

*M.—Foreign Branches.*

1. What countries.
2. What city located.
3. Capital each.
4. Tangible assets each.
5. Sales per year last 5 years of each.
6. Give names of countries where trade marked.
7. Above are recapitulation figures.

Fill in as far as possible this entire questionnaire for each branch.

*N.—Additional Data Not Requested in this Questionnaire Noticed by Investigator Which Buyer Should Know.*

## COMMENTS, QUESTIONS AND SUGGESTIONS ARE WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

## SEASONABLE DISPLAYS FOR FEBRUARY AND MARCH.

Surgical goods and sick-room supplies.  
 Dental supplies.  
 Olive oil.  
 Telephone order business.  
 Shampoos and hair tonics.  
 Castile soap.  
 Face creams, lotions and powders.  
 Easter perfumes, toilet waters and sachets.

## A COMPARATIVE STATISTICAL STUDY OF THE NUMBER OF REGISTERED PHARMACISTS, OF DRUG STORES AND OF HOSPITALS OF TWENTY-FIVE OR MORE BEDS' CAPACITY.\*

BY HENRY J. GOECKEL.<sup>1</sup>

The objective of this investigation is to show, if possible, on the basis of supply that a large percentage of the hospitals in the United States do not employ registered or qualified pharmacists to compound and dispense and to have general supervision over the drug supplies of these institutions. Incidental objectives are to call attention to the need for developing this branch of pharmaceutical service, to learn how many registered pharmacists there actually are and how this number compares with the total number of pharmacies, hospitals of more than twenty-five beds' capacity and with the total population.

The excellent statistical study on the number of drug stores and the relation to populations of the various states, etc., by W. F. Rudd,<sup>2</sup> presented at the last

\* Read before Section on Practical Pharmacy and Dispensing, A. PH. A., Des Moines meeting, 1925.

<sup>1</sup> Consulting Pathologist, Somerset Hospital, Somerville, N. J.

<sup>2</sup> W. F. Rudd, JOUR. A. PH. A., p. 1153 (December 1924).

meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, covered this phase of the subject in a very thorough manner.

The writer has used the figures for 1923, as they are the most recent and thorough statistics available which will permit a reasonably accurate comparative study of value. It was ascertained that thirty of the states have annual registrations which makes their data of the most value, three states have bi-annual registration, one has tri-annual registration, seven have no periodic registration and eight did not publish sufficient data to be of much value in this study. The data secured from various sources is given in Table I, columns 1, 2, 3, 4, 8 and 9; columns 5 and 6 present data calculated from this by the writer.

An attempt was made to learn the average number of registered pharmacists employed in pharmacies, from persons much interested in State Boards in the East. As the replies stated that no such tabulation had been attempted or was possible with present data the writer tabulated a series of stores with which he is personally acquainted and decided that an average of one and a half per store is a conservative figure to use in determining the number of registered pharmacists employed in the retail drug trade. The figures given in column five were obtained by multiplying the number of drug stores in each state by this factor. Subtracting these from the total numbers of resident pharmacists in each state gave the figures tabulated in column six. It will be noted that ten of the states show negative numbers.

As it is necessary to be reasonably sure of the accuracy of the data used if results are to be of any value, the writer scrutinized the published data very carefully and concluded that much of it is more of a rough guess than an actual careful statistical tabulation, especially the data given in columns two and three. Columns one and four are probably correct. The hospital data is the result of a careful census.<sup>1</sup> The tabulation of the total number and the division into non-resident and resident pharmacists not being given by New Jersey the writer, possessing a copy of the directory issued by the New Jersey State Board under date of January 1924, compiled these statistics. The results are found on line 32 of Table I.

In studying the published figures those for Idaho, Missouri, Wyoming and New Hampshire seemed to be the results of very careful mathematical tabulation. These figures therefore were used with those from New Jersey to obtain an average figure for the percentage of total who are non-residents of the states. As these states were well distributed they were very good for this purpose. The result is an average of 31.4 per cent, as shown in Table II. It is desirable to have approximately correct figures for this, as otherwise the statistics will be very much padded and show more than 20,000 more registered pharmacists than there actually are. As an example, the writer being registered in three states appears three times in the list. As the majority of non-resident pharmacists are registered in the state where they reside, deducting the non-resident numbers from the totals will give the approximately correct number of registered pharmacists in the United States. To test the validity of this average percentage factor all of the first thirty-four States' total figures for registered pharmacists were used to calculate the probable number of non-resident pharmacists in each state. To permit a ready comparison the published figures also are given, in Table III. It will be noted at once that

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<sup>1</sup> By Council of Medical Education and Hospitals, *Jour. A. M. A.*, V. 82 (January 12, 1924).

the figures published by the states having the lesser numbers of pharmacists, in most instances, compare favorably with the average figure while those states with many thousands of registered pharmacists on their lists present figures which suggest a guess at the number of non-residents. As the writer believed that the figures obtained in Table III will come nearer being correct than those in Table I, he has used the former for the purpose of this study.

TOTAL NUMBER OF REGISTERED PHARMACISTS.

Using the totals so obtained in the states publishing complete data as a basis by the rule of three a fairly accurate estimate can be made of the total number of persons actually registered.

|  |        |
|--|--------|
| Total number of resident pharmacists in the 34 tabulated states..... | 48,705 |
| Total number of drug stores in these states.....                     | 32,518 |
| Total number of drug stores in the rest of the states.....           | 20,452 |

48,705:32,518::X:20,452; X equals 30,633 in the states 35 to 49. 48,705 plus 30,633 gives 79,338 as the total number of persons holding registered pharmacist certificates, an average of 1.497 per drug store.

COMPARISON OF AVAILABLE REGISTERED PHARMACISTS AND DRUG STORES IN THE VARIOUS STATES.

The figures obtained would tend to show that many states have scarcely more registered pharmacists than there are drug stores. Some actually have less. Considering the hours that the majority of stores are open, this would suggest that either the registered pharmacists are employed too many hours for the maintenance of their health or to conserve the best interests of society, or that many are very poorly manned. It certainly tends to show that the hospitals in these states cannot be making strong demands upon the supply of pharmacists.

COMPARISON OF HOSPITALS TO SUPPLY OF REGISTERED PHARMACISTS.

By the conservative figures of the Council on Medical Education and Hospitals, we find the following:

|   |         |
|---|---------|
| Total number of hospitals of 25 or more bed capacity..... | 4,006   |
| Total number of patients—average per day.....             | 528,686 |
| Average number of patients per hospital per day.....      | 132     |

Any one who has had experience in a hospital where pharmacy is actually practiced will be quite willing to admit that this average number of patients will not leave much time for loafing. Where there is also a busy clinic a hospital of that size would require at least two pharmacists. In the hospital in which the writer in past years was a pharmacist, with an average housing of about 160 patients and a busy clinic, it took all of the time of three registered men and a porter to give good service.

If to this group of 4006 hospitals which, if properly served pharmaceutically, should require at least 5000 pharmacists we add the total numbers of registered men who are not engaged or available by reasons of other forms of employment, it

does not look as if there was an excess of registered pharmacists in the very recent year 1923. Pharmacists not available would include all holding certificates but retired, engaged in teaching, in the U. S. Army, Navy or Public Health Service, all engaged in the pharmaceutical, chemical and other lines of manufacturing, in other retail or wholesale business, and those holding certificates but now practicing medicine or engaged in laboratory activities.

#### REMARKS.

In selecting statistics for the preceding study the writer took the figures of the Council on Medical Education and Hospitals of the American Medical Association because they are the most conservative and take in only institutions relative to which there can be no question of the propriety of adequate pharmaceutical supervision. This tabulation was considered more satisfactory than that of the "Modern Hospital" or of the United States Public Health Service as these include sanatoriums and hospitals for nervous and mental diseases. The total number of hospitals by the American Medical Association classification is 6830. The United States Public Health Service census figures for 1922, including sanatoria and institutions for the mentally diseased, feeble minded and epileptic, are 11,522.

As the care for the last three types of patients is now as much of a medical as a housing and segregating proposition, most of these could properly be classed with institutions requiring the services of pharmacists for the proper discharge of their obligations to the public.

The writer wishes, before summarizing, to acknowledge the assistance of the Director of the Hospital Library and Service Bureau in furnishing the data on hospitals and to Secretary H. C. Christensen, of the National Association of Boards of Pharmacy, who furnished the writer with a copy of the data compiled by E. L. Newcomb, published in the *Northwestern Druggist*, September 1923, and for the data on which was based the arrangement of the states on the basis of intervals of registration.

#### SUMMARY AND CONCLUSIONS.

Data is presented showing that there were about 79,338 persons in the United States registered as pharmacists—an average of 1.497 for each of the 52,970 drug stores. Deducting those engaged in other lines of activity will greatly reduce this average number.

Considering the hours that the average drug store is open to serve the public, it would appear that the average pharmacist either spends too many hours at his vocation or that many of the drug stores in the United States are not at all times under the supervision of registered pharmacists.

It is evident from the statistics that many of the hospitals cannot be employing registered pharmacists. The hospitals of the United States for the proper discharge of their obligations would require the services of more than 5000 pharmacists.

The data presented in this paper show, if the number of drug stores is not excessive, that the supply of registered pharmacists is not excessive, which is significant when we compare this with the large classes at our colleges.

It was deemed unnecessary for the purposes of this paper to compare the number of registered pharmacists with the population of the states as this can readily be done if desired by using these data and those of the article by W. F. Rudd.

The proper manning of hospitals pharmaceutically will aid in advancing the professional status of pharmacy as it has that of medicine, dentistry and nursing, and will benefit the profession in general as well as the public by proper pharmaceutical service where it is of educational value to both the medical profession and to pharmacy.

TABLE I.—STATES WITH ANNUAL REGISTRATION.

| State.            | Registered Pharmacists. |                        |                    | Stores. | Reg. pharm. employed<br>× 1.5. | Excess. | Hospitals 25<br>or more<br>beds. | Bed<br>capacity. | Daily<br>average<br>pa-<br>tients. |
|-------------------|-------------------------|------------------------|--------------------|---------|--------------------------------|---------|----------------------------------|------------------|------------------------------------|
|                   | Totals.                 | Non-<br>res-<br>ident. | Resi-<br>dent.     |         |                                |         |                                  |                  |                                    |
| 1 Alabama         | 1,045                   | 155 <sup>a</sup>       | 890 <sup>a</sup>   | 675     | 1,012                          | -122    | 47                               | 6,161            | 4,265                              |
| 2 Arizona         | 415                     | 100                    | 315                | 125     | 187                            | 128     | 35                               | 3,262            | 2,224                              |
| 3 Arkansas        | 1,000                   | 300                    | 700                | 1,000   | 1,500                          | -800    | 37                               | 4,832            | 3,490                              |
| 4 California      | 8,200                   | 100                    | 8,100              | 2,750   | 4,135                          | 3,965   | 219                              | 36,231           | 26,391                             |
| 5 Colorado        | 1,960                   | 300                    | 1,660              | 950     | 1,425                          | 235     | 63                               | 10,902           | 7,861                              |
| 6 Connecticut     | 1,375                   | 150                    | 1,225              | 640     | 960                            | 265     | 55                               | 11,596           | 9,460                              |
| 7 Florida         | 1,022                   | 400                    | 822                | 646     | 969                            | -147    | 9                                | 1,063            | 783                                |
| 8 Idaho           | 684                     | 252                    | 432                | 290     | 435                            | -3      | 21                               | 2,172            | 1,575                              |
| 9 Illinois        | 6,000                   | 500                    | 5,500              | 3,000   | 4,500                          | 1,000   | 270                              | 50,678           | 31,463                             |
| 10 Indiana        | 3,964                   | 200                    | 3,764              | 1,418   | 2,127                          | 1,637   | 97                               | 17,018           | 12,481                             |
| 11 Iowa           | 4,500                   | 500                    | 4,000              | 2,200   | 3,300                          | 700     | 103                              | 14,882           | 11,457                             |
| 12 Kansas         | 2,150                   | 250                    | 1,900              | 1,600   | 2,400                          | -500    | 73                               | 9,743            | 7,417                              |
| 13 Kentucky       | 1,850                   | 275 <sup>a</sup>       | 1,575 <sup>a</sup> | 860     | 1,290                          | 285     | 62                               | 10,237           | 7,829                              |
| 14 Louisiana      | 1,840                   | 200                    | 1,640              | 862     | 1,293                          | 347     | 44                               | 8,745            | 6,984                              |
| 15 Minnesota      | 2,150                   | 400                    | 1,750              | 1,050   | 1,575                          | 175     | 113                              | 19,843           | 15,268                             |
| 16 Missouri       | 5,185                   | 1,556                  | 3,629              | 2,238   | 3,357                          | 272     | 119                              | 20,909           | 16,821                             |
| 17 Montana        | 687                     | 300                    | 387                | 320     | 480                            | -160    | 40                               | 4,181            | 2,803                              |
| 18 Nebraska       | 2,000                   | 100                    | 1,900              | 906     | 1,359                          | 541     | 50                               | 7,043            | 5,455                              |
| 19 New Mexico     | 833                     | 500                    | 333                | 110     | 162                            | 171     | 31                               | 3,401            | 2,439                              |
| 20 North Carolina | 1,000                   | 15                     | 985                | 802     | 1,203                          | -218    | 88                               | 10,129           | 6,798                              |
| 21 North Dakota   | 625                     | 150                    | 475                | 350     | 525                            | -50     | 29                               | 3,395            | 2,565                              |
| 22 Oklahoma       | 2,900                   | 700                    | 2,200              | 1,239   | 1,858                          | 342     | 53                               | 6,332            | 4,626                              |
| 23 Oregon         | 1,400                   | 300                    | 1,100              | 470     | 705                            | 395     | 45                               | 6,886            | 5,756                              |
| 24 South Carolina | 1,000                   | 150                    | 850                | 500     | 750                            | 100     | 34                               | 6,018            | 4,048                              |
| 25 South Dakota   | 600                     | 250                    | 350                | 450     | 675                            | -225    | 33                               | 4,045            | 2,273                              |
| 26 Tennessee      | 1,550                   | 230 <sup>a</sup>       | 1,320 <sup>a</sup> | 800     | 1,200                          | 120     | 56                               | 9,077            | 6,329                              |
| 27 Utah           | 376                     | 56 <sup>a</sup>        | 320 <sup>a</sup>   | 121     | 181                            | 139     | 11                               | 1,817            | 1,295                              |
| 28 Virginia       | 1,278                   | 200                    | 1,078              | 736     | 1,104                          | -26     | 73                               | 12,861           | 9,227                              |
| 29 Wisconsin      | 2,150                   | 215                    | 2,035              | 1,050   | 1,575                          | 460     | 151                              | 19,539           | 15,083                             |
| 30 Wyoming        | 220                     | 75                     | 145                | 145     | 202                            | 57      | 16                               | 1,517            | 956                                |
| Totals            | 59,959                  | 8,879                  | 51,080             | 28,293  | 40,464                         | 9,083   | 2,077                            | 324,665          | 235,422                            |

## States with Bi-annual Registration.

|                  |                    |                    |                    |       |       |     |     |        |        |
|------------------|--------------------|--------------------|--------------------|-------|-------|-----|-----|--------|--------|
| 31 New Hampshire | 503                | 143                | 360                | 221   | 331   | 39  | 29  | 4,452  | 3,460  |
| 32 New Jersey    | 3,658 <sup>b</sup> | 1,014 <sup>b</sup> | 2,644 <sup>b</sup> | 1,442 | 2,165 | 481 | 124 | 22,756 | 17,021 |
| 33 Vermont       | 450                | 67 <sup>a</sup>    | 383 <sup>a</sup>   | 162   | 243   | 140 | 20  | 2,353  | 1,862  |
| Totals           | 4,611              | 1,224              | 3,387              | 1,825 | 2,737 | 660 | 173 | 29,561 | 22,343 |

<sup>a</sup>—Calculated by average of all other stated figures. <sup>b</sup>—Tabulated by author from the directory issued by the New Jersey State Board of Pharmacy under date of January 1924.

| State with Tri-annual Registration.  |                         |        |     |       |        |       |     |       |         |         |
|--|-------------------------|--------|-----|-------|--------|-------|-----|-------|---------|---------|
| 34   | Ohio                    | 4,500  | 150 | 4,350 | 2,400  | 3,600 | 750 | 171   | 36,365  | 25,277  |
| States Having No Periodic Renewal of Registration or Publishing Incomplete Data. |                         |        |     |       |        |       |     |       |         |         |
| 35   | District of<br>Columbia | 500    | 300 | 200   | 250    | ...   | ... | 22    | 9,157   | 7,001   |
| 36   | Maryland                | 1,000  | ... | ...   | 550    | ...   | ... | 75    | 14,302  | 10,357  |
| 37   | Massachusetts           | 2,800  | ... | ...   | 1,804  | ...   | ... | 191   | 41,493  | 33,744  |
| 38   | Michigan                | 4,627  | ... | ...   | 1,981  | ...   | ... | 114   | 21,232  | 15,853  |
| 39   | Mississippi             | 1,100  | ... | ...   | 634    | ...   | ... | 41    | 6,190   | 4,229   |
| 40   | New York                | 15,000 | ... | ...   | 5,487  | ...   | ... | 448   | 111,010 | 85,714  |
| 41   | Pennsylvania            | 6,000  | ... | ...   | 3,740  | ...   | ... | 309   | 61,162  | 47,200  |
| Totals   |                         | 31,027 | ... | ...   | 14,446 | ...   | ... | 1,200 | 264,546 | 204,098 |
| 42   | Delaware                | ...    | ... | ...   | 110    | ...   | ... | 9     | 1,063   | 783     |
| 43   | Georgia                 | ...    | ... | ...   | 1,095  | ...   | ... | 57    | 9,074   | 7,121   |
| 44   | Maine                   | ...    | ... | ...   | 395    | ...   | ... | 40    | 5,028   | 3,885   |
| 45   | Nevada                  | ...    | ... | ...   | 46     | ...   | ... | 9     | 580     | 304     |
| 46   | Rhode Island            | ...    | ... | ...   | 324    | ...   | ... | 25    | 5,507   | 3,563   |
| 47   | Texas                   | ...    | ... | ...   | 2,927  | ...   | ... | 117   | 17,307  | 12,384  |
| 48   | Washington              | ...    | ... | ...   | 690    | ...   | ... | 77    | 11,587  | 8,549   |
| 49   | West Virginia           | ...    | ... | ...   | 419    | ...   | ... | 51    | 7,129   | 4,956   |
| Totals   |                         | ?      | ?   | ?     | 6,006  | ?     | ?   | 385   | 57,275  | 41,545  |

TABLE II.—SHOWING THE PERCENTAGE OF THE TOTAL NUMBER OF REGISTERED PHARMACISTS WHO ARE NON-RESIDENTS OF THE STATE.

| State.              | Idaho. | Missouri. | Wyoming. | New Hampshire. | New Jersey. | Average. |
|---------------------|--------|-----------|----------|----------------|-------------|----------|
| Percentage of total | 36.8   | 30.0      | 34.0     | 28.4           | 27.7        | 31.4     |

TABLE III.—SAME STATES AS IN TABLE I FROM 1 TO 34 WITH NON-RESIDENT REGISTERED PHARMACISTS CALCULATED WITH AVERAGE PERCENTAGE FROM TABLE II. FIGURES FROM TABLE I ARE GIVEN FOR COMPARISON.

| State.        | Non-resident.<br>Table I. Calculated. | Resi-<br>dent. | State.            | Non-resident.<br>Table I. Calculated. | Resi-<br>dent. |
|---------------|---------------------------------------|----------------|-------------------|---------------------------------------|----------------|
| 1 Alabama     | ...                                   | 328            | 18 Nebraska       | 100                                   | 628            |
| 2 Arizona     | 100                                   | 130            | 19 New Mexico     | 500                                   | 262            |
| 3 Arkansas    | 300                                   | 314            | 20 North Carolina | 15                                    | 314            |
| 4 California  | 100                                   | 2,575          | 21 North Dakota   | 150                                   | 190            |
| 5 Colorado    | 300                                   | 615            | 22 Oklahoma       | 700                                   | 911            |
| 6 Connecticut | 150                                   | 432            | 23 Oregon         | 300                                   | 440            |
| 7 Florida     | 400                                   | 321            | 24 South Carolina | 150                                   | 314            |
| 8 Idaho       | 252                                   | (215)          | 25 South Dakota   | 250                                   | 188            |
| 9 Illinois    | 500                                   | 1,884          | 26 Tennessee      | ...                                   | 487            |
| 10 Indiana    | 200                                   | 1,245          | 27 Utah           | ...                                   | 118            |
| 11 Iowa       | 500                                   | 1,413          | 28 Virginia       | 200                                   | 401            |
| 12 Kansas     | 250                                   | 675            | 29 Wisconsin      | 215                                   | 675            |
| 13 Kentucky   | ...                                   | 581            | 30 Wyoming        | 75                                    | (69)           |
| 14 Louisiana  | 200                                   | 578            | 31 New Hampshire  | 143                                   | (158)          |
| 15 Minnesota  | 400                                   | 675            | 32 New Jersey     | ...                                   | (1,014)        |
| 16 Missouri   | 1,556                                 | (1,628)        | 33 Vermont        | ...                                   | 141            |
| 17 Montana    | 300                                   | 216            | 34 Ohio           | 150                                   | 1,413          |
| Totals        |                                       |                |                   | 21,525                                | 48,705         |

Where parentheses are used the original figures were employed in total summary.