Letters

Why Not "Get Lost?"

Under the caption, "The lost legion," the editorial of the issue of 3 October [*Science* **128**, 747 (1958)] mourns the effects of team replacement of individually directed effort in current research—(i) loss of contribution to published research results, (ii) loss of scientific freedom under the supervision of an administrator, (iii) loss of identification with specific accomplishment, and (iv) loss of recognition as a productive scientist—this by way of warning the young scientist to be wary of the conditions of his employment if he enters an industrial laboratory. The advantages of the industrial-team situation, "financial and otherwise," deserve closer examination.

"Of the making of many books there is no end." The sheer volume of published reports of bits-and-pieces "research findings," sometimes in multiple audience orientations, has become burdensome to the individual scientist or, in the team approach, to the reference librarian and the bibliographer. (Editorial evaluation of the scientific merit of the manuscripts with any degree of selectivity must be a nightmare!)

Not every young scientist is endowed with the genius, or has attained the breadth of outlook, the maturity in scientific discipline, and the self-discipline, to exercise freedom of research constructively, either for his own progress or for the expansion of scientific frontiers. To the immature scientist, the research administrator may seem a tyrannous instrument of management control, but in most instances, viewed more objectively, he is likely to be mentor, counselor, and friend, seeking to develop and nurture whatever aptitudes are present. This is as much a part of his "management" function as is the expeditious completion of specific projects or programs. The young scientist seeking employment in a research program, whether industrial, governmental, or institutional, should be concerned with both the scientific and managerial quality of the supervision he will receive.

The privilege of publishing and being identified with piddling, fortuitously planned, or uncritically guided and reviewed research is not one that would be highly prized by a young man with serious intentions toward a scientific career.

The notion that the published record of his research is the only acceptable, or even the best, evidence of his productivity as a scientist can be considered an undeserved slur on the perspicacity of senior scientists, research directors, and deans. A competent employment officer for a scientific facility will make a more thorough evaluation of an applicant's qualifications than is possible by mere inspection of his list of publications. An inordinately long list may invite more careful scrutiny of the scientific quality of the publications listed. On the other hand, a record of satisfactory participation in the work of an agency recognized for the quality of its output—supported by appropriate inquiries concerning the scope and nature of the individual's contribution to projects in which he has participated, his growth, and his ability to work harmoniously and constructively with associates—is likely to weigh heavily in making the employment decision. (The harmonious-relations item assumes that the value system of the man in the laboratory coat differs from that of the "man in the gray flannel suit.")

When major advances and "breakthroughs" in science are more and more based on intelligently directed efforts of teams comprising widely assorted varieties of scientists, technologists, and technicians, it may be better for the young scientist to "get lost" in the anonymity of such team efforts, with the prospect of emerging to recognition and identification with significant effort at a later, more mature, stage, rather than to be lost through isolation.

EUGENE D. CARSTATER
Bureau of Naval Personnel,
U.S. Department of the Navy,
Washington, D.C.

Young men entering upon their careers can draw their own conclusions as to whether they desire anonymity along with opportunities to do research. Will they knowingly enter laboratories where the "get lost" philosophy prevails? I think not. I believe they have the right to know the philosophy underlying the personnel policies of their employers. They should be encouraged to ask questions before accepting employment. That was the thesis of "The lost legion."

In regard to publication of research results, it is debatable whether there are too many books or scientific articles. That is not a question for research directors to decide. One may take the position that research is not completed until results are made available to other workers in the field. Carstater, I fear, is unduly concerned with the "burdensome" tasks of reference librarians, bibliographers, and editors. Let each attend to his own knitting. Release of research results may properly be delayed because of patent applications or for security reasons. Ultimately, I believe, research results should be in the public domain as known "contributions to the sum total of human knowledge." In passing, we should recognize that an employer runs certain risks when a member of his organization releases a report. A competitor may offer him a job at a higher salary or profit by his discovery. If the work of a scientist is not publicized, such dangers are minimized.

(*Continued on page 218*)

(*Continued from page 174*)

I agree with Carstater that the young scientist "should be concerned with both the scientific and managerial quality of the supervision he will receive." These are important considerations. A record of publication constitutes one type of evidence as to the caliber of the scientific output of a laboratory. The "managerial quality of supervision" is extremely difficult to evaluate unless one is personally involved in an organization.

I do not know what Carstater means by "the privilege of publishing." Publication is not a favor to be conferred upon good behavior. In my opinion, in discussing the publication of a research paper, the word *privilege* should be taboo. It is legitimate to ask a research director, "What is the policy of your organization regarding the publication of research results?" One should be guided by one's own ideals after an answer to that question is obtained. Verbal answers, no matter how sincere, may not be known to administrators who later may direct a man's work. Unless reduced to writing, "policy" can become a meaningless thing.

Carstater is ungracious in stating that "an undeserved slur on the perspicacity of senior scientists, research directors, and deans" was intended or implied in the thesis of "The lost legion" editorial. Selection, at best, is a difficult task. All evidence, even if remotely related to the problem, should be available for consideration before an appointment is made. A record of published research constitutes evidence. It should be used in conjunction with, and not as a substitute for, verbal reports on behavior, attitudes, and record searches. The published record of research most certainly would not constitute "the only acceptable, or even the best, evidence of his productivity as a scientist." But it would be an important item for consideration.

I am slightly amused by but very tolerant of Carstater's "father knows best" point of view. He refers to "the immature scientist" and the scientist at a "more mature stage." There may be organizations where the research administrator "is likely to be mentor, counselor, and friend, seeking to develop and nurture whatever aptitudes are present." It would be interesting to conduct attitude surveys to check this hypothesis.

RICHARD S. UHRBROCK
College of Arts and Sciences,
Ohio University, Athens

Skin Diving in Rocket Ships

A person in a tank of water is able to withstand relatively great accelerations without damage or malfunction (even more than in a pilot's "G suit"). This could possibly be expected from the report on weightlessness by H. J. Muller [*Science* **128**, 772 (1958)].

Experiments demonstrating this were described to me by Carter Collins, about the time of the publication of my report "Some principles of self-contained underwater breathing apparatus" [*Science* **128**, 1001 (1958)]. Collins noted that an air-pressure regulator which is wrongly positioned with respect to the body is dangerous in high-acceleration situations because the density of the material separating the lungs and the regulator is effectively increased proportional to the acceleration, and thus the lungs are not necessarily supplied with air at the pressure surrounding them. The weight-compensated regulator described in my report effectively puts the regulator within the lungs, and it retains this ability under the action of most commonly experienced acceleration forces, whether compensation is by a weight or by a float. In a centrifugal field, if the center of rotation is near the person, departures from exact compensation can exist. Under changes in gravity, compensation in all positions can remain perfect. Compensation with a spring does not give these effects.

In this connection, it is relevant to