Comments and Communications

Biologists in Military Service

The recent article by Wigodsky (*Science,* 1949, **110,** 135) is a challenge calling for study and action. He charges that the military services are dealing inadequately with "the problem of science" and that organized science is insufficiently interested in the actions of the military services—"With the exception of certain of the civilians on the Research and Development Board, . . . none of the top rank positions within the three armed services is held by an outstanding scientist."

Wigodsky does not clearly restrict his discussion to scientists in uniform. His quotations from *Scientists in Uniform, World War II,* a booklet published by the Army, imply such a restriction, but on the other hand he emphasizes the role played by civilians holding appointments on the RDB. Since scientific societies have not advocated that all scientists in the armed forces be in uniform, it will be assumed that Wigodsky has an open mind on that subject.

I do not speak officially for the Department of Defense, the Department of the Army, or the Chemical Corps. My views are my own, based on experience as a biological scientist working for eight of the past nine years in and out of uniform for the armed forces, including the Air Force, the Quartermaster Corps, and the Chemical Corps. As a councillor of the American Physiological Society for the past three and a half years I have participated in many discussions of the position of scientists in government laboratories.

The example of the Medical Division, Army Chemical Corps, can be cited as evidence that the problem of scientists and the armed forces can be solved in peacetime. The senior scientists in the Medical Division during the war were on leave from their civilian posts, at considerable inconvenience and often financial sacrifice. They conceived it their duty to serve as officers in this research laboratory. Once the war was over, there was a quick exodus; there was a general feeling that their own interests and the country's peacetime interests would be served best by their return to prewar posts.

At this stage the wisdom of the chief of the Medical Division, Col. John R. Wood, M.C., was demonstrated. Col. Wood had been selected by the Army Medical Department for assignment to this position in the Chemical Corps. He foresaw the impossibility of staffing a research laboratory in the postwar era with scientists in uniform. He drew up an organizational chart with three research branches and an administrative branch. The former branches and the constituent sections were to be headed by civil service appointees; the latter branch by an officer. About seven-eighths of all the positions were civilian. The other places were to be filled by regular and reserve officers, most of whom were to be trained for a research career. This plan was approved by all concerned; steps were then taken to implement it. The three principal steps were to appoint recognized biologists to responsible positions, to insure maximum stability, and to provide for the training of officers. Progress was slow but encouraging; now that the goal established in 1945 has been achieved, it is time to take stock. Evidence that the first step succeeded is seen in the recognition given to the senior staff. Seventeen of them hold membership in one or more of six societies that form the Federation of American Societies for Experimental Biology.

There are many facets to building a research organization having stability and high morale. Evidence of both is found in the rate of turnover. For the Medical Division as a whole there were thirty separations for all causes during the year ending June 30, 1949. This is about 15% of the present staff. Only two of the senior biologists left, one to industry and one to a university, both having had offers which could not be met. One of the major requirements is that research workers be enabled to carry on independent research that can be published. The Chemical Corps is on record (*Symposium on military physiology.* The National Military Establishment, Res. and Dev. Board, Digest Series No. 4, 1947. GE 61/1, pp. 9–10.) as follows:

> Competent scientists are wedded to fundamental research, and fundamental research is vital to the success of a research and development organization.
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> Our scientists of Ph.D. caliber are encouraged to undertake original independent research within the broad field of Chemical Corps responsibilities. They are not placed under the onus of producing within six months or a year applicable results from such research. It is assumed that this policy will bear fruit in the form of fundamental discoveries of great importance to science; it is hoped and believed that some of these discoveries eventually can be applied by our engineers. In any case, it is certain that these scientists will grow in stature and will be strengthened in their loyalty to the Chemical Corps by this policy.

Evidence that opportunities for research exist in the Medical Division and among contractors is found in the record of work published. During the year ending June 30, 1949, the Medical Division staff published 54 papers, while university investigators supported by the Medical Division published 37 papers.

Stability in a research organization requires opportunity for professional advancement. This includes not only freedom to publish but also interchange of ideas with leaders in research. Such an interchange is provided by having distinguished scientists lead weekly seminar discussions, by occasional visits from consultants who are eminent in the various medical sciences, by visits to research institutions, by encouraging attendance at scientific meetings, and by an organized graduate training program. It is hoped to pay the expenses of each scientist to one meeting per year if he has a paper to present. Graduate training leading to degrees is provided through a contractual arrangement with the University of Maryland. Courses in many of the medical sciences are given at Medical Division, and opportunities are offered for research. Instructors are chiefly scien-

tists on the Medical Division staff who are given appointments on the faculty of the University of Maryland for this purpose. Those who participate are allowed by civil service regulations to spend one-tenth of the 40-hour week taking such courses. Our laboratories are opened after hours where needed.

The relation between the military and the civilian appeared to be of major concern to some of the respondents reported in *Scientists in Uniform*. No serious problem of this nature has arisen in the Medical Division. This is due in part to the characteristics of the people involved; it is also due to the fact that, with few exceptions, officers and civilians have different functions and are not competitive. At any rate, our experience proves that the relations between officers and civilians can be harmonious in a research laboratory of the armed forces.

Training of officers. There are now 34 officers in the Medical Division, the majority of whom belong to the Chemical Corps. All have had some interest and qualifications in the biological or allied sciences. None are kept on except those who demonstrate professional ability. An officer trained in this way for two or three years is not necessarily lost to the Medical Division. If he proves gifted in research, he may return for subsequent tours of duty. If war comes again and necessitates an increase in staff, he may be brought back as an officer or a civilian, whichever seems appropriate. Chemical Corps officers trained here may well reach positions of authority in another ten years.

These steps have not been taken easily. There are minor sources of irritation which rankle with some and are taken in stride by others. Regular fixed hours of work are anathema in academic circles, but seem unavoidable in civil service. The formality of making a new appointment is matched only by the difficulty of uprooting an unsatisfactory "permanent" employee. "Clearance" has been slow and has involved procedures abhorrent to scientists.[1] It is only fair to say, however, that in no instance during the past year has any employee, prospective or on the job, been lost because of clearance troubles. Usually an interim clearance can be obtained.

In peace or war, there seems to me to be no essential difference between the scientist in uniform and the same scientist employed as a civil servant. In wartime laboratories scientists in and out of uniform worked side by side. Early in the war there were administrative difficulties when civilian scientists went to theaters of operation; these were partly removed when a uniform and "simulated" rank were authorized. It is true that 80% of the biologists covered by *Scientists in Uniform* thought that better methods of assignment and of supervision were needed. This does not imply that 80% were dissatisfied; actually 45% of the 2,830 reporting were utilized in their own or in collateral fields. Perhaps the basic error was made in putting so many biologists in uniform. Three pertinent questions should be resolved before another war comes: How many biologists are needed in the armed forces? How many of them should be in uniform? How can the others be persuaded to remain in their own laboratories?

Wigodsky urges that the relation of scientists to the armed forces be studied by a committee of biologists. This recommendation, insofar as it concerns physiologists, was considered by the Council of the American Physiological Society at its recent Augusta meeting. The council concluded that the American Institute of Biological Sciences (of which the Physiological Society is a member) is best qualified to deal with the matter. Furthermore, it was considered that the area covered should be greater, and it was recommended: "That the scope of the Institute's Committee Advisory to the Armed Forces be extended and broadened to include the utilization of all biologists in Government services." This committee, which represents a large number of professional biologists and which is also under the wing of the National Research Council, should be competent to deal with Wigodsky's questions as well as subsidiary questions raised above.

If such action is taken by the AIBS, a logical question will be: How many biologists are there in government service? While no complete answer can be given to this question, the directory of the Federation of American Societies for Experimental Biology (*Fed. Proc.*, 1949, **7, 8,** 667) lists the affiliations of members of its component six societies. This directory shows 43 members in the Department of Agriculture, 14 in the Atomic Energy Commission, 3 in the Civil Aeronautics Authority, 13 in the Air Force, 53 in the Army, 11 in the Navy, 18 in the Food and Drug Administration, 65 in the National Institutes of Health, 11 in other departments of the Federal Security Agency, and 17 in the Veterans Administration—a total of 248. This is a fair approximation of the distribution of senior biologists (in the six fields concerned) in federal service. Many large groups of biologists are not in the federation; e.g., bacteriologists, geneticists, plant physiologists, zoologists, and entomologists.

It is hoped that this AIBS committee will consider means for strengthening the bonds between scientists in and out of government laboratories, without regard to the question of uniform. For example, can these bonds be strengthened by relying on the government's scientists for advice in placing research contracts? This has proved a fruitful arrangement; contracts are entered into only after consultation between Medical Division scientists best qualified in the field and the university scientists who are to conduct the research. This arrangement is designed not to interfere in any way with the conduct of the university scientist's research program. Rather, it provides mutually valuable opportunities for exchange of visits and ideas.

DAVID B. DILL

Medical Division,
Army Chemical Center, Maryland

[1] This subject has been dealt with admirably by Lee A. DuBridge in the *Atlantic Monthly*, October, 1949.