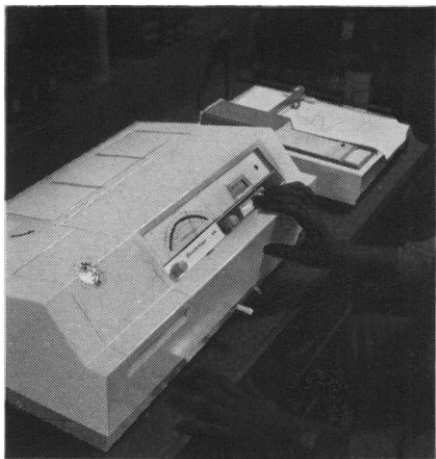


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Letters

Science and the Welfare of Mankind

I am more encouraged than I have been in years about the state of the world and its prospects for the future by the report of the AAAS Committee on Science in the Promotion of Human Welfare [*Science* 132, 68 (8 July 1960)]. This report offers the first prospect I have seen of achieving a source of dispassionately accurate, reliable, and undistorted information on the new environmental factors of our age which are subtly but vitally affecting the course of human life throughout the world.

This country, a leader both in scientific achievement and in moral heritage, has a responsibility to humanity to understand and to state clearly to all men the facts about the reactions on human beings of the changes technology is making in our environment. Unfortunately, in many areas, this country's private industrial and merchandizing interests have seen fit to obscure or distort many of these facts. Government appears to be either unwilling or unable to make major contributions to public enlightenment.

Until I saw the report of the AAAS committee, the situation seemed pretty hopeless. Those who speak out are lone voices in the wilderness, and "authorities" are available on both sides of every issue. Nowhere can one find a source of information on the truly vital issues of our age which can be viewed as impartial, scientifically sound, and interested only in the ultimate welfare of humanity.

The special committees recommended by the Committee on Science in the Promotion of Human Welfare should provide such a source of information. I wish, therefore, to urge the AAAS to give the highest possible priority to implementation of the committee's recommendations. The accumulation and dissemination of this information is, in my view, the most important single project currently proposed by any organization in the United States. It is a project the ultimate value of which to the welfare of mankind is utterly incalculable. It should be undertaken immediately and pressed with the utmost vigor consistent with scientific accuracy.

VERNON M. ROOT

*Applied Physics Laboratory,
Johns Hopkins University,
Silver Spring, Maryland*

I have read with great interest the report of the AAAS Committee on Science in the Promotion of Human Welfare, and I find it singularly objective in tone and very much to the point in

content. At a time when so much is being said and written on the political responsibilities of scientists from the adolescent angle of a Calamity Jane, it is most refreshing indeed to read a report on the same subject which is mature in its approach.

As the committee asks for recommendations from colleagues regarding "questions of immediate importance" for further study and discussion, may I suggest that to the six listed there be added the following: The relationship of science to the other aspects of human culture. For example, what is the relation of science to philosophy, to art, to religion? The problem of their interrelations is doubtless implicit in the whole report, but I think the problem itself deserves special attention. In any case, as I see it from a philosophical standpoint, we can hardly expect to achieve the goal of reducing the growing gap in our culture between the sciences and the humanities without a serious consideration of their similarities and differences. The attainment of such a goal will require, of course, closer cooperation between scientists and nonscientists in the years to come.

PATRICK ROMANELL

*Medical Branch,
University of Texas, Galveston*

The report of the Committee on Science in the Promotion of Human Welfare is the best product of the scientific method that I have seen for a long time.

Surely, since it is as a result of the progress of science that the world is in its present predicament, it can be argued that scientists have an obligation to humanity to devise methods of salvation.

Those scientists (if there be any such) who feel no such obligation may also agree with the report, as a matter of self-preservation, for it is very certain that if the problem of nuclear war is not solved there will be no science and few scientists left.

Nuclear war is only one of the problems presented to society by science, but it is the most pressing, for if it is not solved soon, none of the others will need attention.

IRVING F. LAUCKS

*Post Office Box 607,
Healdsburg, California*

Teaching and Learning

I would like to comment on John Helwig's letter regarding the training of college teachers [*Science* 132, 845 (23 Sept. 1960)].

I share his concern that state licensure might lead us to so much emphasis on

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Letters

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pedagogy that the teacher's knowledge of subject matter content might turn out to be far less than desirable. As I see it, the problem is one of proper balance. Some knowledge of the technique of teaching would, in my opinion, be highly desirable for the majority of college teachers.

I believe it is a vast oversimplification to state, as Helwig does, "that the two essential characteristics of a good teacher are (i) enthusiasm and (ii) thorough knowledge of and interest in his subject." I believe that most people concentrate on "teaching" and forget that the important process is really its complement "learning." This takes place within and *only* within the mind of the student. If our educators would exhibit more concern for learning, then teaching, as such, would take care of itself. I submit that the key factor in the education process is the motivation of the learner; I would venture further that the role of the teacher is primarily that of a motivator and only secondarily that of an imparter of knowledge. Actually the student may acquire knowledge from books, audio visual aids, direct experience, or other means.

College teaching, as contrasted with secondary school teaching, is concerned with the development within the student of the power to think, reason, appreciate, and discriminate; but the exercise of intellect necessary to become learned requires self-discipline on the part of the student, not enthusiasm and interest of the teacher, or only insofar as it makes the student want to learn.

There appears to me only a tenuous relationship between learning on the part of the student and either enthusiasm or thorough knowledge of and interest in the subject matter on the part of the teacher. If these two attributes of the teacher serve to motivate the student, so much the better, but one should not rule out other techniques of motivation. Unfortunately one can think of a number of teachers who possess these two qualifications and yet who are not considered by either their peers or their students to be very good teachers.

We must recognize also that college teaching embraces a wide range from the instruction of beginning freshmen to the occasional contact with the mature graduate student pursuing studies in either purely academic or professional fields. It is my personal opinion that teaching the elementary college level courses makes the greater demands

on the motivation skill of the teacher; whereas, in graduate work, motivation may be more readily derived from the teacher who is both enthusiastic and possessed of great knowledge, because both of these qualities provide high motivation to the advanced student.

It is in this latter situation particularly that I fear that any state licensure might only serve to eliminate many of our greatest and most widely influential teachers.

MERRITT A. WILLIAMSON
*College of Engineering and
Architecture, Pennsylvania State
University, University Park*

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