | | | 5 | 2 | 1 | | | 8 | 15 |
| Undulant fever..... | | | | 1 | | 1 | | | | 2 |
| Venereal diseases: | | | | | | | | | | |
| Gonorrhoea..... | 1 | 20 | 7 | 88 | 54 | 37 | 11 | 33 | 112 | 363 |
| Syphilis..... | | 4 | 5 | 60 | 25 | 11 | 4 | 11 | 15 | 135 |
| Other forms..... | | | | | | | | | 1 | 1 |
| Whooping cough..... | | 10 | | 63 | | 2 | 2 | | 8 | 85 |

Newfoundland cases: Diphtheria 2; gonorrhoea 1; syphilis 3.

INDIA

Bombay—Poliomyelitis.—Information dated August 1, 1949, states that 63 new cases of poliomyelitis were officially reported by doctors in Bombay during July 1949. Cases of this disease had been reported by months since January 1, 1949, as follows: January, 2; February, none; March, 4; April, 3; May, 10; June, 16. The number of deaths from poliomyelitis reported since the first of the year totaled 22, of which 18 were stated to have occurred in July.

MADAGASCAR

Notifiable diseases—May 1949.—Notifiable diseases were reported in Madagascar and Comoro Islands during May 1949 as follows:

| Disease | May 1949 | | | |
|-------------------------------|----------|--------|---------|--------|
| | Aliens | | Natives | |
| | Cases | Deaths | Cases | Deaths |
| Beriberi..... | | | 4 | 0 |
| Bilharziasis..... | 2 | 0 | 105 | 0 |
| Cerebrospinal meningitis..... | | | 3 | 0 |
| Diphtheria..... | 1 | 0 | 1 | 0 |
| Dysentery, amebic..... | 20 | 0 | 260 | 6 |
| Erysipelas..... | | | 16 | 1 |
| Influenza..... | 88 | 0 | 3,353 | 45 |
| Leprosy..... | | | 28 | 1 |
| Malaria..... | 472 | 3 | 48,404 | 313 |
| Measles..... | 3 | 0 | 93 | 0 |
| Mumps..... | 3 | 0 | 86 | 0 |
| Plague..... | | | 4 | 3 |
| Pneumonia, broncho..... | 4 | 1 | 296 | 64 |
| Pneumonia, pneumococic..... | | | 381 | 50 |
| Poliomyelitis..... | 1 | 0 | 1 | 0 |
| Trachoma..... | | | 3 | 0 |
| Tuberculosis, pulmonary..... | 9 | 2 | 132 | 24 |
| Typhoid fever..... | 5 | 0 | 12 | 1 |
| Whooping cough..... | | | 313 | 15 |

NEW ZEALAND

*Notifiable diseases—3 weeks ended May 21, 1949.**—During the 3 weeks ended May 21, 1949, certain notifiable diseases were reported in New Zealand as follows:

| Disease | Cases | Deaths | Disease | Cases | Deaths |
|-------------------------------|-------|--------|-------------------------------|-------|--------|
| Cerebrospinal meningitis..... | 1 | 1 | Poliomyelitis..... | 13 | 1 |
| Diphtheria..... | 3 | | Puerperal fever..... | 4 | |
| Dysentery: | | | Scarlet fever..... | 54 | |
| Amebic..... | 1 | | Tetanus..... | 2 | |
| Bacillary..... | 7 | | Tuberculosis (all forms)..... | 104 | 47 |
| Erysipelas..... | 8 | | Typhoid fever..... | 5 | 2 |
| Food poisoning..... | 2 | | Undulant fever..... | 3 | |

*Report for May 28, 1949, not received.

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

Note.—The following reports include only items of unusual incidence or of special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

India—Madras.—Information dated July 26, 1949, states that the Governor of Madras, as of July 22, 1949, declared the city of Madras threatened with an outbreak of cholera, and authorized compulsory

inoculation and other preventive measures. Cholera has been reported in that city in recent weeks as follows: Week ended July 23, 34 cases; week ended July 30, 35 cases; week ended August 6, 39 cases.

Smallpox

Manchuria—Port Arthur.—During the week ended July 16, 1949, 9 cases of smallpox were reported in Port Arthur, Manchuria.

Netherlands Indies—Java.—Smallpox has been reported in Java as follows: In Batavia, for the week ended July 30, 1949, 165 cases, week ended August 6, 222 cases; in Cheribon, week ended July 16, 89 cases, week ended July 30, 68 cases; in Bandoeng, week ended July 2, 25 cases; in Semarang, during the period July 1–31, 130 cases.

Yellow Fever

Ecuador.—On June 29, 1949, one death from yellow fever was reported in Oriental Region, Ecuador. This is stated to be the first case of yellow fever reported in Ecuador since 1919.

Gold Coast.—On July 25, 1949, one suspected case of yellow fever was reported in Bawdua, Oda Area, Gold Coast.

Panama.—On August 7, 1949, one fatal case of yellow fever was reported in Panama. The patient is stated to have contracted the disease in the jungle area of the Province of Colon. He died in Saint Tomas Hospital in Panama City.

Peru—Cuzco Department.—On April 15, 1949, one death from yellow fever was reported in Quincemil, Cuzco Department, Peru.

DEATHS DURING WEEK ENDED AUG. 6, 1949

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

| | Week ended Aug 6, 1949 | Correspond- ing week, 1948 |
|---|---------------------------|----------------------------------|
| Data for 94 large cities of the United States: | | |
| Total deaths..... | 8,854 | 8,261 |
| Median for 3 prior years..... | 8,261 | ..... |
| Total deaths, first 31 weeks of year..... | 290,472 | 291,931 |
| Deaths under 1 year of age..... | 737 | 676 |
| Median for 3 prior years..... | 676 | ..... |
| Deaths under 1 year of age, first 31 weeks of year..... | 20,169 | 20,888 |
| Data from industrial insurance companies: | | |
| Policies in force..... | 70,282,580 | 70,970,594 |
| Number of death claims..... | 12,934 | 11,668 |
| Death claims per 1,000 policies in force, annual rate..... | 9.3 | 8.6 |
| Death claims per 1,000 policies, first 31 weeks of year, annual rate..... | 9.4 | 9.7 |