

Research Preferences and Activities Of Public Health Service Officers

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PUBLIC HEALTH SERVICE professional personnel—commissioned officers and civil service—engage in four major types of health activities: research, clinical or medical care, administrative, and public health (for example, consultation on State health programs and developing disease control programs). Research activities are both basic and applied. They are performed in laboratory, field, or clinical situations and are concerned with such problems of health and disease as etiology, therapy, and control.

Achieving the best in-Service placement in the four areas of Service activity requires

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knowledge of employees' interests and training. In the research area, the need for readily available information on work preferences was recently highlighted by the staffing requirements of the newest research programs of the Public Health Service, those operating in the Clinical Research Center of the National Institutes of Health, in Bethesda, Md.

To meet this need among commissioned personnel, a questionnaire was designed to identify the officers interested in doing research and to determine their specific interests in defined areas of investigation. As an aid to administrators in making a quick initial screening of officers who might be assigned to research activities, the questionnaire also asked each officer to indicate his years of training and experience in research and other work areas. Background characteristics of those officers who, on the basis of questionnaire responses, appear adequately prepared for research positions could then be more completely evaluated from the records of training and experience contained in the personnel files of the Division of Commissioned Officers.

This report summarizes the salient findings from an analysis of the questionnaire responses, furnishing an overview of the research activity of the Public Health Service commissioned corps and identifying its research potential as indicated by expressed work preferences. The data may also be useful to individuals dealing with that phase of the Nation's manpower prob-

lems involving the identification and utilization of research personnel. Some attention is devoted to the methods for collecting and using the information in dealing with staffing problems since these methods could be extended to other organizations and other types of personnel activities.

Methods

The research interest questionnaires and instructions for their use were mailed in May 1952 to the 2,589 regular and reserve officers who were on active duty in the Public Health Service. Followup letters were sent a month later to officers who had not returned the forms. Of the questionnaires distributed, 2,278—88.0 percent—were included in the study; 298—11.5 percent—were not returned; and 13—0.5 percent—were returned too late to be included in the tabulations.

The questionnaire was of the self-coding type. It was designed so that it could be easily and quickly completed, would yield the complex information desired, and would furnish information that could be processed by machine tabulation methods.

Information from the questionnaires was disseminated to employers of officer research personnel in the Public Health Service through the compilation of three listings. The listings were arranged to answer the three major questions which these employers could be expected to ask: Who are the officers interested in doing research? On what disease or condition would each officer prefer to work? In what discipline or field is each officer most interested in working?

To answer the first question, officers were grouped according to their responses to the questionnaire—not interested in research, satisfied to do research, glad to do research, and preferring research to any other field. The second and third questions were answered by grouping officers according to their first research choices indicated from a list of 134 diseases or conditions and 197 disciplines or fields. Write-in first choices were listed separately. Within each of the 3 listings, officers' names were arranged first by profession, then by rank, and last, alphabetically within rank.

The prepared listings thus enable Service employers to locate rapidly individuals who might possibly fill research vacancies. By consulting the listing arranged by first choice of disease or condition, they can immediately locate the names of all officers in the Public Health Service who are interested in doing research on, for example, malignant neoplastic diseases. At the same time, they can see which officers have had sufficient training and experience to warrant further consideration by a review of their personnel files.

General Interest in Research

In considering the statistical results from the study, it is well to bear in mind that the data are based on officers' evaluations of their own training, research interests, and current activities. The generalizations which may be derived from an analysis of questionnaire responses could differ somewhat from those which might be made in other types of appraisals of current officer research potential and activities. Further, the current research interests reported by officers are not to be regarded as immutable. While it may be assumed that interests in broad occupational areas in the health field, such as medical care, public health, or research, will remain fairly constant, expressed specific interests may be influenced by such factors as an officer's present assignment or his estimation of future needs of the Public Health Service.

Where available, comparative percentages of other groups engaged in research are included in this report. Strict comparisons of the Public Health Service group with other groups cannot be made since conditions under which information was obtained were not necessarily the same and since Service officers could possibly constitute a part, though a small proportion, of some of the other groups. The comparative data, however, may be helpful in providing a frame of reference for the material in this report.

Research Potential

Summary data on officers' research interests and activities are presented in table 1. From this table, it may be seen that 27 percent of officers in the study report that they are cur-

rently engaged in research. Most of these, 24 percent of the total group, say that they are in research and like it. Only 3 percent of all the officers indicate that they are currently engaged in research and are not satisfied with their present type of assignment. Of the officers included in the study, 73 percent state that they are not in research assignments; 31 percent indicate that they are not in research assignments but would be satisfied or glad to do research. As measured in terms of expressed interest, this 31 percent represents the personnel research potential of the commissioned corps. If, then, new research vacancies occur, either because of expanding research activities

or because of transfer of officers in research to other activities, this group of 712 commissioned officers can be evaluated for research assignments.

The 42 percent who say they are not performing research and do not wish to do so may be eliminated from consideration for research activities. These officers are needed in the public health, medical care, and administrative functions in which they may be presumed to be interested.

Comparison of Categories

The categories with the highest proportion of officers reporting they are currently engaged in

Table 1. Officers' current¹ research activity and preference

Commissioned officer categories ²	Preferring research		Not preferring research		Total doing research	Total not doing research	Total preferring research	Total not preferring research	Total answering
	Doing	Not doing	Doing	Not doing					
Number									
Scientist.....	112	24	1	4	113	28	136	5	141
Veterinarian.....	13	3	0	6	13	9	16	6	22
Sanitarian.....	75	49	2	71	77	120	124	73	197
Medical.....	244	382	27	475	271	857	626	502	1, 128
Sanitary engineer.....	54	88	6	104	60	192	142	110	252
Nurse.....	24	77	9	104	33	181	101	113	214
Dental.....	20	55	8	125	28	180	75	133	208
Dietitian.....	1	9	3	28	4	37	10	31	41
Pharmacy.....	4	20	1	33	5	53	24	34	58
Therapy ³	0	5	1	11	1	16	5	12	17
Total.....	547	712	58	961	605	1, 673	1, 259	1, 019	2, 278
Percentage of category									Percentage of total
Scientist.....	79. 4	17. 0	0. 7	2. 8	80. 1	19. 9	96. 5	3. 5	
Veterinarian.....	59. 1	13. 6	0	27. 3	59. 1	40. 9	72. 7	27. 3	1. 0
Sanitarian.....	38. 1	24. 9	1. 0	36. 0	39. 1	60. 9	62. 9	37. 1	8. 6
Medical.....	21. 6	33. 9	2. 4	42. 1	24. 0	76. 0	55. 5	44. 5	49. 5
Sanitary engineer.....	21. 4	34. 9	2. 4	41. 3	23. 8	76. 2	56. 3	43. 7	11. 1
Nurse.....	11. 2	36. 0	4. 2	48. 6	15. 4	84. 6	47. 2	52. 8	9. 4
Dental.....	9. 6	26. 4	3. 8	60. 1	13. 5	86. 5	36. 0	63. 9	9. 1
Dietitian.....	2. 4	22. 0	7. 3	68. 3	9. 8	90. 2	24. 4	75. 6	1. 8
Pharmacy.....	6. 9	34. 5	1. 7	56. 9	8. 6	91. 4	41. 4	58. 6	2. 5
Therapy ³	0	29. 4	5. 9	64. 7	5. 9	94. 1	29. 4	70. 6	. 7
Percentage of total number answering.....	24. 0	31. 3	2. 6	42. 2	26. 6	73. 4	55. 3	44. 7	100. 0

¹ At time of completing the questionnaire.

² There are 10 major categories of commissioned officers in the Public Health Service; 2 categories, scientist and sanitarian, are each subdivided into a number of professions.

³ Physical and occupational.

research are the categories of scientist—80 percent, veterinarian—59 percent, and sanitarian—39 percent (see table 1). The scientist and sanitarian categories of the Service are composed of a number of scientific professions (1). Because of the small numbers of officers in each profession in these two categories, percentages engaged in research are based on all professions within each category.

Of the scientific professions represented in the scientist and sanitarian categories of the Public Health Service, data are available on the research activity in certain of these professions in this country (2-4). With respect to the members of these professions who have the doctorate, as is required of scientists in the Service, 55 percent of the chemists, 42 percent of the physicists, and 12 percent of the psychologists report that they are engaged in research. With regard to professional groups in this country who have the degrees required for the sanitarian category—in this category the master's degree is required for commissioning in the Regular Corps and the bachelor's for the Reserve Corps—the following data on percentages engaged in research are available (2-4): chemists with the master's degree—49 percent, with the bachelor's degree—41 percent; physicists with the master's—44 percent, with the bachelor's—61 percent; psychologists with the master's—12 percent. (Psychologists with the bachelor's degree are usually not eligible for research positions.) In all degree levels, 51 percent of chemists in government and 71 percent of physicists in government report that they are engaged in research.

The 59 percent of veterinarian officers reporting research activity suggests that the work of Service veterinarians differs from that of other groups of veterinarians. An estimated 7 percent of the veterinarians in the United States are engaged in teaching and research, exclusive of the approximate 1 percent who are doing research in the Federal Government and in commercial organizations.

Of Service officers engaged in research, the medical (24 percent) and sanitary engineer (24 percent) categories contain the inbetween percentages. Medical officers engage in all four types of Service activities—research, medical care, public health, and administrative. Sani-

tary engineer officers engage in all except medical care. Data are not available on the research activity of physicians in this country. A greater percentage of Public Health Service sanitary engineers, however, state they are doing research than do sanitary engineers in general. Only 2 percent of the sanitary engineers in this country report that they are engaged in research (5).

Authoritative estimates are available on the percentages of all engineers and scientists combined who are engaged in research in this country. About 25 percent of engineers and scientists were in research in 1952, and about 35 percent of engineers and scientists in the Federal Government were engaged in research in 1951 (6). Keeping in mind the previously mentioned reservations concerning comparisons of Service and other groups, one may note that 42 percent of Service officers in the combined scientist, sanitarian, and sanitary engineer categories are engaged in research.

It is easy to understand why relatively small proportions of nurse (15 percent), dental (14 percent), dietitian (10 percent), pharmacy (9 percent), and therapy (6 percent) officers are engaged in research in the Public Health Service. Officers in these professions are usually employed for medical care, public health, and administrative assignments. Informed estimates are available on the percentages of some of these professions that are engaged in research in the United States. Presumably, these indicate that a higher proportion of Service officers in these professions engage in research than do members of these professions in general. Nurse researchers are as yet few in number. Approximately 1.5 percent of the members of the American Dietetic Association are doing full-time research. About 4 percent of the members of the American Pharmaceutical Association are actually engaged in research, and an estimated additional 1 percent are engaged in teaching and research.

Considering officers' preferences for research, it may be seen that the order of the percentages of officers within each category preferring research closely parallels that of the percentages within each category doing research (see table 1). There are large differences between categories in the proportion of officers preferring

research. As is to be expected, scientist officers are the most research-minded group: 97 percent prefer research. Next in order are the veterinarian, sanitarian, sanitary engineer, and medical officers.

Preferred Areas of Research

The specific areas in which research-interested officers would like to work were determined by asking officers to indicate their preferences for various kinds of research operation, such as laboratory or clinical, and for various disciplines or fields of study. Preferred areas of research are summarized in table 2 in which the 197 disciplines originally listed for use with the questionnaire have been grouped in 8 general fields.

Of the total number of officers interested in performing research, most show preference for these types of research operation: clinical in-

vestigation (20 percent), combined laboratory-clinical (16 percent), laboratory (16 percent), laboratory-field (12 percent), and field (12 percent). Relatively little interest is shown in such types of research as the combined field-clinical (6 percent), administrative (5 percent), and statistical surveys and analyses (2 percent).

The highest preferences by discipline are in the medical (43 percent), biological-medical (15 percent), engineering-sanitation (14 percent), and biological (12 percent) fields. The pattern of discipline preferences fits fairly closely that of preferences for operational areas. This is to be expected since many disciplines tend to fall into specific operational areas. As examples, research in the medical field is likely to be in a clinical area of operation, and biological-medical research is likely to be in a combined laboratory-clinical area.

Table 2. Commissioned officers (1,259) preferring¹ to do research in various operational areas and in various disciplines

Research preference	Total group		Doing research		Not doing research	
	Number	Percent	Number	Percent	Number	Percent
<i>Operational area</i>						
Clinical.....	248	19.7	43	7.9	205	² 28.8
Laboratory-clinical.....	207	16.4	81	14.8	126	17.7
Laboratory.....	204	16.2	175	32.0	29	² 4.1
Laboratory-field.....	154	12.2	83	15.2	71	² 10.0
Field.....	147	11.7	52	9.5	95	³ 13.3
Research-administration.....	112	8.9	52	9.5	60	8.4
Field-clinical.....	69	5.5	15	2.7	54	² 7.6
Administrative.....	66	5.2	31	5.7	35	4.9
Statistical surveys.....	22	1.8	6	1.1	16	2.2
Not stated.....	30	2.4	9	1.6	21	3.0
Total.....	1,259	100.0	547	100.0	712	100.0
<i>Discipline or field</i>						
Medical.....	544	43.2	155	28.3	389	² 54.6
Biological-medical.....	192	15.2	101	18.5	91	³ 12.8
Engineering-sanitation.....	179	14.2	70	12.8	109	15.3
Biological.....	149	11.8	101	18.5	48	² 6.7
Chemical.....	76	6.0	69	12.6	7	² 1.0
Physical.....	27	2.1	14	2.6	13	1.8
Social.....	19	1.5	9	1.6	10	1.4
Mathematical-statistical.....	5	.4	5	.9	0	0
Other.....	44	3.5	16	2.9	28	3.9
Not stated.....	24	1.9	7	1.3	17	2.4
Total.....	1,259	100.0	547	100.0	712	100.0

¹ First choice.

² Differences between those doing and not doing research are significant at the 1-percent level.

³ Differences between those doing and not doing research are significant at the 5-percent level.

Preferences of the research-interested officers who state that they are currently engaged in research are different from those of officers who are not in research. In areas of research operation, the former group definitely prefers laboratory research (32 percent), a combination of laboratory and field (15 percent), and laboratory and clinical combined (15 percent). Officers not doing research lean toward clinical investigations (29 percent). Combined laboratory-clinical (18 percent), field (13 percent), and combined laboratory-field (10 percent) are next in order of preference (see table 2).

In the discipline choices, research-interested officers not in research are significantly more interested in the medical field (55 percent) than are the officers doing and preferring research (28 percent). Significantly more of the latter group, those who perform and prefer research, however, show interest in the biological-medical, biological, and chemical fields. Preferences for the engineering-sanitation and remaining fields are fairly close for the two groups.

Preference differences of officers reporting that they are currently in research and those not in research may be partly accounted for by the fact that proportionately more scientist, sanitarian, and veterinarian officers who prefer research are engaged in it than are medical officers who prefer research. By reference again to table 1, one may see that of the 547 officers preferring and doing research, 200 (37 percent) are in the scientist, veterinarian, and sanitarian categories, and 244 (45 percent) are in the medical category. By contrast, of 712 officers preferring but not doing research, only 76 (11 percent) are in the first 3 categories, while 382 (54 percent) are in the medical category. It is not surprising, then, that a higher percentage of officers who are interested in research but are currently not engaged in this activity would like to work in the medical or clinical areas than would officers interested in and now doing research.

The preferences in disciplines and areas of research operation expressed by the total group of research-interested officers reflect to some extent the professional composition of the Public Health Service. If it is presumed that the

professional structure within the Service has developed from the activities and needs of the Service, then it is not surprising that the expressed preferences of the group studied fit well the present and anticipated work of the organization. In the past, laboratory, combined laboratory-field, and laboratory-clinical types of studies have tended to receive emphasis. With the opening of the Clinical Research Center in July 1953, an increase in the clinical type of investigation and more opportunity for integrated laboratory-clinical work can be expected.

Preferred Research Problems

One part of the questionnaire asked officers interested in research to describe in narrative form the kind of research problem on which they would like to work. These descriptions are available to Service employers of research personnel. In addition, more general information on preferred research problems was obtained from the choices that the officers indicated for diseases or conditions on which they would like to do research. The disease research preferences for those officers expressing interest in doing research are shown in table 3. For the table, the list of 134 diseases or conditions used with the questionnaire has been divided into 19 general groups based on a modification of a standard classificatory system (7).

A comparison of the preferences indicates that proportionately more officers not doing research than those in research prefer to work on problems dealing with psychological disorders, diseases or conditions of the respiratory system, and organs of special sense. A greater proportion of those indicating that they are in research than of those not in research would like to investigate infections by lower organisms, infections by higher plants or animal parasites, and disorders of metabolism, growth, or nutrition. Generally, however, there is good agreement between the disease work preferences of the two groups of officers.

The 1,259 officers interested in research prefer to work on the following diseases or conditions as classified in table 3: vectorborne diseases (13 percent), infection by lower organism (11 percent), psychological disorders (9 percent), car-

Table 3. Commissioned officers (1,259) preferring¹ to do research on various diseases and conditions

Diseases or conditions ²	Total group		Doing research		Not doing research	
	Number	Percent	Number	Percent	Number	Percent
Vectorborne diseases, general.....	165	13.1	80	14.6	85	11.9
Infection by lower organism ³	136	10.8	76	13.9	60	⁴ 8.4
Psychological disorders.....	108	8.6	23	4.2	85	⁴ 11.9
Cardiovascular system.....	107	8.5	37	6.8	70	9.8
New growths ³	104	8.3	45	8.2	59	8.3
Digestive system.....	100	7.9	39	7.1	61	8.6
Diseases of body as a whole, general ³	73	5.8	38	7.0	35	4.9
Disorder of metabolism, growth or nutrition ³	62	4.9	36	6.6	26	⁵ 3.7
Due to trauma or physical agent ³	44	3.5	17	3.1	27	3.8
Nervous system.....	38	3.0	20	3.7	18	2.5
Infection by higher plant or animal parasite ³	37	2.9	23	4.2	14	⁵ 2.0
Musculoskeletal system.....	25	2.0	9	1.6	16	2.2
Hemic and lymphatic system.....	22	1.7	10	1.8	12	1.7
Respiratory system.....	19	1.5	4	.7	15	⁵ 2.1
Endocrine system.....	19	1.5	9	1.6	10	1.4
Urinogenital system.....	11	.9	5	.9	6	.8
Due to intoxication ³	12	.9	8	1.5	4	.6
Organs of special sense.....	8	.6	1	.2	7	1.0
Animal diseases.....	1	.1	0	0	1	.1
Other ⁶	73	5.8	37	6.8	36	5.1
Not stated.....	95	7.5	30	5.5	65	9.1
Total.....	1,259	100.0	547	100.0	712	100.0

¹ First choice.

² Where not mentioned, the words "diseases or conditions of" may be understood, for example, "Cardiovascular system, diseases or conditions of."

³ Classified under "Diseases of the body as a whole," but considered separately here.

⁴ Difference between those doing and not doing research is significant at the 1-percent level.

⁵ Difference between those doing and not doing research is significant at the 5-percent level.

⁶ Diseases or conditions not in list but written in as first choice.

diocvascular system (9 percent), new growths (8 percent), and the digestive system (8 percent). These preferences coincide to a considerable degree with the various kinds of research in which the Public Health Service is engaged, as for example, studies of vectorborne diseases and infections by lower organisms at the National Microbiological Institute, Rocky Mountain Laboratory, Communicable Disease Center, and Environmental Health Center; psychological disorders at the National Institute of Mental Health; diseases of the cardiovascular system at the National Heart Institute; new growths at the National Cancer Institute; and diseases and conditions of the digestive system at the National Institute of Arthritis and Metabolic Diseases. Officer preferences for research on psychological disorders, cardiovascular diseases, and new growths also fit well the anticipated work of the new Clinical Research Center.

Training and Experience

The questions on training and experience were designed not to duplicate personnel records but to make information relevant to the screening of research officers easily available. The information supplied by officers interested in doing research is summarized in table 4. These officers were grouped into areas according to the functions in which they had advanced training and professional experience regardless of their professions or occupations. Since each officer could indicate training or experience in more than one area, the percentages given are the percentages of all officers marking that area.

More than half (56 percent) of the officers interested in and doing research reported advanced or specialized training in the research area, while only 18 percent of those interested in but not doing research stated they had such

Table 4. Advanced or specialized training and professional experience of 1,259 commissioned officers interested in doing research

Functional area	Total group (1,259 officers)				Doing research (547 officers)				Not doing research (712 officers)			
	1 year or more		None		1 year or more		None		1 year or more		None	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
<i>Training</i>												
Research.....	436	34.6	823	65.4	305	55.8	242	44.2	131	¹ 18.4	581	81.6
Public health.....	266	21.1	993	78.9	100	18.3	447	81.7	166	² 23.3	546	76.7
Clinical.....	206	16.4	1,053	83.6	88	16.1	459	83.9	118	16.6	594	83.4
Administration.....	63	5.0	1,196	95.0	24	4.4	523	95.6	39	5.5	673	94.5
Statistics ³	43	3.4	1,216	96.6	25	4.6	522	95.4	18	² 2.5	694	97.5
<i>Experience</i>												
Research.....	700	55.6	559	44.4	478	87.4	69	12.6	222	¹ 31.2	490	68.8
Clinical.....	675	53.6	584	46.4	240	43.9	307	56.1	435	¹ 61.1	277	38.9
Public health.....	495	39.3	764	60.7	185	33.8	362	66.2	310	¹ 43.5	402	56.5
Administration.....	417	33.1	842	66.9	163	29.8	384	70.2	254	² 35.7	458	64.3

¹ Difference between officers doing and not doing research is significant at the 1-percent level.

² Difference between officers doing and not doing research is significant at the 5-percent level.

³ Statistics is a method used by many officers, but it is the major functional area of only a few commissioned officers in the Public Health Service; therefore, it is included under training but not under experience.

training. A sizable portion (44 percent) of officers interested in, and currently engaged in, research indicate no advanced training in research. These officers, however, have had to satisfy the basic academic and professional training requirements of their profession, such as the doctorates in medicine, dentistry, and veterinary medicine, in order to be eligible for the commissioned corps. While such training does not necessarily equip these officers for research, proficiency in research may be gained in positions offering adequate opportunities and supervision. Although not shown in table 4, it is noteworthy that 44 percent of research-interested officers engaged in research have advanced degrees beyond those required for commissioning while 29 percent of those not in research have such degrees. The percentage difference is significant at the 1 percent level.

The total group of officers expressing interest in research have obtained most of their advanced training in three areas: research (35 percent), public health (21 percent), and clinical medicine (16 percent). These officers lack advanced or specialized academic training in administration (5 percent) and statistics (3

percent). It is likely that many of them have received some training in statistics but did not consider it advanced or specialized. It is doubtful, however, that many have had much advanced academic training in administration.

That research experience is also an important differential factor in the background of those officers performing research may be seen from studying table 4. Of the officers expressing interest in research, a markedly higher proportion of officers engaged in research than of those not in research have had 1 or more years of research experience inside or outside the Service—87 percent as contrasted with 31 percent. Those research-interested officers who indicate that they are not in research have a higher proportion of clinical experience (61 percent) than do those in research (44 percent). The group interested in but not doing research also has higher percentages of officers with public health experience and administrative experience.

Summary

The foregoing demonstrates the feasibility of determining the research and other interests and qualifications of an organization's person-

nel by questionnaire and statistical methods. It describes how such information may be made conveniently available to those who utilize research personnel.

Public Health Service officers are a research-minded group. The numbers discovered who report that they are interested in, but are not doing research, now constitute a known research personnel potential of the commissioned corps.

Regardless of their present assignment, officers interested in research prefer clinical, laboratory-clinical, and laboratory types of investigations in medical, biological-medical, engineering-sanitation, and biological fields. They are interested in doing research on a number of different diseases or conditions and show the greatest preference for research on vectorborne diseases (general), infections by lower organisms, psychological disorders, diseases of the cardiovascular system, and new growths.

It is of significance that officers who are interested in research activities, and who are already in the research field, have had more advanced or special training in research, more degrees beyond those required for commissioning in the commissioned officer corps, and more research experience than officers who are interested in, but are not engaged in, research.

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Public Health Service Advisory Councils

Dr. Howard A. Rusk, chairman of the Department of Physical Medicine and Rehabilitation, New York University College of Medicine, has been appointed a member of the National Advisory Arthritis and Metabolic Diseases Council. The Council's recommendations are the basis for Public Health Service research grants in arthritis and metabolic diseases. Dr. Rusk, internationally known for his work in the field of rehabilitation, and for medical articles,

includes among his activities the chairmanship of the Health Resources Advisory Committee of the Office of Defense Mobilization and the chairmanship of the National Advisory Committee to the Selective Service System. Since 1946, he has been an associate editor of the New York Times. In 1952, he received the Lasker Award of the American Public Health Association, and in 1953, the Dr. C. C. Criss Award for his work in rehabilitation.