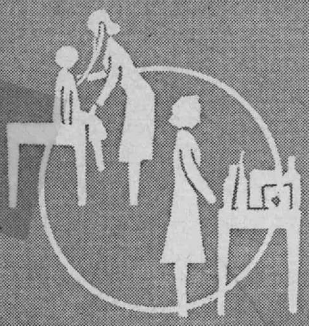
THE OUTLOOK FOR WOMEN IN OCCUPATIONS IN THE Medical AND OTHER HEALTH Services



Trends and Their Effect upon the Demand for Women Workers

Bulletin 203, Number 12

UNITED STATES DEPARTMENT OF LABOR • WOMEN'S BUREAU

L. B. SCHWELLENBACH, Secretary **FRIEDA S. MILLER, Director**

THE OUTLOOK FOR WOMEN IN OCCUPATIONS IN THE MEDICAL AND OTHER HEALTH SERVICES

More than a million workers in the United States are normally engaged in some type of medical or health service. Almost 60 percent of them are women. Into such service in wartime have gone thousands of additional women, some aided by war training programs. What is the outlook for women in these fields of their choice? What economic future lies ahead for other girls and women who, in the years ahead, want to serve in the medical and health occupations?

This bulletin attempts to present the over-all picture, as it can be pieced together from the facts available on the past and the present. The principal occupations of interest to women are compared with respect to volume of employment, regulation of practice, minimum preparation required, and earnings. The over-all trends affecting all workers in medical and health services as distinct from workers generally are discussed.

Some of the recent changes which have exerted a special and differential influence on certain of the occupations are also considered. These specific influences are described more fully, however, in separate pamphlets in this series on:

Physical Therapists—Bulletin 203-1
Occupational Therapists—Bulletin 203-2
Professional Nurses—Bulletin 203-3
Medical Laboratory Technicians—Bulletin 203-4
Practical Nurses and Hospital Attendants—Bulletin 203-5
Medical Record Librarians—Bulletin 203-6
Women Physicians—Bulletin 203-7
X-Ray Technicians—Bulletin 203-8
Women Dentists—Bulletin 203-9
Dental Hygienists—Bulletin 203-10
Physicians' and Dentists' Assistants—Bulletin 203-11

The supply of free copies of these for individuals is practically exhausted, but a small reserve is available (upon request to the Women's Bureau) to libraries and to organizations which will make wide use of the bulletin. However, copies can be purchased at 10 cents each (except *Professional Nurses*—Bulletin 203-3, which is 15 cents) from the Superintendent of Documents, Washington 25, D. C.

LETTER OF TRANSMITTAL

U. S. DEPARTMENT OF LABOR,

WOMEN'S BUREAU,

Washington, May 16, 1946.

SIR: I have the honor of transmitting a summary of the outlook for women in medical and other health services, the final bulletin in a series which, for selected occupations in this field, presents the prewar situation of women, reviews the wartime changes, and discusses the future outlook as it can be projected from the experiences of the past and the present.

This study, like the rest of the series, has been prepared by Marguerite Wykoff Zapoleon with the assistance of Elsie Katcher of the Bureau's Research Division. In this bulletin, as in the others, the information presented was obtained from publications available in the Army Medical and other Washington libraries, from unpublished reports and interviews with authorities of the principal Government agencies concerned directly with medical and other health service personnel, from similar reports and interviews with authorities representing the principal organizations of personnel in the medical and other health services, and from individual women engaged in the occupations described whose experience and judgment were appropriate to the task of evaluating the total outlook rather than the specific situation. A first draft of the bulletin was reviewed by similar critics, whose suggestions were used in the final revision. The names of the principal cooperators are listed at the beginning of each of the bulletins.

I wish to express my appreciation to the many persons who have contributed to this series. A list of the national agencies or organizations they represent is given in Appendix C.

Respectfully submitted.

FRIEDA S. MILLER, *Director.*

HON. L. B. SCHWELLENBACH,
Secretary of Labor.

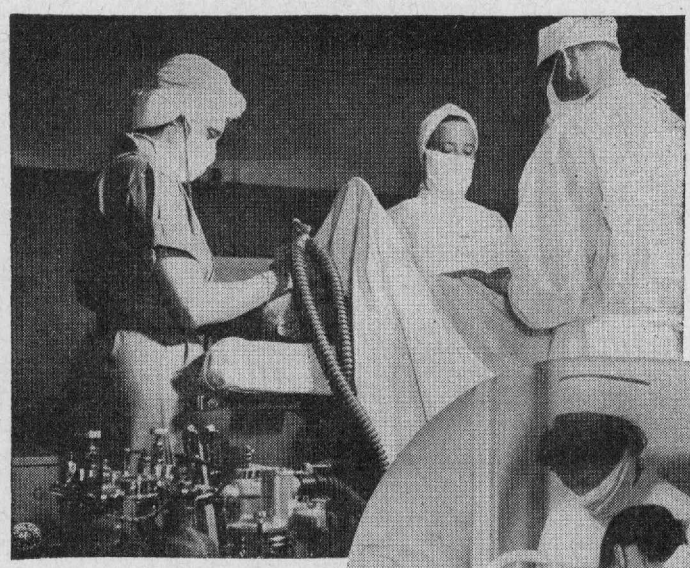
CONTENTS

APPENDIXES

TABLES

CHARTS

ILLUSTRATIONS



Courtesy, War Department

Hospitals

Medical and other health service personnel work in a variety of places.

Physicians' Offices

Clinics

Courtesy, Woman's Medical College of Pennsylvania

TRENDS AND THEIR EFFECT UPON THE DEMAND FOR WOMEN WORKERS

Chapter I. MEDICAL AND OTHER HEALTH SERVICES AS AN INDUSTRY

Engaging more than one million persons in 1940, medical and other health service is one of the major economic enterprises of the United States. In addition to its significance in the public welfare, then, it has an importance derived from its position as one of the largest employing industries in the Nation, ranking fourteenth in this respect. (See Chart 1.) With its more than half a million women workers, it is third among all industries in the employment of women. Only domestic service with 2 million women and educational services with 1 million women outstrip it. In this regard it even outranks by a slight margin the principal manufacturing industry in which women have been traditionally employed, the production of apparel and other fabricated textile products. (See Chart 2.) In fact, in 1940 more than five percent of all women employed in the United States[1] were working in medical or other health establishments. (34)

Type of Establishments

These establishments, concerned essentially with direct service to individuals, are found practically everywhere but tend to be more numerous where the population is concentrated. Furthermore, the medical and other health services have long been characterized by numerous small enterprises, although recent developments indicate a slow, partial movement toward larger-scale operation and concentration.

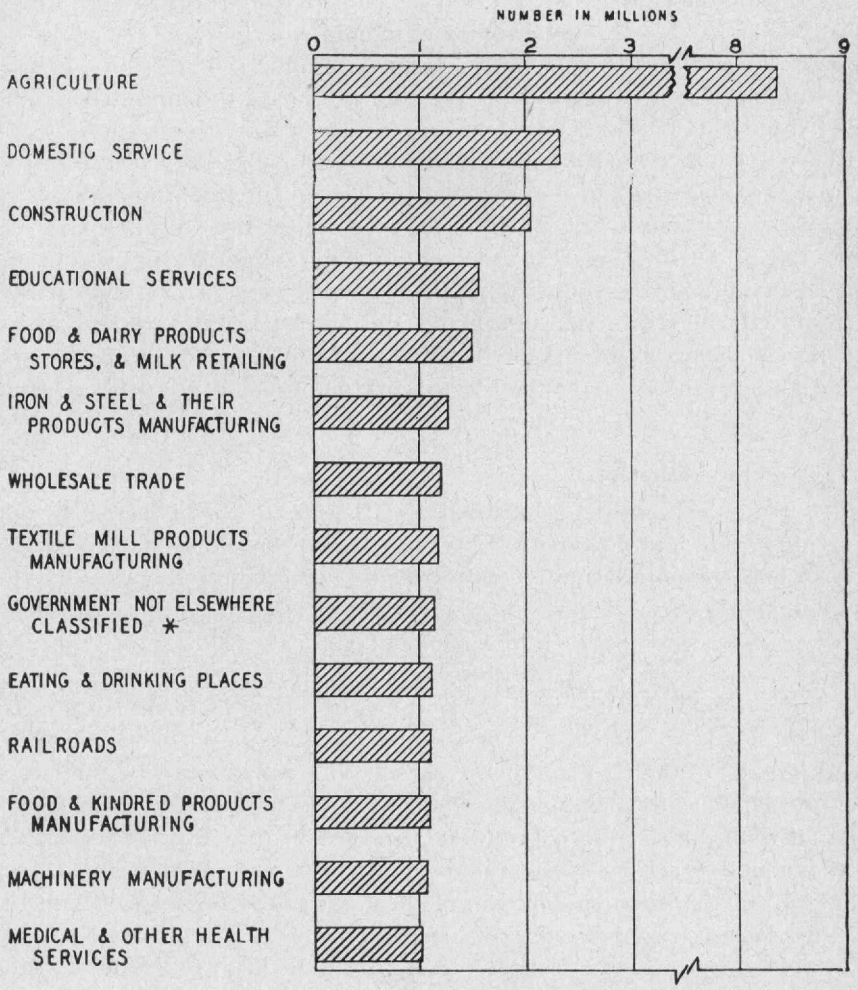
More than half of the men (52 percent) in the industry are employers or are working on their own account, whereas less than one-tenth (7 percent) of the women are so engaged. This is explained by the large numbers of women in nursing and other occupations where they are usually employees and by the preponderance of men in private medical and dental practice. Twenty percent of the women and twenty-three percent of the men employed in medical and other health work are in Government service—local, State, or Federal. (34) (See Chart 3.)

The wide variety of workplaces in which medical and other health services are rendered is indicated by the Bureau of the Census' industrial classification of medical and other health services which covers the

[1] The continental United States is meant here and throughout the bulletin.

following principal types of establishments (32): Hospitals, medical centers, clinics, dispensaries, infirmaries; laboratories (bacteriological, biological, dental, medical, X-ray); convalescent and nursing homes; health and hygiene agencies; sanitariums and institutions for the physically or mentally ill; the offices of chiropodists, chiropractors, healers, dentists, physicians, osteopaths, veterinarians; and nurses engaged in private practice.

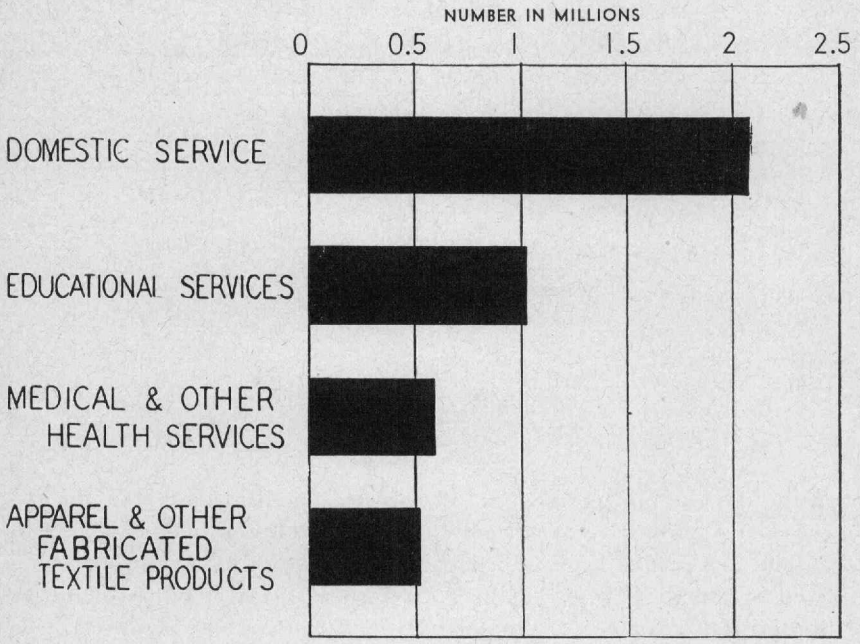
CHART 1.—Industrial Groups Employing More Than One Million Persons, United States, 1940.



* DOES NOT INCLUDE ALL GOVERNMENT EMPLOYES, BUT ONLY THOSE WHOSE ACTIVITIES ARE PECULIARLY GOVERNMENTAL FUNCTIONS

SOURCE: U. S. CENSUS (34)

CHART 2.—Industrial Groups Employing More Than One-Half Million Women, United States, 1940.



SOURCE: U S. CENSUS (34)

Occupations in the Medical and Other Health Services

Predominating among the occupations carried on in medical and other health establishments are the professions and semi-professions. More than 60 percent of both men and women workers in medical establishments are classified by the Bureau of the Census as professional or semi-professional. (See Table 1.) The service occupations rank next, employing approximately 19 percent of the women and 22 percent of the men. There is no marked difference in the distribution of men and women workers by major occupational groups except for the considerably higher proportion of women engaged in clerical activity (16 percent as compared with less than 3 percent).

The majority of men and women in occupations in the medical and other health services work in establishments classified by the Census as in this industry. But there are a relatively small number who work in such non-medical establishments as factories and schools who fall into a

different industrial classification because of their place of employment.[2] The statistics used hereafter in all tables except those in Chapter V are for each occupation as a whole, regardless of the type of establishment.

TABLE 1.—*Percent Distribution, by Major Occupational Group, of Persons Employed in Medical and Other Health Services, United States, 1940*

Major occupational group	Women	Men
Total	100.0	100.0
Professional and semi-professional workers	61.1	64.6
Service workers	18.9	22.1
Clerical, sales, and kindred workers	16.2	2.5
Operatives and kindred workers	2.6	3.2
Proprietors, managers, officials	.8	1.3
Craftsmen, foremen, and kindred workers	.2	4.3
Laborers	.1	1.8
Occupations not reported	.1	.2

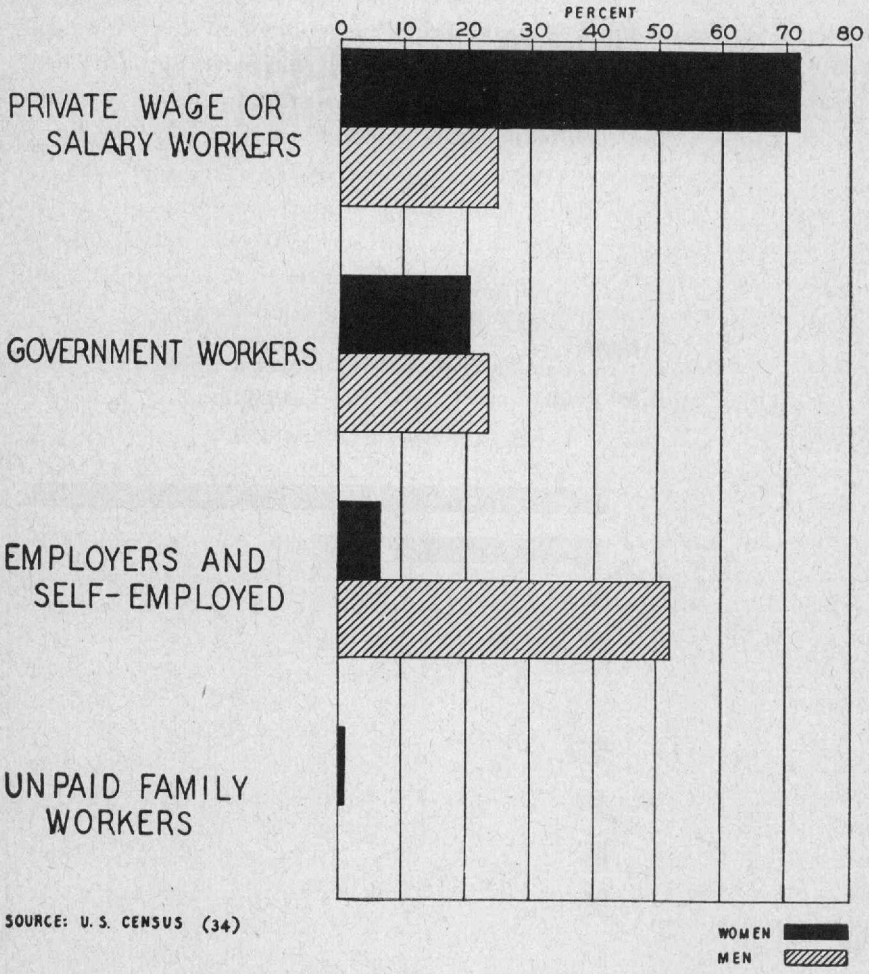
Source: U. S. Census. (34)

Although the occupations included in the medical and other health services are extremely varied, most of the men and women engaged in this field are in five leading occupations. In the order of numbers employed in them in 1940, they are: Professional nurses; practical nurses and hospital attendants; physicians; pharmacists; and dentists. (See Chart 4.) Women are concentrated occupationally even more than men, with a large majority of them working as professional or as practical nurses and hospital attendants. Dwarfed by comparison with these are such related occupations as physicians' assistants, medical laboratory technicians, dentists' assistants, and X-ray technicians, which fall next in line in point of numbers of women employed.

Unfortunately, there are no separate or complete Census statistics for most of these smaller occupations. The estimates used in Table 2 in lieu of Census data came from a variety of sources, as shown in Appendix B. For some of the occupations, the estimates are supported by statistics from hospitals as reported annually to the American Medical Association. For those in which the personnel are primarily graduates of approved schools, the data on individuals who complete such training are useful in arriving at an estimate. The value of the latter statistics, however, is limited by the almost complete lack of data, or even of estimates, on the annual withdrawals from the occupation. Even the Census data are known to be subject to errors of understatement or overstatement,

[2] For example, according to Census sample statistics, 6,820 of the 7,540 women reported working as physicians in 1940, and 307,920 of the 340,440 professional and student nurses, worked in establishments classified in the medical and other health services group. The remaining 720 physicians and 32,520 professional nurses were included in other industrial groups. (33)

CHART 3.—Percent Distribution of Medical and Other Health Services Personnel, By Class of Workers Employed, United States, 1940.



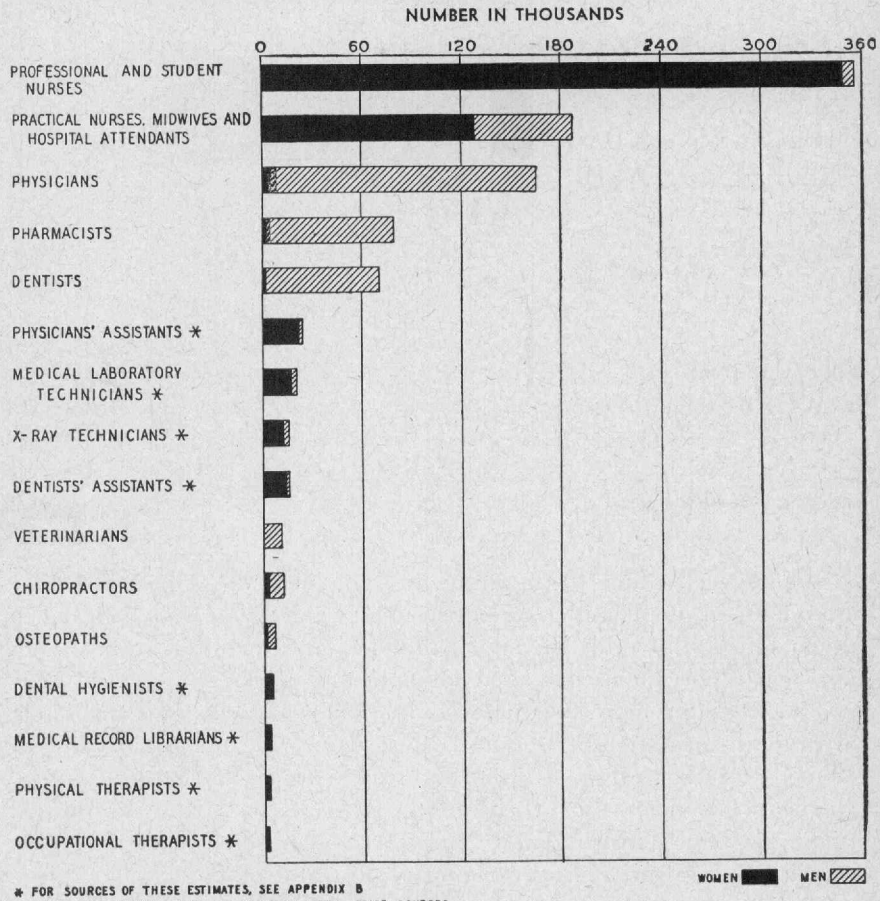
SOURCE: U. S. CENSUS (34)

as the Census volumes containing the data indicate. The number of attendants in physicians' and dentists' offices, for example, is believed to understate considerably the actual number, since many of such attendants may report themselves as stenographers or clerks. (43)

The need for more adequate occupational statistics is immediately obvious in any attempt to construct a picture of the distribution of women workers in these fields and to study current and possible future changes. The net result of assembling available data is an unfinished picture at best. As such, Table 2 may be used to show the relative size of the principal occupations in the medical and other health services, especially with regard to the employment of women.

In most of the occupations, the employment is either predominantly male or female rather than distributed among men and women workers according to their 3-to-1 ratio in the prewar labor market. (See Chart 4.) Ninety percent or more of professional and student nurses, physicians' and dentists' assistants, medical laboratory technicians, physical therapists, occupational therapists, dental hygienists, and medical record librarians are women. On the other hand, 95 percent or more of all physicians, dentists, pharmacists, and veterinarians are men. All the occupations listed in Table 2 in which women predominate are discussed separately in other bulletins in this series. Women physicians and women dentists, too, have been the subject of separate bulletins because of the significance of their occupations in the total picture.

CHART 4.—Number of Men and Women Employed in Selected Medical and Other Health Occupations, United States, 1940.



* FOR SOURCES OF THESE ESTIMATES, SEE APPENDIX B
SOURCE: U. S. CENSUS (34) AND ESTIMATES FROM OTHER SOURCES

TABLE 2.—*Number of Women Employed in Relation to Total Employment in Selected Medical and Other Health Occupations, United States, 1940*

Occupations	Total employed	Number of women employed	Percent women are of total employed
Professional and student nurses,[1] including 85,000 students [2]	355,786	348,277	97.9
Practical nurses, midwives, and hospital attendants [2]	186,656	128,440	68.8
Physicians' assistants [3]:			
Attendants in physicians' offices [2]	15,200	14,500	95.3
Medical stenographers in hospitals [2]	[4] 7,000	[4] 6,900	99.0
Medical laboratory technicians [2]	20,000	18,000	90.0
Dentists' assistants [2]	14,100	13,500	95.3
X-ray technicians [2]	15,000	12,000	80.0
Physicians and surgeons	164,649	7,608	4.6
Dental hygienists [2]	5,000	5,000	100.0
Medical record librarians [2]	[4] 3,800	[4] 3,750	98.7
Pharmacists	79,347	3,216	4.1
Physical therapists [2]	[4] 3,100	[4] 3,050	98.3
Occupational therapists [2]	[4] 2,200	[4] 2,180	99.0
Chiropractors	10,629	1,871	17.6
Osteopaths	6,007	1,102	18.3
Veterinarians	70,121	1,047	1.4
Dentists	10,717	79	.7

Source: U. C. Census, 1940, (34) except where footnotes indicate estimates are derived from other sources. For detailed statement on sources see Appendix B, p. 50.

[1] Student nurses are classified by the Census as employed, since so large a part of their training consists of supervised practice in hospitals where they actually serve patients.

[2] Estimates as given in Appendix B, p. 50.

[3] Excluding professional nurses, medical laboratory technicians, and others classified elsewhere.

[4] Estimates are for 1941.

A number of other occupations in which large numbers of women are employed and which are identified with the medical services have not been included because the background and training required to perform them are more closely associated with another professional field. The hospital dietitian, for example, whose fundamental training is in home economics and dietetics with specialization in the hospital field, is affected not only by the trends in the demand for hospital workers but also by trends in dietetics in general. The hospital librarian (i.e., librarian in a medical, nursing school, or patients' library, and not to be confused with the medical records librarian described in this series) is affected not only by the number of hospitals but by the supply and demand for trained librarians of all types. Her training is primarily that of a librarian, supplemented by specialized preparation and experience in the handling of medical and nursing school collections and research for staff, and in supplying hospital or other medical institution patients with therapeutic readings. Similarly, the medical social worker and the psychiatric social worker are associated primarily with the field of social service, although their specialization brings them into the medi-

cal field. The sanitary engineer, the nutritionist, and the health educator are other examples. In all these occupations there has been and will continue in the next few years to be a demand for trained personnel. The shortage of psychiatric social workers and of hospital dietitians has been especially critical during the war period and is likely to be so for some time.

A variety of business and service occupations are also found in medical and other health service establishments. As in other large institutions, administrators, executive housekeepers, cooks, maids, accountants, telephone operators, bookkeepers, clerks, cashiers, elevator operators, public relations and personnel workers are among those likely to be found in a large hospital or medical organization.

All these occupations are affected by the general trends in the medical and health services, but because they are not primarily confined to the medical field and have as much or more identification with other occupational areas, they have not been discussed separately in this study. It is frequently possible, however, for a woman who has had partial training or some experience in one of the distinctly medical occupations, and who cannot or does not wish to continue in the occupation, to find an outlet in one of these other occupations in the medical milieu. Provided she has the basic qualifications for the other work, her experience in a medical situation is an additional asset in securing employment.

Chapter II. THE SUPPLY OF PERSONNEL

The medical and other health services are affected by the customary difficulties of adjusting the supply of workers in a given occupation to the demand for them. There are, for example, regional and local differences (discussed in Chapter V) which, combined with the lack of mobility of trained personnel and the inadequacy of current information on job openings, impede a ready adjustment to the over-all growing demand. In addition, however, there are special barriers to equalization of supply and demand in the form of regulations which stem from the responsibility of those who practice these occupations and from the relatively long and specialized character of the preparation required to enter the medical and other health services.

Supply and Minimum Standards of Practice

In some occupations in the medical and other health services, practice is restricted by State statute to persons meeting certain requirements. This is the most complete type of regulation of supply, since it actually prohibits the practice of the occupation by those who do not meet the standards set up in the Act. Usually an examination, or completion of specified training, or both, are required to obtain a State license. Physicians, dentists, pharmacists, and professional nurses are among the familiar occupational groups so licensed.

In a number of other occupations, partial control is exercised through the influence of organizations whose members are engaged in the occupation, or by the American Medical Association, or by joint effort. (Only the physicians' assistants among the groups studied are without a national organization of their own, although in at least two cities they have organized a local association; some of these assistants, too,—a nurse or medical laboratory technician, for example—may be qualified in related occupations and belong to other organizations.) In the non-licensed occupations, influence is sometimes exercised by maintaining a registry of those who meet specified standards and encouraging physicians or medical administrators to prefer them (or those with equivalent experience). Either in conjunction with such a registry or as a separate measure, standards are also promoted through inspection and approval of schools offering specified training. Table 3 shows the type of State regulation or other control of standards characteristic of the occupations included in this study.

Many of the occupations are in a transitional stage in the setting of standards. State licensing of practical nursing, for example, is less than half completed and, with one exception, is voluntary rather than mandatory. The first list of inspected and approved schools for the training

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of X-ray technicians was published by the American Medical Association in 1944, although as early as 1937 the American Registry of X-Ray Technicians printed a list of schools approved without annual inspection. The American Dental Association is now engaged in arranging for inspection and approval of schools for dental hygienists. There is still no provision for Nation-wide inspection and approval of schools for dentists' assistants. The occupation of the physician's assistant, of all those studied, is the least standardized, although it employs more women than any of the others except nursing.

The long-time trend in all occupations in this field has been toward the requirement of higher standards, which, in effect, reduces the elasticity of the supply of personnel. Even during the war, when the immediate demand was great, this trend was for the most part maintained. The inspection and approval of training courses for X-ray technicians was completed. Three additional States passed legislation licensing dental hygienists. Although New York State suspended its mandatory licensing requirement for practical nurses during the war, national efforts to extend State licensing legislation and to establish standards for training in this field were crystallized into a coordinated program. On the other hand in fields not generally regulated by statute, such as that of medical laboratory and X-ray work, there was undoubtedly greater employment of substandard personnel because of the exhaustion of the supply of those registered or having equivalent background.

TABLE 3.—*Extent and Type of Control of Minimum Standards for Practice in Selected Medical and Other Health Occupations, United States, December 1945*

Occupation	State licensing legislation	National registration of qualified personnel by recognized organizations	Nation-wide inspection and approval of schools by recognized organizations
Dentists	48 States and D. C.		✓
Physicians	"		✓
Pharmacists	"		✓
Professional nurses	"		✓
Osteopaths	"		✓
Veterinarians	"		✓
Chiropractors	43 States and D. C.		✓
Dental hygienists	35 States and D. C.		
Practical nurses and hospital attendants	19 States [1]		
Medical laboratory technicians	2 States	✓	✓
Medical record librarians	None	✓	✓
Occupational therapists	"	✓	✓
Physical therapists	"	✓	✓
X-ray technicians	"	✓	✓
Dentists' assistants	"		
Physicians' assistants (including medical stenographers in hospitals)	"		

[1] Licensing is optional except in New York where though normally required by law, it was suspended during the war until 1 year after the cessation of hostilities.

Specialized Training and Supply

Most occupations in the medical and other health services, as compared with those in other fields, involve a considerable period of specialized training, which also slows up the adjustment of supply to the demand for personnel. The amount and nature of this specialization, as well as of the preliminary education required, vary widely. The usual minimum preparation is shown in Table 4.

In some States a minimum is set by statute. The Act may specifically state the clock-hours of training by subject required for a license, or it may outline only generally the fields to be covered. Frequently training at an approved school is specified. In any case, the requirements vary from State to State, some being higher or more rigid than others. Similarly, the minimum qualifications for entrance to and completion of an approved training course vary with schools, as well as with requirements specified in the State statute. The summary in Table 4, therefore, indicates the usual minima only.

Many divergencies occur in States or schools where requirements are unusually low or, on the other hand, in States or schools where they tend

Courtesy Dental School, University of Pennsylvania

The study of science is an important element in the preparation required for most of the occupations in the medical and other health services

to be higher than usual. Particularly when applications for entrance are much more numerous than capacity allows, schools tend to raise the minimum requirements for entrance or to admit only students who offer considerably more than the announced minimum. Especially in occupations which are predominantly male, or in those in which training facilities are relatively few, it is usually necessary for the girl who applies for admission to a training school to have more than the bare minimum required. There is always likely to be strong competition for

TABLE 4.—*Usual Minimum Education and Specialized Training Required for Selected Medical and Other Health Occupations, United States, December 1945*

Note: Requirements vary with schools. Many have higher requirements and, where enrollment is limited, those with best background are selected. For example, all but 1.2 percent of the freshmen in medical schools in 1941-42 had more than the minimum preparation.

Occupation	Preliminary education	Specialized preparation
Physicians	3 years college [1] (during war 2 years or its accelerated equivalent of 15-18 months).	4 years (during war accelerated to 3 years).[2]
Dentists	2 years college [1]	4 years (during war accelerated to 3 years).
Osteopaths	"	4 years (during war accelerated to 3 years).
Veterinarians	"	4 years (during war accelerated to 3 years).
Pharmacists	H. S. graduation [1]	4 years, plus one year of work experience in pharmacy.
Chiropractors	H. S. graduation or equivalent	4 years.
Occupational therapists	1 year college	3 years (during war accelerated to 2-2½ years).
Medical laboratory technicians	2 years college [1] or graduation from accredited school of nursing, plus 30 semester hrs.[1]	1 year.
Medical record librarians	2 years college or graduation from accredited nursing school.	1 year.
Physical therapists	2 years college [1] or graduation from accredited school of nursing, or graduation from college with major in physical education.	1 year.
Professional nurses	H. S. graduation [1]	3 years (during war accelerated to 24-30 months).
Dental hygienists	H. S. graduation	1 year.
X-ray technicians	H. S. graduation or graduation from accredited school of nursing.	1 year
Dentists' assistants	H. S. graduation	None, but 1 year courses available.
Physicians' assistants (including medical stenographers in hospitals).	H. S. graduation preferred but not required.	None, but 1-year-or-more courses available.
Practical nurses and hospital attendants.	2 years of high school preferred though not required.	1 year preferred but not required.

[1] Certain credits in science or other specified subjects are usually required.

[2] An additional year of internship is required for a license in 23 States and the District of Columbia. In any case, most physicians complete an internship.

acceptance in schools of high standing where enrollment is limited and applications ordinarily numerous. At the same time, during a period of normal economic activity or of depression, schools which barely meet the standards for approval and which have a poor reputation have difficulty in obtaining students in spite of their usually low requirements for entrance.

The capacity of approved schools in the United States limits the number that may be added to the supply in occupations for which such training is required for a State license to practice. Except for a few persons, including, for example, those trained in foreign countries, newly practicing physicians and dentists in the United States are graduates of approved schools, and their number is limited for the most part by the total capacity enrollment of these training institutions.

Wartime Growth of Supply

During the war, the combined military and civilian demand became so much greater than the supply in certain occupations that the training capacity had to be quickly increased. In the older fields, such as medicine, dentistry, pharmacy, and nursing, this was done primarily by accelerating the training programs (eliminating vacations or condensing the schedule covered), so that it was possible within a year's time for a school to enroll perhaps 25 percent more than its usual peacetime number. In newer fields, such as physical therapy and occupational therapy, new schools opened to meet the need, and some of the older schools offered accelerated programs as well.

In medicine and dentistry, fields which were primarily male, the Army and the Navy because of their tremendous needs financed the training of most of the male students (those physically qualified for military service) as inductees or enlisted men. No special aid was available to civilian students, men or women, except as they had less competition for existing scholarships. However, in professional nursing, occupational therapy, and physical therapy civilian students were financed by the Federal Government in certain special training programs set up to meet the critical need. (These are described in the separate bulletins in this series.)

The exact effect of these training programs and other wartime factors affecting the supply cannot be measured because of the lack of complete statistics for 1944 (as well as for the prewar year of 1940) and the low degree of comparability of the statistics for the two periods. All the defects of the statistics for 1940 indicated earlier apply to Table 5, as well as similar deficiencies in the figures for 1944, all of which are estimates from a variety of sources. To compare them with any degree of certainty or exactness is impossible. But they serve to show the general

increase in the supply of personnel in all these fields, and, roughly, the relative size of that increase in relation to the prewar supply.

The war training program apparently had the effect of creating a large numerical but relatively small percentage increase in an occupation like professional nursing which already employed several hundred thousand (if student nurses are counted with professional nurses, as is customary in the Census). (See Table 5.) Dentists and physicians were the only other occupational groups among those studied whose numbers increased at a lower rate during the period 1940-1944. In these occupations the curtailment of the Army pre-medical and pre-dental training programs early in 1945 and the drafting of these men directly into military service, which diverted them from medical or dental school, were expected ultimately to offset any increase achieved through the wartime acceleration of training. This diversion also resulted in greater encouragement of the enrollment of women students in medical and dental schools in 1945 and 1946 to offset the decrease in men students expected to continue until 1947.

TABLE 5.—*Estimated Changes in Employment of Persons in Selected Medical and Other Health Service Occupations, United States, 1940 and 1944*

Occupation	Estimated number employed 1944	Estimated number employed 1940	Estimated increase 1944 over 1940	
			Number	Percent
Professional and student nurses	412,000	356,000	56,000	16
Professional nurses	300,000	371,000	29,000	11
Student nurses	112,000	85,000	27,000	32
Practical nurses, midwives, hospital attendants	(1)	187,000	.....	.....
Physicians	180,000	165,000	15,000	9
Dentists	75,000	70,000	5,000	7
Physicians' assistants:				
Attendants in physicians' offices	Not available	15,200	.....	.....
Medical stenographers in hospitals	11,000	[2] 7,000	4,000	57
Medical laboratory technicians	More than 25,000	20,000	More than 5,000	More than 25
Dentists' assistants	Not available	14,000	.....	.....
X-ray technicians	20,000	15,000	5,000	33
Dental hygienists	6,500	5,000	1,500	30
Medical record librarians	5,300	[2] 3,800	1,500	40
Physical therapists	4,500	[2] 3,100	1,400	45
Occupational therapists	3,000	[2] 2,200	800	36

Source of Estimates: See Appendix B, p. 51.

[1] No estimate for 1944 available. In 1946, the National Association for Practical Nurse Education indicated that the number might be as high as 300,000 to 400,000 for 1946.

[2] Estimate for 1941.

A very high percentage increase during the period 1940-44 appears to have taken place in the relatively small occupation of physical therapy. Here the additional facilities, the War Department training programs, and the publicity given to the need resulted in almost doubling

the number. Actually as far as can be ascertained from available figures, the order of size of the occupations included in this study was the same in 1944 as it was in 1940. As noted earlier, all the 1944 figures and many of the 1940 ones are estimates, not exactly comparable either as to source or as to month (although information for the end of 1944 was usually obtainable). They should be considered as tentative only, therefore, and in lieu of more complete and more reliable data.

Prewar Rate of Growth of Supply

It so happens that the prewar rate of growth, like the wartime rate, appeared to be least in the older occupations of physician and dentist. The 1,900 net addition to the number of physicians estimated by the American Medical Association as having taken place in 1941 (20) represents a 1.2 percent increase over the number of physicians reported in the 1940 Census.[3] The number of dentists was remaining practically stationary before the war. (46) Dental hygienists, too, were not growing in number. (38) On the other hand, occupational therapists and physical therapists, believed to be increasing at about 125 a year just before the war (42) (41) were growing at a rate of 5.7 percent and 4 percent, respectively. Professional nurses, with about 10,000 net additions each year, (45) were increasing at a 3.7 percent rate in 1941. In the other occupations studied, information on additions and withdrawals was not sufficient to make even an estimate of annual rate of growth. It may be said, however, that the lack of statistics indicating growth of the occupation is even greater in other industrial categories which, unlike the medical and other health services, are not so characterized by regulatory practices and specialized training facilities which serve as sources of data on supply.

Earnings and Supply

That many other influences besides earnings affect the supply of personnel in this field is indicated by the wide variations in earnings within most of the occupations as well as by marked differences in earnings in one medical occupation as compared with another. (See Table 6.) Unfortunately the wide variety of sources from which the data come makes them subject to discrepancies arising from different methods, coverage, and instructions for obtaining the information. An allowance for this must be added to that for the usual difficulties of measuring the

[3] For 1942 and 1943, the estimates of net additions were considerably higher—2,628 and 2,570, respectively; by 1944 when the wartime acceleration of medical training began to be felt, the net increase was estimated at 3,306. Because the estimates of annual withdrawals of physicians from practice vary from 3,200 to 4,000, it is impossible to arrive at an accurate estimate of the rate of increase. If 2,600 is a more typical figure than the 1,900 estimate for 1941, and that figure were substituted and related to the 1940 employment, the rate of increase, however, would still be only 1.6 percent.

annual income from occupations which differ in the way work is scheduled and in the terms in which it is rewarded.

The physician in private practice, for example, does not usually work on a salary basis but conducts his practice like a business, calculating his net income as his gross receipts from patients minus his expenses. The annual income earned by the nurse in private practice is her daily rate multiplied by the number of days she works each year (which may vary considerably according to work available and her inclination), plus an allowance for meals and other living expenses if these are financed by the patient. Many technicians and nurses who work in hospitals count board, room, and laundry as income supplementing the cash salary received. In reporting earnings it is customary to make allowance for the cash value of such supplementary income. Such allowances are included in the earnings data in Table 6 except in the case of the nurse in private practice. Obviously the wide variation in form of payment in these occupations complicates comparison.

TABLE 6.—*Earnings in Selected Medical and Other Health Service Occupations, United States, 1941*

Note: On institutional jobs, a cash allowance for maintenance received has been included in reported earnings; for physicians and dentists, the earnings represent net income, i.e., income after expenses have been deducted.

Occupation	Annual earnings		Beginning salary: Federal Civil Service		
	1941 average	1941 range	Prewar	1944, with overtime	1945, basic salary
Physicians	$5,179	Net loss to $50,000	$3,200	$3,828	$3,640
Dentists	3,773	Net loss to $30,000	3,200	3,828	3,640
Professional nurses:					
Public health	[1] [2] 1,608	[2] $840-$7,200	1,800	2,190	2,100
Institutional	[1] [2] 1,481	[3] 825- 5,600	1,620	1,970-2,190	1,620-2,600
Private practice	1,192 + meals	$5 to $8 a day + meals	.....	.....	.....
X-ray technicians	1,550	[4] $1,200-$3,600	1,620	1,970	1,902
Occupational therapists	1,536	1,000- 5,000	1,800	2,190	2,100
Physical therapists	1,500	1,000- 4,000	1,800	2,190	2,100
Medical laboratory technicians	1,464	900- 3,000	1,620	1,970	1,902
Medical record librarians	1,320	Not available	.....	.....	.....
Dental hygienists:					
In dentists' offices	1,232	$650-$1,320	.....	.....	.....
Institutions and public health agencies.	Not available	1,300- 2,100	1,620	1,970	1,902
Physicians' assistants	Not available	624- 2,600	.....	.....	.....
Dentists' assistants	$858	555- 3,000	1,260	1,752	1,704
Practical nurses	Not available	[3] $4 to $6 a day + meals	.....	.....	.....
Hospital attendants	$888	[3] $840-$1,380	1,020	1,500	1,440

Sources: See Appendix B, p. 52.

[1] Median for staff nurse. The range figures in next column include administrators.

[2] 1942.

[3] 1943.

[4] 1944 estimate.

However, the best available data on earnings for each of the occupations are presented in Table 6, the range as well as the average being given for the year 1941 except in a few instances in which 1941 earnings were not available. Civil Service salaries, both prewar and current ones, are given, since they indicate salary differences in these occupations under similar conditions of employment.

Although there appears to be a definite relationship of earnings to the amount of training required to practice (compare Tables 6 and 4), the earnings in most of the occupations seem low when the discipline and training required for them are considered. The average dental assistant, physician's assistant, and medical stenographer in the United States in spite of their specialization do not seem to earn as much as the average stenographer in such cities as Philadelphia, Los Angeles, Kansas City (Mo.), Richmond (Va.), and Houston (Texas), according to a 1940 study. In Philadelphia where the average stenographic salary was lowest at this time, the monthly rate was $99, equivalent to $1,188 a year. The lowest average for typists in any of these cities was the Richmond rate of $972 a year. (49)

The occupations which are largely male have the highest earnings and those which are entirely female appear to have the lowest. (Compare Tables 6 and 2.) In occupations in which the majority of workers are women but in which there is a considerable percentage of men the average earnings seem to be higher than in those requiring an equivalent or greater amount of training but which employ women almost exclusively. For example, medical laboratory and X-ray technicians generally earn as much as occupational and physical therapists, although the training required is usually less. In fact, differences of pay by sex within an occupation are indicated by data collected by the Registry of Medical Technologists of the American Society of Clinical Pathologists. The average annual salary (without board and room) of 51 male medical laboratory technicians in 1942 was $2,016; that of 531 female technicians was $1,445. Unfortunately, data on earnings by sex are not available in sufficient quantity on the other occupations studied to draw valid conclusions. The belief is quite general, however, that the earnings of women are usually less than those of men in identical occupations in this industry.

Except for Federal Civil Service salaries, also shown on Table 6, the increases that may have taken place during the war in salary payments in the medical occupations cannot be indicated in this bulletin because comprehensive data are not yet available. That such increases have taken place, however, is suggested by a comparison of average weekly wages paid early in 1943 to employees in medical and other health services covered by State unemployment compensation laws with those paid in the comparable period in 1940. The average for April-June 1943 was

$26.41; the average for April-June 1940, was $20.96. The percentage increase amounted to 26 percent. (56) Preliminary indications from a salary study being conducted by the American Association of Medical Record Librarians in 1945 were reported to show improvement of salaries in that occupation.

Chapter III. THE DEMAND FOR MEDICAL AND OTHER HEALTH SERVICE PERSONNEL

In peace or in war, the effective demand for medical and other health services depends upon the size of the population, its need and desire for medical care, and the ability to finance such care. During the war, quite apart from military requirements, effective civilian demand for such service increased in the United States. There is reason to believe that demand will continue to increase in the next decade certainly, though perhaps at a less rapid rate than during the war period. The population is growing; there is an increase in the per capita need for medical care combined with greater recognition of that need by the individual and by society; and the long-run trend in individual expenditures as well as Governmental expenditures for medical and other health services is upward. Although an exhaustive discussion of these trends is beyond the scope of this bulletin, the more significant factors in the growth and development of medical and health services are here briefly indicated because of their effect on the total demand for personnel engaged in this portion of our national economy.

Growth of Population

A population increase of 5.5 percent since 1940 and of 13.2 percent since 1930 is indicated by the Bureau of the Census estimate of the population of the United States on January 1, 1945, as 138,955,469 (including our armed forces overseas). (31) The birth rate, which had declined during the depression years, recovered rapidly in the defense period before the war, so that by 1941 it matched the 1930 rate of 18.9 births per 1,000 population. During the war it reached a peak of 21.5 in 1943 when almost 3 million births were registered in the United States. (36) In 1944, it was 20.3. (2) Meanwhile, the trend in the death rate has been downward in spite of a slight reversal during the war. In 1944 the rate within the United States, excluding the armed forces overseas, was 10.6 per 1,000 population, as compared with 11.3 in 1930. (36) (2) Obviously an increasing population requires more medical personnel to service it even though no change takes place in the amount or level of per capita care.

Increase in the Per Capita Need and Desire for Medical Care

The longer life-span of the individual resulting from progress in medical and health services in turn increases the per capita need for such service. This increase is due particularly to the fact that the rate of degenerative and chronic diseases is higher among the older-age groups

than among younger groups. (27) (18) In addition, the war produced an immediate increase in the amount of medical care required per person, and its after-effects will be felt far into the future in this respect. Aside from the casualties resulting from direct enemy action, the per capita need for medical service was increased by: the physical examinations of millions of men of draft age and of hundreds of thousands of women volunteers; the periodic check-ups on the men and women accepted for military service; the spread of certain types of illness due to the concentration of troops or of industrial personnel under emergency conditions; accidents and physical and mental strain connected with war work and war anxieties.

Hospital reports indicate the unmistakeable upward trend. (13) (14) For some thirty years prior to 1940, the number of hospital beds in the United States increased at an average rate of approximately 26,000 per year. The year 1941, however, produced an increase of 98,136; the year, 1942, an increase of 59,446. Hospitals for the Army, Navy, and Veterans' Administration were largely responsible for the overwhelming addition of 265,427 hospital beds in 1943, the equivalent of a 727-bed hospital for each day of the year. By the end of 1944, when more than 80,000 more beds were established, the total bed capacity of hospitals in the United States approached 1¾ millions. The number of patients admitted to these hospitals also increased enormously during this period, reaching 16 million in 1944, 59 percent more than in 1940. Nor were these additional patients entirely military. Maternity care accounted for part of the increase as shown by the 1.9 million hospital births reported in 1944 as compared with 1.4 million in 1941. (14)

In spite of this wartime expansion, the postwar need for hospitalization is expected to surpass the capacity of current facilities. In estimating the postwar needs for Veterans' hospitals, Brigadier General Frank T. Hines in a letter to Congress, October 25, 1943, placed the maximum at 300,000 beds, pointing out that much depended upon the length and nature of the war and that "this estimated maximum should not be needed until long after the war." (54) This maximum load will be reached in 1975.

The construction program of the Veterans' Administration at that time already provided for increasing the capacity of Veterans' hospitals to 100,000 beds, and an additional 100,000 beds were to be obtained from the Army and Navy following the termination of the war. Appropriations which will make possible the construction of the additional 100,000 beds as they are needed were authorized in the "G.I. Bill." (58)

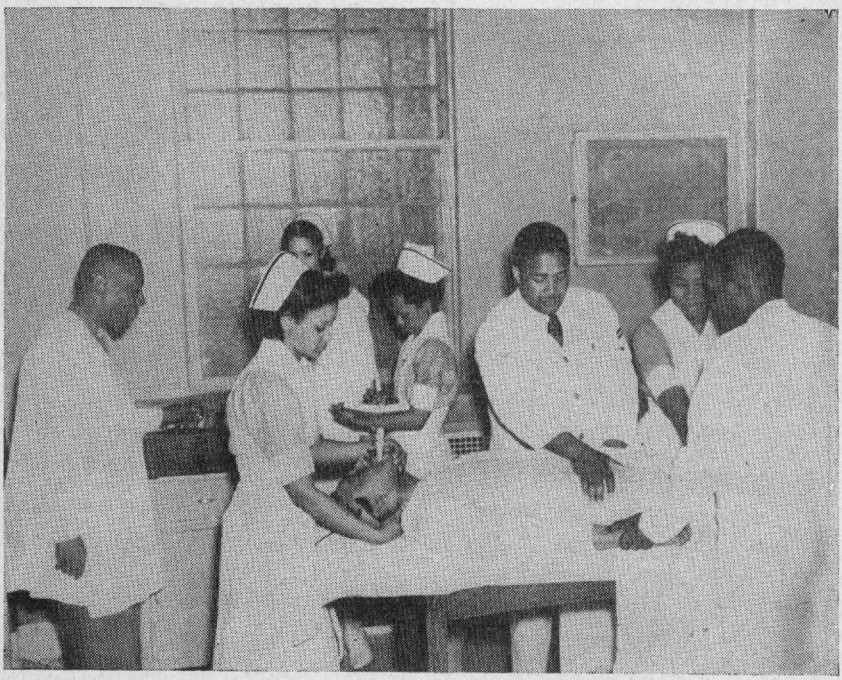
Civilian needs also have been considered. The need for convalescent care has been tentatively estimated by the committee on administrative practice of the American Public Health Association at 75 beds per

100,000 population and for chronic service at 200 beds per 100,000 population. (21) According to these standards 89,000 more beds for convalescents and 263,000 more for chronic patients would be required. Additions to general hospitals beds and replacement of obsolete facilities also are needed to reach a desirable ratio of 4.5 beds per 1,000 population.

In 1944, the Surgeon General of the U. S. Public Health Service estimated the number of beds needed (additional or replacements) for civilians in general hospitals at 166,000 and in tuberculosis hospitals at 60,000. (24)

There is also a special need for hospitals and diagnostic centers to service the rural population and to attract young physicians to rural areas, where the proportion of physicians to population has been declining for decades. (22)

The need for more facilities for the care of the mentally ill is especially urgent. About 38 percent of all hospital beds and nearly half of the daily average of almost 1¼ million patients reported for all hospitals in 1944 were in hospitals for nervous and mental patients. The number of mental patients hospitalized has been increasing steadily for



Student nurses and hospital attendants assist in electro-shock treatment in neuropsychiatric hospital, working under the supervision of the physician and professional nurse.

Courtesy, U. S. Veterans' Administration

several decades according to the U. S. Public Health Service which reported that 113 patients came to take the place of every 100 patients removed by death or discharge from State hospitals for the mentally ill. (53) In spite of a constantly increasing provision for such patients in State institutions, "at no time has the number of beds in all State hospitals been sufficient to furnish adequate facilities for all patients . . ." (30) In 1944, the Surgeon General of the U. S. Public Health Service estimated that 191,000 additional or replacement beds would be needed in mental hospitals to reach the reasonably adequate standard of at least 5 beds per 1,000 population. (24) The increasing need for hospitalization of mental patients is explained as follows:

> Increasing urbanization makes necessary the hospitalization of many chronic patients, since the aged and the infirm are not so readily cared for in a city environment as they may be in a rural locality. As the prevalence of mental disorders is greater among those of more advanced years, the fact that the median age of the general population is steadily advancing will ultimately be responsible for a tremendous increase in the incidence of mental diseases, that is, unless methods of prevention and treatment of old-age psychoses undergo a revolutionary change. (30)

Some evidences of the individual's need for hospitalization or other medical care are obvious. But important factors in determining his desire for medical attention are the early recognition of the less-obvious symptoms of his need for service and his awareness of the importance of systematic medical care. Great strides had been made before the war toward the recognition of the need for regular dental and medical examinations, for preventive as well as remedial treatment. But in 1944, the Director of the Selective Service System reported that more than 4 million of the 22 million registrants under Selective Service showed physical or mental defects serious enough to unfit them for military service. (57)

The war, by revealing these defects, gave impetus to health education. "Physical fitness" became a familiar slogan in schools, colleges, and war plants; in magazines, on posters, over the radio. The effect of the medical service being received by soldiers and sailors upon their buying habits already has been anticipated.

> Servicemen by the millions are for the first time getting the habit of adequate medical and dental care. Thousands are having their first try at wearing glasses; the Army Dental Corps has made a million soldiers dentally fit since Pearl Harbor. Combined with the re-establishment of thousands of professional offices, these changes mean great new postwar demands for medical, dental, and optical equipment and supplies (even though ex-servicemen are entitled to some degree of medical care at Government expense). (28)

A similar conclusion may be reached with regard to the serviceman's desire for medical services as well as for these medical supplies.

Problems of Financing Health and Medical Care

No matter how great the need for medical care, no matter how quick its recognition, means of paying for it must be provided before the demand can become effective.

During the war, income has risen and with it expenditures for health services. (37) Recently the Federal Government has also increased its expenditures on medical care in the armed forces and Veterans' hospitals, as well as in civilian programs, notably the Maternity and Child Care Program for wives of soldiers, the Vocational Rehabilitation Program for civilians, and special programs of the Public Health Service such as those for the control of tuberculosis and venereal diseases. The question of postwar income and of purchasing power which affects all occupations and all workers is beyond the scope of this bulletin. But within the total framework, the question of how much income is devoted to health and medical services and of how provision is made for its expenditure affects those who work in these fields as distinct from other groups in the population.

The principal problem confronting individuals in providing for medical care rests in the fact that the costs do not fall evenly among them, nor are they spaced evenly over time for any one person. In spite of this, in past years about three-fourths of all money spent for medical care has been paid for by the consumer. (55)

About 20 percent was expended by Federal, State and local governments. (50) For example, through taxation the cost of caring for certain types of patients has been distributed among the population as in the case of war veterans in Federal hospitals and the mentally ill or aged in State and county institutions. Traditionally hospitals and physicians alike have given free care to a considerable proportion of the population who could not pay for the care received. This type of philanthropy and services provided by industry has supplied from 4 to 5 percent of total medical care. (50) In a comprehensive study in 1929, a year of high income, 52 percent of the cases of hospitalized illness occurring among families with annual incomes under $1,200 and 23 percent of those occurring among families with incomes between $1,200 and $2,000 received free hospital care and probably also some free service by physicians and nurses. (5)

There has been general agreement that, except for a relatively few wealthy persons, the great bulk of the population is not able to finance from current earnings or savings the emergency needs for medical care that are likely to arise from an unpredictable accident or illness. For this reason, after an extensive study, the Committee on the Costs of Medical Care, representing private medical practice, institutions, and special interests, public health, the social sciences, and the public, more

than ten years ago recommended that "the costs of medical care be placed on a group payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods." (6)

Prepaid Medical Care and Hospitalization Plans

An increasing number of individuals are providing for the costs of future medical care through hospitalization insurance on an individual or group basis and through medical care prepayment plans. Non-profit hospitalization insurance has grown enormously since 1932 when the first plan offering free choice of hospital got under way. In December 1945 the hospital needs of about 18½ million people in the United States were provided for under non-profit Blue Cross hospitalization insurance plans according to the Hospital Service Plan Commission; perhaps as many as 2 million more belonged to other hospitalization plans (16); and an additional 8 million belonged to commercial insurance company group hospital plans which provide cash payments for hospital bills. (17) About 6 million of the 8 million persons covered by commercial insurance company group hospital plans are also insured against the cost of surgical care. In addition there is an unknown number of persons who have individual health and accident policies of commercial insurance companies.

Probably about 6 million persons belong to prepaid medical care plans, many of which provide hospital care as well as the services of a physician. More than 200 prepayment medical care plans of all types covering 5 million persons are described in a 1945 study by the Social Security Board. (51) Plans of medical societies account for the largest share of the total membership. The California Physicians Service, organized in 1939, was the first State-wide prepaid medical service plan undertaken by doctors themselves. (19) (8) Nineteen State and local society plans covering about 2.6 million persons were in existence in 1945; the plans available to employees of certain industries, and in some instances to the dependents of such employees, have about 1½ million members; the balance are members of Farm Security Administration plans, plans sponsored by either physicians practicing as a group, by the consumers of medical services, or by the Government. (51)

Federal and State Health Insurance Plans

Compulsory health insurance plans have been in operation for some time in a number of countries, and more recently in New Zealand and some of the South American countries. (3) Of the United States, Rhode Island is the only one which has any legislation of this sort except for that included in workmen's compensation acts (which cover only accidents and diseases arising out of employment). Enacted in 1942, the Rhode Island law provides a cash benefit during unemployment due to

sickness for employees covered under the unemployment insurance act. (7) (4) In 1945, according to the Social Security Board, bills providing for the risks of costs of medical, nursing, laboratory, dental, and hospital services were considered in the legislatures of 7 States; sickness insurance bills had been introduced in the legislatures of 8 additional States. The legislatures of 6 States have adopted bills to authorize study of a health insurance system, and bills providing for similar investigation were introduced in 2 additional States.

A proposal to provide for medical care and hospitalization on a Nation-wide basis under a revised social security program was included in the Wagner-Murray-Dingell Bill (S. 1050, H.R. 3293) introduced into the Senate May 24, 1945, and referred to the Finance Committee. Workers would contribute 4 percent of their wages up to $3,600, and their payments would be matched by employer contributions to provide old-age, temporary disability, permanent disability, survivors and unemployment benefits, and personal health service benefits for workers and their dependents. The health benefits include all needed medical care from general practitioners and specialists, dental care, and home nursing—although these benefits might be limited at the outset—and laboratory and related benefits, and hospitalization up to 60 days a year. Temporary disability benefits corresponding to unemployment compensation would be payable for a maximum of 26 weeks. Similar provisions for prepaid personal health insurance benefits are included in the Wagner-Murray-Dingell national health bill (S. 1606) introduced on November 19, 1945, to carry out the President's recommendations for a national health program.

Whatever the solution finally worked out, all these activities and proposals point to a general recognition of the need for prepayment plans of some sort to insure the individual of medical care when he needs it.

Financing Through Taxation

It is safe to predict that there is also likely to be more financing of medical care and public health activities through taxation at local, State, and national levels beyond the necessary provision for hospital facilities for veterans and a military force larger than the prewar Army and Navy. The rejection of millions of men for military service because of physical defects has shocked a country which thought it was physically fit. Many localities in the United States are still without minimum public health service. (9) Regardless of the need for expanding service, in existing State and local health departments, in the latter part of 1945 there were an estimated 5,810 vacancies in full-time positions, some 3,231 of which were open to new employees. (The remaining number were held for former employees in military service.) The total number of established positions in these departments was estimated at 25,345. (52) (1)

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The Senate Subcommittee on Wartime Health and Education in its interim report (January 1945) after extensive hearings recommended Federal grants-in-aid to States to assist in postwar construction of hospital and medical centers and health centers. (59) Provision for such grants-in-aid are made in a bill introduced in the House in July 1945 (H.R. 3845) known as the Hospital Construction Act. More adequate provision for maternal and child health is also proposed in the Pepper Bill for Maternal and Child Welfare (S. 1318) which would appropriate 50 million dollars for the fiscal year 1945-46 to assist States in providing medical care and health services for mothers and children. (26) Similar provisions for hospital construction and for maternal and child welfare are also included in the Wagner-Murray-Dingell Bill.

Funds for a program of dental research and increased funds for grants-in-aid to establish dental care programs in the States and education of the public on dental health were provided for in two bills (S. 190 and S. 1099) encouraged and supported by the American Dental Association.

Other Evidences of Increasing Demand

Late in 1944 a Commission on Hospital Care was formed, at the suggestion of the American Hospital Association, to make a 2-year study of the Nation's hospital facilities and to make plans for meeting the most pressing needs for additional ones. The American Academy of Pediatrics' current study of health services for children, State by State, is an example of similar activities of other professional groups. At all levels, from local to international, this same recognition of the need for more adequate facilities and provision for medical care is everywhere indicated. Typical of local efforts are the health and hospital survey of Washington, D. C., authorized by the D. C. Metropolitan Health Council (an organization initiated by the local Council of Social Agencies) and Detroit's plans for a great medical science center at its municipal Wayne University. The Committee on Relief and Rehabilitation Policies of the United Nations Relief and Rehabilitation Administration has stated that "Health work will necessarily constitute one of the primary and fundamental responsibilities of UNRRA." (29) A joint resolution urging the formation of an international health organization was introduced into Congress on August 1, 1945. (25)

Although many of the plans being made may not materialize and others may be lost or forgotten in the maze of problems that the future always brings, it is more than likely that the United States will increase its expenditures for medical care in the coming years. A country which without hesitation supplied the best medical care available for those selected to defend it in combat, and provided maternity care for their wives, is likely to find it even more logical to tax itself to the utmost to keep its army of citizens constantly fit.

Chapter IV. THE OUTLOOK FOR WOMEN IN THE PRINCIPAL OCCUPATIONS IN MEDICAL AND OTHER HEALTH SERVICES

That the supply of personnel trained for medical and other health services has increased during the war in all the principal occupations in which women are employed in this industry is evident from the available statistics presented in Chapter II. That the increase was greater in amount and proceeded at a more rapid rate in some of these occupations than in others is also clear.

The upward trend in the demand for medical and other health services, relative to the demand for other items in individual and government budgets, has been indicated in Chapter III. But the primary concern of women engaged in this field and of those interested in the possibility of entering or preparing for it is the current and future relationship of supply to demand in the separate occupations. Insofar as data were available and prediction possible, these relationships and their implications have been discussed in detail for women physicians and dentists, professional nurses, occupational and physical therapists, practical nurses and hospital attendants, medical record librarians, medical laboratory and X-ray technicians, dental hygienists, and physicians' and dentists' assistants in separate bulletins in this series. This chapter, therefore, is limited to a coordination of the conclusions of these bulletins and a discussion of some of the more recent changes and influences affecting the employment of women in these occupations.

Outlook for Women as Dentists

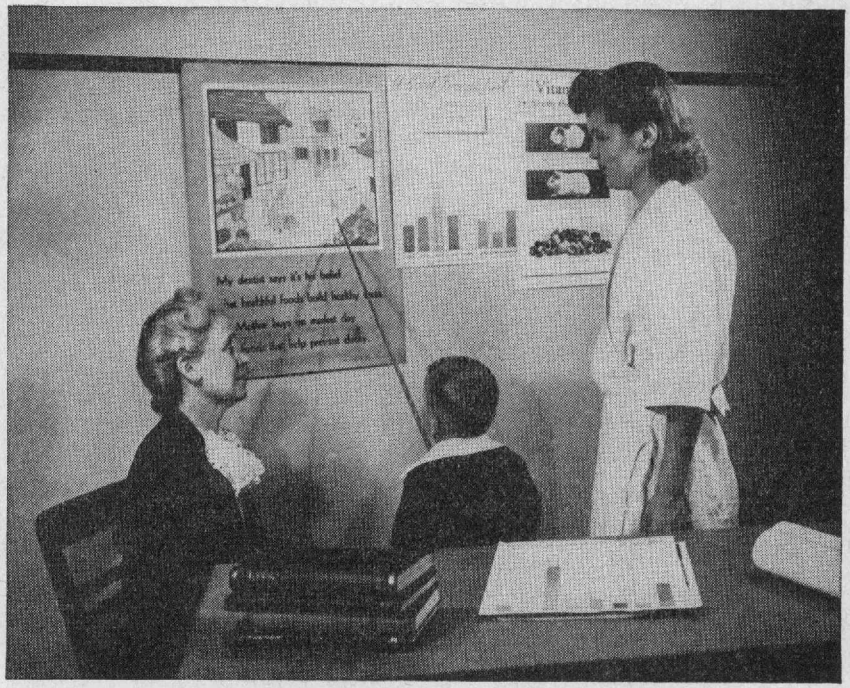
Since the population of the United States at the end of 1944 was estimated to be 5.5 percent greater than it was in 1940 (see Chapter III), any smaller increase in employment in a particular occupation during the same period would indicate an actual decline in per capita service of that type. Although none of the occupations actually fell back in this way (see Table 5), the number of dentists, increasing only 6 percent during this period, barely kept pace with the population growth. So slight an increase could not adequately service the tremendous wartime needs of the armed forces and continue to meet civilian demand at even the prewar level; moreover, the trend is toward an increasing per capita demand for dental service. (60)

The Secretary of the Council on Dental Education of the American Dental Association points out the inevitable decrease in dental service

available to the increasing population, unless the output of dental schools is increased. But the continued drafting of pre-dental as well as undergraduate dental students in 1944 and 1945 was expected to result in a decrease in enrollment in dental schools in the classes beginning their training in 1945, 1946, and 1947. (11) Such a decrease would result in a lessening of a supply already lagging behind the demand.

The number of women enrolled in dental schools was 42 percent greater in 1945 than in 1944, but they numbered only 101. Although in the fall of 1945 the draft policy was modified, and Selective Service Boards were directed to give special consideration to the deferment of dental students, in 1945, only 1,200 freshmen were enrolled in dental schools—59 percent below the 1944 number, and 48 percent below that of 1940. This, of course, improves the employment outlook for the women students who complete their training. The drop in the enrollment of men students is, of course, a temporary one.

Regardless of these unusual influences, dentistry for many years has been a promising field for well-qualified women, though very few women have entered it· the wartime dearth of men students, continuing tem-



The demand for dental personnel is increasing with the growth of programs of oral hygiene.

Courtesy, Dental School, University of Pennsylvania

porarily into the postwar periods, has simply widened their opportunities for training, for private practice, and for employment for the next few years at least.

Outlook for Women as Dental Hygienists

Unlike the dentists, the dental hygienists increased in number at a rapid rate during the war period. They were so few, at the start, however, that in 1944 they totalled only about 6,500 in spite of their increase since 1940. They were not numerous enough, therefore, to relieve the shortage of dentists to any considerable degree, even though qualified to take over the function of prophylaxis (still performed by most dentists in addition to more difficult dental operations and treatments). In fact, if dentists and dental hygienists are counted together, their estimated number in 1944 was only 7 percent greater than their combined total in 1940.

The distinct demand for the services of dental hygienists as dental health educators has been increasing with the growth of programs of oral hygiene. This, combined with the emphasis on regular dental prophylaxis and the predicted continuance of the shortage of dentists, indicates that the supply of hygienists qualified to teach oral hygiene as well as to handle prophylaxis will lag behind the demand for several years to come, in spite of the present rate of growth of the occupation. In the more distant future, the demand for dental hygienists will be influenced not only by the over-all demand for dental care and the relative supply of related personnel, but also by the division of duties among the dental team of dentist, dental hygienist, and dental assistant. This allocation is still in an evolutionary state and varies from community to community, with the use of hygienists at present increasing.

Although there have been very few women applying for admission to courses of dentistry, those seeking training in dental hygiene in 1945-46 far outnumbered the capacity of the schools to accept them. In one school in the fall of 1945, 57 applicants were selected from 300 who applied. Those with more than the minimum background and those who apply for the longer, degree-conferring courses have the best chance for admission.

Outlook for Women as Dental Assistants

The increasing emphasis on dental care and the civilian demands postponed during the war period indicate that for the next year, at least, the demand for dental assistants also will be greater than the present supply of women trained in this field. The anticipated shortage of dentists makes probable a more general use of such assistants than ex-

isted in 1940 when there were only one-fifth as many dental assistants as dentists. Statistics covering the war period are not available, but an undersupply was evidenced by the urgent requests from civilian dentists as well as those from the military services reported by training centers, employment offices, and the Civil Service Commission.

Since the rate at which supply catches up with demand is apt to be faster in occupations requiring least training, the shortage of dental assistants is likely to be ended more quickly than that of dental hygienists, which in turn is likely to end before that of dentists. But the supply of dental assistants is also affected more immediately than the supply of workers in other dental occupations by shifts in earnings and working conditions relative to earnings and working conditions in fields requiring comparable qualifications and training. It is easier for the high school or college girl with business training to switch from a stenographic position in industry or Government to that of dental assistant, or vice versa, than it is for a dental hygienist or a dentist to change to another occupation. As the general labor market eases, the undersupply of dental assistants will end, unless working conditions are unfavorable and salaries low compared with those in other types of office work. On the other hand, indications are that there will be a steadily growing demand for young women in this field, and, as more training facilities become available, that there will be increasing emphasis on specialized preparation for the work.

Outlook for Women as Physicians

Almost as small as the increase in dentists, and having a comparable effect on the demand in related occupations, was the estimated 9 percent increase in the supply of physicians from 1940 to 1944. In spite of the greatly augmented wartime needs for medical service, the number of physicians appears to have increased only 3.5 percent beyond the 5.5 percent population increase during this period. Even this slight increase, however, was expected to be offset by a decrease in medical school enrollments in the fall of 1945, lasting into 1947. Because Army and Navy medical training programs had been curtailed in 1944 and 1945 and potential premedical and medical students drafted, it was predicted that schools would not have enough students who had completed premedical training unless they lowered their qualifications for admission.

The effect of this draft policy was already evident in medical school enrollment in the 1944-45 school year, when civilians composed more than half of the freshmen class and less than 10 percent of the junior and senior classes. The September 1945 request of the Director of Selective Service to local boards urging special consideration to the occupa-

tional deferment of medical students was expected to alleviate the situation, but the drafting of male premedical students continued in full force, reducing the source of supply. Returning veterans, men disqualified for military service on physical grounds, men over 26, and women, who had completed premedical training were the only other sources of supply upon which the medical schools could draw. In 1944-45, women students composed 7.2 percent of the freshmen class in medical schools and 5.6 percent of the total enrollment. Although this was the highest proportion women have been of the total enrollment in the last twenty years, it is actually not much greater than the long-time average of 5 percent. However, the 1,352 women enrolled as medical students in 1945 outnumbered those in 1940 by 207, an 18 percent increase in actual numbers. (62) The easier access to medical schools extended to women students during this period could only benefit directly the relatively few girls who were enrolled in premedical courses. The war also widened opportunities at the top by making available more attractive internships and residencies for women who had completed their undergraduate medical program. However, by 1946, the number of young physicians returning from service who were seeking residencies had already increased the competition at that level.

The past record indicates that women physicians have been generally successful. There was no unemployment problem among them even during the depression of the early thirties. For the next ten years at least, according to a recent study of the Bureau of Labor Statistics, the supply of physicians is not expected to keep pace with the increasing demand for their services. (10) The prospects for well-qualified women to enter medical schools and to engage in medical practice are better than they have ever been in the peacetime past. Unless an unexpectedly large number of returning service men choose to study medicine and apply for admission to medical (or premedical) schools, the favorable outlook should continue.

In psychiatry, particularly, the undersupply is marked, and there is unusual opportunity for qualified women to train and practice in this field. The outlook for women pediatricians in health departments is also particularly good.

Outlook for Women as Professional Nurses

Any shortage of physicians tends to increase the demand in all the other occupations in the medical services. Some of the physician's less technical duties are passed on to others who work directly under him or who take over responsibilities that would ordinarily fall to him. They in turn pass on some of their duties. For example, when physicians are scarce, professional nurses take over some of the treatments ordinarily performed by physicians; more of them are trained to give anesthetics;

more of them are given supervision over other hospital personnel which a physician might otherwise exercise directly instead of indirectly through the nurse. The physician usually can keep pace with the increasingly complicated techniques and procedures arising out of the progress in medical science only by turning over some of the more traditional treatments to professional nurses trained to perform them.

Since nurses are responsible for the care of the patient, they feel the impact of scarcity of personnel in the service ranks also. Under emergency conditions, if no messengers or maintenance personnel are available, nurses must fetch and carry, scrub and clean.

During the war, in addition to the pressures for nursing service resulting from the shortage of physicians on the one hand and of service personnel on the other, there was a tremendous increase in the direct demand for professional nursing personnel. A herculean attempt to increase the supply was made through the Cadet Nurse Program. In 1944, the number of professional nurses had increased only 11 percent over the 1940 number, but the number of student nurses serving patients in hospitals had increased 32 percent. If graduate and student nurses are combined, the 1944 increase was 16 percent over 1940. This is not very much greater than the increase in the number of physicians and augurs an ultimately more disparate supply-demand situation because the withdrawal rate is much higher among nurses than among physicians. A large number of young women leave nursing for full-time homemaking each year. Although the great increase in the number of students in schools of nursing indicates that in the next two years more nurses will be graduated, it is possible that any such increase will be at least partially offset by the anticipated withdrawal from practice of the unusually high number of nurses who married during the war period.

In late 1945, the civilian shortage of nurses was still critical in many communities, and veterans' hospitals in November needed 2,000 additional nurses at once to meet their increasing needs. As some nurses are released from Army and Navy service, these shortages should be relieved although not all the nurses released will continue to practice. No oversupply is anticipated if future enrollments in 3-year programs in schools of nursing return to their peace-time numbers. An undersupply may continue for some time in executive, supervisory, and specialized jobs for which college background or training is preferred. During the war period, when the need for immediate service was so urgent, few girls took the longer program of study or continued specialized training.

Members of the Army and Navy Nurse Corps who are being released are being urged to take additional training, using their rights under the "G.I. Bill" to obtain a year or more of further preparation. By rounding out their experience and specializing in such fields as public health nursing, psychiatric nursing, tuberculosis nursing, nurse-midwifery, pediatric nursing, they can relieve the marked undersupply in these fields and re-

move themselves from possible later competition for the nursing positions which require a minimum amount of training. It is for the latter positions, especially in private practice, that married professional nurses, who prefer to devote themselves to homemaking, may reenter the labor market if the general employment condition is such that other working members of the family cannot maintain its standard of living. It is this potential supply, called forth by a depression, that is the only uncertain factor in the general outlook for the professional nurse. At an economic level equal to or better than 1940, an oversupply of professional nurses is not likely to be produced at the prewar rate of training. The trends toward increasing demand for nursing service should absorb the extra number of professional nurses trained during the war period who wish to continue to practice.

Outlook for Women as Practical Nurses and Hospital Attendants

During the war, the shortage of practical nurses and hospital attendants has been as critical as that of professional nurses. In many communities the scarcity was so acute that experienced practical nurses were paid at rates ordinarily received by the professional nurse who has had considerably more training.

The long-time trend in this as in all the other medical occupations is toward an increased demand for service. But in a field in which the standards for employment are not clearly defined, in which a woman who has nursed a relative for an extended period can in most localities obtain employment as a self-styled "practical nurse," the potential supply of such workers tends to meet any sudden accelerated demand, particularly if the rates of pay are above standard. During the war, undoubtedly many such persons entered the field; on the other hand, many withdrawals and transfers probably took place because the improved economic situation of most families lessened the need to work outside the home and because industrial employment with relatively higher pay was available in many communities. Federal Civil Service salaries for hospital attendants were raised 40 percent, from $1,020 before the war to $1,440 in 1945, but the shortage of this type of personnel is still acute in many Federal institutions in May 1946.

The supply and the total volume of employment in this occupation in the years ahead cannot be estimated accurately enough for general prediction. But it is safe to say that the demand for women who have taken approved training in this field or whose competency has been objectively measured will outstrip for a long, indefinite period the number available. The capacity of schools offering approved training is so small at the present time and the demand for graduates so great, that it

is not likely that any increase in capacity through the opening of new schools will create an oversupply of trained personnel. The trend toward State licensing of practical nurses will gradually reduce competition from persons without specific training or experience; meanwhile such competition will be faced by the bulk of women employed in this occupation.

Outlook for Women as Physicians' Assistants

The wartime shortage of physicians was also reflected in the demand for physicians' assistants, in hospitals and in the offices of doctors in private practice, where routine office functions were turned over to them. The number of medical stenographers in hospitals, for instance, increased almost 60 percent from 1941 to 1944. In the armed services, many enlisted women as well as men were trained to assist doctors in a variety of ways.

Although statistics are lacking, general indications are that the postwar demand for physicians' assistants is likely to be greater than the prewar, but less than the wartime, demand. There is a large number of returning servicemen and women whose medical experience combined with commercial training should make them ideally suited to this occupation. On the other hand, the turn-over in this field, which employs many girls just out of school, is usually high and has been particularly so during the high-marriage-rate period during the war. So there are still a number of openings in this field. As the military demand falls off and the supply of service-trained personnel is available for civilian service, young girls without special training or experience may have difficulty in competing for jobs of this type with those who have such experience or who have taken special training for the work in a junior college or private or vocational school.

Outlook for Women as Medical Record Librarians

A much smaller group, some of them deriving from the physicians' assistants or medical stenographers, are those responsible for the records in a hospital or other medical institution. Their number increased about 40 percent from 1940 to 1944. Since the capacity of approved schools is only 90 to 100 medical record librarians each year, it is unlikely that there will be any difficulty in placing personnel so trained in an occupation that absorbed more than 1,200 additional full-time workers between 1941 and 1944. (13) (14) Until more trained persons are available hospitals will continue to appoint to these jobs persons promoted from filing and stenographic jobs within the institution or persons with registrar experience in other types of institutions.

Outlook for Women as Medical Laboratory Technicians

A number of new, approved training centers opened during the war to meet the increasing demand for medical laboratory technicians, or technologists, as those on the Registry of the American Society of Clinical Pathologists are called. But approved training schools were filled to only half their capacity in 1944 and the shortage of trained personnel became serious. The total increase in personnel employed as medical laboratory technicians cannot be estimated exactly but was more than 25 percent in the period from 1940 to 1944. Many of these were non-registered personnel, for the most part women without special training in laboratory techniques who were employed and trained on the job.

The increasing demand for trained personnel in this field, according to indications, should continue to absorb easily the 900-1,000 who graduate annually from approved schools and those with comparable experience in military service who have the college background required and can complete what they may lack in the way of all-round training. The high school graduate with only a little military or civilian laboratory experience as a helper or routine worker will not have much chance in competition with trained personnel as they become available.

Outlook for Women as X-ray Technicians

X-ray technicians in medical service, whose number in 1940 appeared adequate to meet the demand, are believed to have increased about 33 percent by the end of 1944. During the war, demand grew at a considerably faster rate, so that most X-ray technicians worked longer hours and missed the vacations they needed to reduce the effects of radiation encountered in their work. A number of enlisted men and women were trained to assist in X-ray work in the Army and Navy, and some of these, if their experience has been sufficiently long under acceptable supervision and if they have graduated from high school, may qualify for registration as X-ray technicians. Others may wish to complete their training under the "G.I. Bill."

The outlook for registered technicians continues to be promising and the capacity of approved schools for training does not seem to be beyond the power of the occupation to absorb their graduates. A considerable number of men are employed in this field, and during the war many men were employed in industrial X-ray work where the demand is expected to contract sharply. Therefore, it is to a woman's advantage if she has an additional skill useful in a medical situation in combination with her X-ray technique. Nursing, secretarial, or medical laboratory training are desirable complements.

Outlook for Women as Physical Therapists

Although the number of physical therapists is estimated to have increased by almost half (45 percent), between 1940 and 1944, a shortage still existed in this field in 1945 because of the extraordinary demands of military and Veterans' hospitals as well as because of the increased emphasis on physical therapy in the treatment of poliomyelitis, orthopedic, and other cases. Since this growing occupation numbered little more than 3,000 before the war, it could continue to absorb for several years at least the 700 who were graduating annually from approved schools during the war period. But with the closing of all the Army training schools by December 31, 1945, the annual number of graduates added is reduced to 540—about 9 or 10 percent of those employed. Such a proportion should be readily absorbed, either as replacements for those who withdraw, or as additions to meet the growing demand for service of this type. The scholarships available under the expanded physical therapy program of the National Foundation for Infantile Paralysis offer further encouragement to women qualified to train for this work.

Outlook for Women as Occupational Therapists

Like the physical therapists, the occupational therapists were relatively few in number in 1940, totalling some 2,200. But to meet the extraordinary war needs, they increased more than a third by 1944 as the opening of new schools more than doubled the training capacity. In 1944, the Army worked out an emergency 1-year course in which selected college graduates were trained at approved schools. The Veterans' Administration in 1945 was absorbing some of these trained personnel in its expanding program. The practice of occupational therapy has extended geographically from the eastern and midwest States where its use was concentrated before the war. The types of illnesses and conditions with which it is used have also widened. Its extension to convalescents and to those who can be served in curative workshops, as well as its expanded use in institutions, created additional need for trained personnel. For the next several years, the demand should be able to absorb the women trained in this field at approved training centers. However, as alternative opportunities for training and employment decline from wartime peaks, the emphasis and flood of publicity given occupational therapy will probably result in occupational therapy schools receiving applications in excess of their capacity to train.

Outlook for Women in Other Occupations Reported Separately in the Census

Factors similar to those affecting physicians and dentists encouraged wartime employment of women in *pharmacy* beyond the 4 percent they

The war emphasized the need for therapists, here shown serving civilians.

A physical therapist obtains cooperation of infantile paralysis patient in muscle re-education.

Courtesy, National Foundation for Infantile Paralysis

An injured industrial worker strengthens shoulder muscles by throwing darts under supervision of occupational therapist.

represented of the total in this field in 1940. The enrollment of women students in pharmacy schools which were hard-hit by the drafting of male students was also urged. The percentage of women students enrolled in undergraduate courses in such schools had been increasing before the war and was approximately 13 percent in 1941. But this proportion increased to 40 percent in the fall of 1945, when 2,108 were enrolled. The outlook for women in this field for the next few years is very promising because of the few men trained during the war period and the increasing demand for pharmaceutical service in drug stores, hospitals, and in research, control, and industrial laboratories. Especially in hospital pharmacies and in control and research laboratories are the opportunities good.

The medical occupation in which the smallest number of women was reported by the Census in 1940 was that of *veterinarian.* Only 79 women were engaged in this field at that time, less than 1 percent of the more than 10,700 employed. Although prospects in this relatively small occupation were excellent even during the depression period, few women have ever been interested in entering it, and those few have generally been discouraged from entering schools offering training in this field. The principal objection is that most veterinary jobs are unspecialized and involve work with large animals frequently enough so that a woman who could not handle such animals alone would be handicapped in carrying on the work. However, there seems to be opportunity for training and employment for the few girls who want to enter this field, particularly at this time when male students are reduced in number and few have completed training during the war period.

Almost 2,000 women were reported practicing as *chiropractors* in 1940. They represented 18 percent of the total number. In this field, too, the number of women students increased during the war as women were encouraged to fill up the gaps left by men entering military service. In 1945, they were urged to enroll in the 4 schools offering training, and the outlook for them was reported favorable by the association representing persons in this type of practice.

Women *osteopaths,* according to the Census of 1940, numbered more than 1,000, 18 percent of the total so engaged. Since some osteopaths are also doctors of medicine and may be classified as physicians by the Census, the number may be higher. In 1942, the American Osteopathic Association listed in its membership directory more than 1,500 women in the United States, about a fifth of whom were practicing in affiliation with male relatives or husbands. For some time women have been encouraged to enter this occupation. The trend was accentuated by the war and is continuing, since the opportunities are considered good by the women already practicing in this field. (23)

Chapter V. VARIATIONS IN THE OUTLOOK FOR WOMEN IN THE MEDICAL AND OTHER HEALTH SERVICES

Although the general outlook for the employment of women in medical and other health occupations in the United States is favorable, granted a general economic level equal to or above that of 1940, employment prospects for individual women differ with their location and their characteristics. In some occupations, too, the general outlook is liable to change more rapidly than it is in others. These variations are important to consider in relating information of the type presented in this bulletin to the employment or training plans of an individual woman.

Geographic Variations in the Outlook

Employment prospects, for example, are not equally good in all parts of the country. Although these geographical variations are not important to women who can and are willing to move to any locality in which jobs are available, they are significant to the many women who, because of home or other responsibilities, are tied to a particular area.

Women living in rural communities, for example, will find relatively few opportunities there for employment in most of the occupations discussed in this series. Although the need for additional medical and dental service is relatively greater in such areas, since they have been characteristically less well served, the scattered nature and lower economic level of the population, the relative lack of hospital facilities and technical equipment, and the difficulty of maintaining contact with professional colleagues have discouraged young physicians and dentists from settling in such areas. Women physicians and dentists, even more than men in these professions, have tended to concentrate in urban areas. To the enterprising, pioneering woman, however, the challenge of building up a successful medical or dental practice in a rural community, where prejudices are likely to be against her at the start, may have a distinct appeal. As more public health services are extended into rural communities, there should be an increasing possibility of employment by State or county health services for physicians, dentists, nurses, and dental hygienists. However, in 1940 only 22 percent of the physicians, 20 percent of the dentists, 14 percent of the professional and student nurses, and 28 percent of practical nurses and midwives lived in rural areas, although 44 percent of the population resided there.[4] Moreover the trend on the part of young practitioners has been away from rather than toward rural location. Although similar information on the other occu-

pations covered in this series is not available, it appears that relatively fewer physicians' assistants and dentists' assistants are employed in rural communities and that the concentration of most of the technicians and therapists in hospital work makes rural opportunities even more unusual for them.

In the four separate regions of the United States, the Northeast, the South, the West, and the North Central States,[5] the percentage women composed of the total employment in medical and other health services in 1940 was approximately the same, varying only between 57 and 59 percent. (See Table 7.) But the volume of their employment, like the total volume, was considerably greater in the two Northern regions than in the South and West. It is possible that the industrialization of the South and West that took place during the war may have resulted in an increase in medical personnel to serve the population which moved into the new industrial centers. However, marked shortages of medical service were reported in war centers, and it is unlikely that any additions that took place would materially alter the percentage distribution indicated in Table 7.

TABLE 7.—*Number and Percent Distribution by Region of Women Employed in Medical and Other Health Service Establishments, United States, 1940*

Region	Women employed		Men and women employed		Percent women are of total employed
	Number	Percent	Number	Percent	
United States	593,244	100.0	1,018,815	100.0	58.2
Northeastern States	214,106	36.1	368,962	36.2	58.0
North Central States	183,091	30.9	310,166	30.5	59.0
South	119,040	20.0	208,163	20.4	57.2
West	77,007	13.0	131,524	12.9	58.5

Source: U. S. Census. (34)

People living in the South have been only about half as well served in this respect as the Northeast and West, on the basis of the ratio of personnel in medical and other health service establishments to population. (See Table 8.) The need for additional service is obviously greatest

[4] The rural population (farm and non-farm) is described by the Census as all persons not classified as urban. Urban population is that residing in cities and other incorporated areas having 2,500 inhabitants or more. In addition, certain densely populated townships or other civil divisions, not incorporated as municipalities, have been classiéed as urban under special rules. (34)

[5] The regions as designated in Census reports are as follows:
Northeastern States—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont;
North Central States—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin;
South—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia;
West—Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming. (34)

there, but unless provision is made for financing medical and other health services to meet the need, opportunities for employment of medical personnel in the South will continue to be relatively lower both in total volume and in proportion to its population.

TABLE 8.—*Number of Persons Employed in Medical and Other Health Service Establishments in Relation to Population, by Region, United States, 1940*

Region	Total employed in medical and other health services	Total population	Ratio of medical and other health personnel to population
United States	1,018,815	131,669,275	1 to 129
Northeastern States	368,962	35,976,777	1 to 98
North Central States	310,166	40,143,332	1 to 129
South	208,163	41,665,901	1 to 200
West	131,524	13,883,265	1 to 106

Source: U. S. Census. (34) (35)

Hospital statistics bear out the indication of the Census data. Hospital facilities, as shown in Table 9, are fewest in relation to the population in the South and most numerous in the Northeast and West. The North Central States again are typical of the Nation-wide average.

TABLE 9.—*Hospital Beds in Relation to Population, by Region, United States, 1940*

Region	Number of general hospital beds to 1,000 population	Number of beds in all hospitals to 1,000 population
United States	3.5	9.3
Northeastern States	4.1	12.0
North Central States	3.4	9.2
South	2.6	6.6
West	4.9	10.7

Source: Hospital Statistics as Reported to the American Medical Association (12) and U. S. Census. (35)

Variations in the Outlook for Women with Special Employment Problems

The difficulties individual women may encounter in entering an occupation are legion and vary with the person and the circumstances which surround her. But there are four groups of women concerning whose special problems in obtaining employment there have been evidence and inquiry sufficient to warrant a brief discussion of them in each of the separate bulletins in this series and mention here. The older woman, the married woman, the Negro woman, and the woman with a physical handicap, when compared with young, single, white,

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robust women, are less likely to find their opportunities for employment following the usual pattern.

Since skill and experience are of prime value in all occupations in the medical and other health services, a woman is seldom separated from her job because of age alone. But if her work is physically strenuous, as much of the service in this field is, she may wish to transfer to less active work as she becomes older. And within the field, such adjustments are possible, although a reduction in income may be involved unless the transfer is an advancement to a supervisory, teaching, or research position. The hospital staff nurse, for example, may seek part-time or full-time work as a nurse in a physician's office; a physical therapist may leave her position in an institution to work as a doctor's assistant where her therapy duties are less frequent and interspaced with routine office chores. The physician or dentist may reduce the size of her practice or share it with a young assistant.

Although age presents no unusual handicap in retaining employment in these occupations, it is very difficult for a woman over 35 to obtain preparation for any of them, with one exception—practical nursing. Schools of professional nursing, or physical and occupational therapy as well as of medicine and dentistry, seldom admit women over 30 or 35. Preference is given to young women, mature enough to be acceptable to patients (those 21 are preferred to those 18) but young enough to be active for a long period following training. Exceptions to this general custom are more likely to be made in medical laboratory and X-ray training, much of which is on an apprenticeship basis, but even there younger students are preferred. Unless a woman over 35 has unusual aptitude and motivation, or a definite assurance of employment following training, or is interested in practical nursing, she had better seek preparation outside the medical field. In the one occupation of practical nursing, however, middle-age seems to be a distinct asset.

Married women apparently continue to work without undue handicap in any of these occupations except in institutions or private homes which require living where one works. Since students preparing for professional nursing live at the hospital during their training, married women are usually not accepted, although this restriction was lifted during the unusual circumstances of the war. Because of local tradition or personal preference, a private physician or dentist or other employer —even a public agency—may not hire married women or may even require or suggest the resignation of women who marry after they are employed. Such practices, however, do not seem to be more prevalent in this field than in others. In fact, they appear to be less. The part-time employment of married women with training and experience is mentioned fairly frequently and, in some types of service, marriage is mentioned as an asset. In private practice, of course, there is no restriction

whatever. Before the war, approximately two-thirds of the practical nurses, one-half of the women physicians, and one-third of the professional nurses were married. (45) (44) (47)

Very few Negro women are trained in the newer occupations of physical and occupational therapy, medical laboratory and X-ray work, and dental hygiene, although there is a growing demand for them. In the older occupations, their number is highest in practical nursing. In 1940, there were about 13,000 Negro practical nurses and midwives and about 7,000 professional and student nurses; Negro women physicians numbered 129, dentists, even less. More than a thousand Negro women were working as physicians' assistants and a few hundred as dentists' assistants. Financial aid to student nurses under the Cadet Nurse Program and the critical shortage of nurses in public hospitals during the war resulted in improved opportunities for training and employment in professional nursing, where in 1940 only 2 percent were Negroes, as compared with the 14 percent of practical nurses who were Negroes. (45) (44) The opening of a training course in nurse midwifery at Tuskegee was also a step forward.

The chief handicap to Negro girls wanting to enter medical and other health service occupations has been the lack of training facilities or their distance from the localities in which the girls live. Placement following training has not been the primary difficulty, since the general increase in demand for medical services and the low ratio of Negro personnel trained in this field to the Negro population indicates an expanding rather than a contracting opportunity for service.

The significance of good health in these occupations is indicated by the customary requirement of a physical examination of those who apply for admission to training schools. The direct contact with patients characteristic of most of the work in this field and the physical endurance needed because emergencies are not exceptional make these occupations more difficult than most for anyone who has a physical handicap that affects general health, endurance, or ability to move quickly and deftly. A disfiguring handicap is less easily compensated for in a medical environment which is likely to include numerous contacts with strangers.

However, as much depends upon the particular work situation as upon the nature of the occupation. Adaptations which enable a physically handicapped woman to work without disadvantage to the job or to herself are possible and more likely to be satisfactory in this field where professional medical personnel are present to advise and check.

Among the occupations, too, there is wide variation. Medical laboratory technicians, for example, and medical record librarians ordinarily have more desk work, less physically strenuous duties, and fewer contacts

with patients than do hospital staff nurses, physical therapists, and dental hygienists.

Consultation with a physician or a rehabilitation specialist is advisable for a woman who has a physical handicap but who wants to enter one of the occupations in medical and other health services.

Changes in the Employment Situation

The shortages so marked in all occupations in the medical and other health services during the war have continued at least into the early postwar period of 1946. Some, however, will be relieved more quickly than others. Unless other factors (such as the number of training facilities or the cost of training to the individual) change radically, shortages will last longest in those occupations for which the educational qualifications are highest and the training period longest. It takes longer, for example, to increase the supply of physicians and dentists than to produce additional practical nurses, medical stenographers, or dental assistants.

Within a given occupation, too, the jobs requiring the highest degree of specialized experience and training will tend to remain undersupplied longer than those requiring a minimum amount of preparation. The scarcity of psychiatrists will last longer than that of physicians engaged in general practice, unless other factors change; in relation to a relatively unchanging demand for their respective services, dental hygienists qualified to teach in public school systems will tend to be fewer than those not so qualified.

The foregoing discussion of the outlook for physicians' assistants illustrated the fact that changes in earnings and other conditions of work have a more immediate effect on the supply of personnel in the occupations which require the least amount of specialized preparation. The rate at which the supply of hospital attendants decreased as they transferred to better-paying industrial jobs during the war is another example. Because of the tremendous needs for medical service and the philanthropic origin of many of the hospitals and institutions in which medical personnel have been employed, there has been a tendency, perhaps, to regard the psychic satisfaction derived from direct service to individuals and the association with scientifically trained personnel as compensation for the relatively low cash earnings derived from much of the work in this field. In spite of this long tradition, better income and working conditions in other fields of work are bound to divert women from occupations and from particular jobs in the medical and other health services, thus affecting the supply, more immediately at the lower educational levels, but at the higher levels, too.

Implications for the Individual Woman of Trends in Supply and Demand

To the individual woman engaged in or considering preparation for one of the medical or other health service occupations, the over-all relationships discussed in this bulletin are not as important in her decision to remain in or enter an occupation as are her qualifications for and interest in the particular occupation. No matter what the demand-supply situation is, she will be unable to find employment if she lacks the minimum qualifications which in so many instances are prescribed by State law. On the other hand, if she possesses the basic requirements and the motivation, it is valuable for her to become informed on the probable amount and nature of the competition she will face in obtaining employment or entrance to a training center in the occupation of her choice. The greater the existing and immediately potential supply is in relation to the demand, the more urgent becomes her possession of better-than-the-minimum qualifications or unusual interest and drive.

Particularly in occupations in which women are a small minority is it important for a woman to have the confidence of being well-qualified. At the moment, qualifications are unusually low in all fields because of the effect of the tremendous wartime demand which outstripped supply so completely and rapidly. In a more normal period requirements are likely to be raised once more to the prewar levels or even beyond, since the long-time trend is toward higher standards. For this reason, in the separate bulletins in this series, the prewar as well as the wartime minimum requirements have been given for each of the occupations discussed.

On the whole, these occupations will continue to offer in the future, as they have in the past, satisfying opportunities for the employment of women in service vital to the National welfare as well as to the individuals served. These opportunities will increase as the problem of financing the overwhelming needs for additional service in this field are solved, as corresponding attention is given to the improvement of the earnings and working conditions of those employed, and as women are given that true equality of opportunity for preparation, employment, growth, and advancement which they enjoy now in many particular situations in this field, but not yet in all.

APPENDIX A

Sources to Which Reference Is Made in the Text

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(47) ——— ——— ——— Women Physicians. Washington, U. S. Government Printing Office, 1945. 28 pp. (Bulletin 203, No. 7.)

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APPENDIX B

Sources of Statistics Presented in Tables 2, 5, and 6

TABLE 2

Chiropractors: U. S. Census 1940. (34)

Dental Hygienists: Estimate is a compromise approved by the American Dental Hygienists' Association, between the 5,700 dental hygienists reported as licensed in 32 States and the District of Columbia in 1940. (*See* Illinois Dental Journal 10:352-354, September 1941) and the American Dental Association's estimate of 4,200 dental hygienists practicing in 1942. (*See* the American Dental Association's Regulation of the Practice of Dental Hygiene by Law. Mar. 6, 1942.)

Dentists: U .S. Census, 1940. (34)

Dentists' Assistants: U. S. Census 1940 statistics for attendants in physicians' and dentists' offices (34) separated according to 1930 Census ratio of attendants in dentists' offices to dentists as applied to 1940 Census figures for dentists. (43)

Medical Laboratory Technicians: Estimate of the Registry of Medical Technologists of the American Society of Clinical Pathologists. (39)

Medical Record Librarians: Hospital Statistics for 1941 as reported to the American Medical Association (13) allowing an 800 full-time equivalent for 1,000 part-time personnel. Estimate approved by American Association of Medical Record Librarians.

Occupational Therapists: Estimate of the American Occupational Therapy Association (41) supported by hospital statistics as reported to the American Medical Association. (13)

Osteopaths: U. S. Census 1940. (34)

Pharmacists: U. S. Census 1940. (34)

Physical Therapists: Estimate of the American Registry of Physical Therapy Technicians. (42)

Physicians: U. S. Census 1940. (34)

Physicians' Assistants: U. S. Census 1940 statistics on attendants in physicians' and dentists' offices separated according to 1930 Census ratio of attendants in physicians' offices to physicians as applied to 1940 Census figures for physicians. (43) Statistics on medical stenographers from hospital statistics as reported to the American Medical Association. (13)

Practical Nurses, Midwives, and Hospital Attendants: U. S. Census 1940. (34)

Professional Nurses: U. S. Census of 1940 figures for Trained and Student Nurses. (34) The estimate of the number of student nurses in 1940 is based on statistics on enrollments in schools of nursing obtained from the Nursing Information Bureau. (*See* Facts About Nursing. 1944)

Veterinarians: U. S. Census 1940. (34)
X-Ray Technicians: Based on a minimum estimate of the Executive Secretary of the American Registry of X-Ray Technicians. (48)

TABLE 5

For sources of 1940 (and 1941) data, see sources given in Table 2. Figures have been rounded to facilitate comparison.
Sources of 1944 estimates are as follows:

Dental Hygienists: Estimate of 7,000 total approved by the American Dental Hygienists' Association as given in Journal of American Dental Hygienists' Association 19:40, April 1945, and 500 deducted for those inactive though licensed.

Dentists: Rounded estimate of active dentists, 1944, based on mortality and retirement rate of 20 per 1,000. *See* Journal of the American Dental Association 31:1105. August 1944.

Dentists' Assistants: No estimate available.

Medical Laboratory Technicians: An increase of 5,000 over 1940 is indicated in hospital statistics as reported to the American Medical Association. (13) (14) Since no estimate is available on the increase of such technicians employed elsewhere but the general opinion is that they also have increased in number, the 1944 estimate is indicated as a minimum increase only.

Medical Record Librarians: Hospital statistics as reported to the American Medical Association, allowing an 80 percent full-time equivalent for the part-time personnel. (13) (14)

Occupational Therapists: Graduates of approved schools from 1941 through 1944 have been added to the prewar number. An additional 100 allows for estimated additions of those qualified through recognized experience minus the small attrition during the period. For number of graduates *see* (13) and (14) and the Journal of the American Medical Association 118: 1137, Mar. 28, 1942 *and* 121: 1087, Mar. 27, 1943. Estimate approved by the American Occupational Therapy Association.

Physical Therapists: Estimate represents prewar estimate plus graduates of approved training programs as reported to the American Medical Association. (References the same as for Occupational Therapists.) A liberal deduction of 300 has been made for withdrawals during the four-year period so the estimate is a minimum one.

Physicians: Estimate of the American Medical Association, Council on Medical Education and Hosptals at end of 1944 (Jan. 1, 1945) was 191,689 including some retired. *See* Journal of the American Medical Association 128:114, May 12, 1945. A deduction of 6 percent, the percentage difference between the American Medical Association's comparable figure for 1940 and the 1940 Census figures for employed physicians, has been made as an allowance for retired physicians in the American Medical Association's 1944 estimate.

Physicians' Assistants: No estimate available on attendants in physicians' offices. But for 1944, figures on medical stenographers in hospitals as reported to the American Medical Association are given. (13)

Practical Nurses: No estimate for 1944. The 1946 statement is from a letter from the President of the National Association for Practical Nurse Education.

Professional and Student Nurses: The estimate of graduate nurses is the rounded sum of the number of nurses in the armed forces at the end of 1944 plus the number of civilian nurses in January 1944 as estimated by the Procurement and Assignment Service (45) plus the number of nurses graduated in 1944. For the latter as well as the number of student nurses, *see* the Nursing Information Bureau's Facts about Nursing, 1944.

X-Ray Technicians: Estimate of the Executive Secretary of the American Registry of X-Ray Technicians. (38)

TABLE 6

Civil Service salaries obtained from U. S. Civil Service Commission. Sources of data for Columns 1 and 2 are as follows:

Dental Hygienists: Denison, Edward F. Incomes in Selected Professions. Part 5, Dentistry. Survey of Current Business 24:17-20, April 1944 *and* Woodhouse, Chase Going. Dental Careers, Opportunities in Dentistry and Dental Hygiene. New York, N. Y., Funk and Wagnalls Co., 1939. 201 pp. Chapter XI.

Dentists: Denison, Edward F. Incomes in Selected Professions. Part 5, Dentistry. Survey of Current Business 24:17-20, April 1944.

Dentists' Assistants: Denison, Edward F. Incomes in Selected Professions. Part 5, Dentistry, Survey of Current Business 24:17-20, April 1944.

Hospital Attendants: For average, *see* 20th Hospital Yearbook, 1942. Chicago, Ill., Modern Hospital Publishing Co., 1942. For range, *see* This Salary Situation as it Applies to the Small Hospitals. Modern Hospital 61:60-61, December 1943.

Medical Laboratory Technicians: For 1941 average, *see* 20th Hospital Yearbook, 1942. Range from unpublished study of the Registry of Medical Technologists of the American Society of Clinical Pathologists.

Medical Record Librarians: 20th Hospital Yearbook, 1942. p. 965.

Occupational Therapists: For 1941 average, *see* 20th Hospital Yearbook, 1942. p. 965. Range based on interviews with authorities in the field and approved by the American Occupational Therapy Association.

Physical Therapists: For average, *see* 20th Hospital Yearbook, 1942. pp. 965, 971. The range is an estimate based on interviews with authorities in the field and approved by the American Physiotherapy Association.

Physicians: Incomes in Selected Professions. U. S. Department of Commerce. Survey of Current Business 23:16-20, October 1943.

Physicians' Assistants: Attendants in Physicians' offices: The 1941 range is based on information obtained by the Women's Bureau directly from physicians' assistants and employment agencies.

Practical Nurses: Deming, Dorothy. Practical Nurses—A Professional Responsibility. American Journal of Nursing 44:36, January 1944.

Professional Nurses: Institutional: Nursing Information Bureau of the American Nurses' Association in cooperation with the National

League of Nursing Education and the National Organization of Public Health Nursing. Facts about Nursing, 1943. New York, the Bureau, 1943. pp. 51, 54. The median annual salary for 1942 was $981 plus full maintenance estimated at a total value of $1,481. *See* U. S. Senate, 78th Congress, 2d Session. Wartime Health and Education. Hearings before a Subcommittee on Education and Labor on S. Res. 74. Part 3, Washington, D. C. Jan. 25-29 and Feb. 9, 1944. Washington, U. S. Government Printing Office, 1944. p. 1416.

—— Private Practice: Denison, Edward F. Income of Private Duty Nurses, 1938-41. American Journal of Nursing 43: 655-657, July 1943; *and* Facts about Nursing, 1943. p. 54. (See Institutional above, for full reference.)

—— Public Health: Nursing Information Bureau of the American Nurses' Association in cooperation with the National League of Nursing Education and the National Organization of Public Health Nursing. Facts about Nursing, 1944. New York, the Association, 1944. pp. 72, 75.

X-Ray Technicians: For average, *see* 20th Hospital Yearbook, Chicago, Ill., Modern Hospital Publishing Co., 1942. pp. 965, 967. The range is an estimate for 1944, approved by the principal organizations with whom the manuscript was checked.

APPENDIX C

National Organizations and Federal Agencies from Which Source Material and Criticism on the Medical and Other Health Occupations was Obtained

American Association of Industrial Nurses, c/o Mrs. Gladys Dundore, 299 Madison Ave., New York 17, N. Y.

American Association of Medical Record Librarians, 18 East Division St., Chicago 10, Ill.

American Association of Medical Social Workers, 1129 Vermont Ave., N.W., Washington 5, D. C.

American Association of Nurse Anesthetists, 18 East Division St., Chicago 10, Ill.

American College of Dentists, c/o Dr. O. W. Brandhorst, Secretary, 4952 Maryland Ave., St. Louis, Mo.

American College of Radiology, 540 North Michigan Ave., Chicago 11, Ill.

American Dental Assistants Association, c/o Miss Aileen M. Ferguson, General Secretary, 709 Centre St., Jamaica Plain 30, Mass.

American Dental Association, 222 East Superior St., Chicago 11, Ill.

American Dental Hygienists' Association, c/o Miss A. Rebekah Fisk, Secretary, 1704 North Troy St., Apt. 824, Arlington, Va.

American Dietetic Association, 620 North Michigan Ave., Chicago 11, Ill.

American Hospital Association, 18 East Division St., Chicago 10, Ill.

American Medical Association, 535 North Dearborn St., Chicago 10, Ill.

American Medical Women's Association, Inc., 50 West 50th St., New York 20, N. Y.

American Nurses' Association, Inc., 1790 Broadway, New York 19, N. Y.

American Occupational Therapy Association, 33 West 42nd St., New York 18, N. Y.

American Osteopathic Association, 139 North Clark St., Chicago 2, Ill.
American Physiotherapy Association, 1790 Broadway, New York 19, N. Y.
American Psychiatric Association, 9 Rockefeller Plaza, New York 20, N. Y.
American Public Health Association, 1790 Broadway, New York 19, N. Y.
American Red Cross Nursing Service, 17th St. between D and E Sts., N.W., Washington, D. C.
American Registry of Physical Therapy Technicians, 30 North Michigan Ave., Chicago 2, Ill.
American Registry of X-Ray Technicians, 2900 East Minnehaha Parkway, Minneapolis 6, Minn.
American Society of Medical Technologists, c/o Miss Hermine Tate, Executive Secretary, Medical Center Bldg., Lafayette, La.
American Society of X-Ray Technicians, c/o Mrs. Genevieve J. Eilert, Secretary-Treasurer, 16 Fourteenth St., Fond du Lac, Wis.
American Veterinary Medical Association, 600 South Michigan Ave., Chicago 5, Ill.
Association of American Women Dentists, c/o Dr. Muriel K. Robinson, Secretary-Treasurer, 4906 Walnut St., Philadelphia, Pa.
Association of Collegiate Schools of Nursing, 2063 Adelbert Rd., Cleveland 6, Ohio.
Association of Women in Public Health, c/o Miss Sally Lucas Jean, Counselor, 460 West 24th St., New York, N. Y.
Baruch Committee on Physical Medicine, 597 Madison Ave., New York 22, N. Y.
Howard University, Washington 1, D. C.
National Association for Practical Nurse Education, 250 West 57th St., New York 19, N. Y.
National Association of Colored Graduate Nurses, Inc., 1790 Broadway, New York 19, N. Y.
National Chiropractic Association, Inc., National Bldg., Webster City, Iowa.
National Dental Association, c/o Dr. D. H. Turpin, President, 903 First Ave., South, Nashville, Tenn.
National League of Nursing Education, 1790 Broadway, New York 19, N. Y.
National Nursing Council, Inc., 1790 Broadway, New York 19, N. Y.
National Organization for Public Health Nursing, Inc., 1790 Broadway, New York 19, N. Y.
Osteopathic Women's National Association, c/o Dr. Angela McCreary, Secretary-Treasurer, 712 World-Herald Bldg., Omaha, Nebr.
Radiological Society of North America, c/o Dr. Donald S. Childs, Secretary-Treasurer, 607 Medical Arts Bldg., Syracuse 2, N. Y.
Registry of Medical Technologists of the American Society of Clinical Pathologists, c/o Mrs. Ruth Drummond, Registrar, Ball Memorial Hospital, Muncie, Ind.
Special Libraries Association, 31 East 10th St., New York 3, N. Y. Hospital and Nursing Librarians Group, c/o Miss Ruth M. Tews, Chairman, St. Paul Public Library, St. Paul 2, Minn.
U. S. Federal Security Agency, Social Security Board, Bureau of Research and Statistics, Washington 25, D. C.
U. S. Federal Security Agency, U. S. Office of Education, Vocational Division, Washington 25, D. C.

U. S. Federal Security Agency, U. S. Public Health Service, Washington 25, D. C.
U. S. Navy Department, Bureau of Medicine and Surgery, Washington 25, D. C.
U. S. Civil Service Commission, Washington 25, D. C.
U. S. Department of Labor, Children's Bureau, Division of Research in Child Development, Washington 25, D. C.
U. S. Department of Commerce, Bureau of the Census, Population Division, Washington 25, D. C.
U. S. Department of Labor, Bureau of Labor Statistics, Occupational Outlook Division, Washington 25, D. C.
U. S. Veterans' Administration, Washington 25, D. C.
U. S. War Department, Office of the Surgeon General, Washington 25, D. C.
U. S. War Manpower Commission; Procurement and Assignment Service, Washington 25, D. C.