

Comments and Communications

Science Teaching in the Secondary Schools

A VERY important problem in secondary science teaching in addition to those mentioned by Professors Schriever (*SCIENCE*, 115, 96 [1952]) and Watson (*SCIENCE*, 116, 261 [1952]) is how to interest high school students in taking the available mathematics and physical science courses. Today we find that, even in large high schools with competent staffs and adequate laboratory facilities, the enrollment in these courses is relatively small. Professor Schriever points out the same problem when he states that the U. S. Naval Academy had to forego the requirement of high school physics for its prospective candidates. How often, however, have college science instructors heard their students remark how they wished that they had taken more high school mathematics and science. It is certain that many promising young men and women have been lost to the scientific professions because of this lack of background.

Here, of course, we can hear the objection that the job of the high schools is only in part college preparatory, and thus the importance of mathematics and science is often minimized by some public school administrators. The answer to this objection was well given by Professor Schriever, that the secondary schools take a lead from the colleges by requiring of *all* students good general education courses in the physical sciences. These courses should include laboratory work and elementary mathematical treatments of the subject matter.

My big question, however, is: Why do we not guide our high school students better in their course selection? The high school student naturally takes the easiest way out and most often chooses not to take the courses under question, because they already have a reputation of being hard and requiring more work. If the parents also fail to exercise their influence through lack of understanding of the problem, the student loses out on one of the most important phases of his education, which would provide him with a better appreciation of his natural environment and of every day living in a technological age.

If we believe in "life adjustment education," as one of the latest pedagogic phrases goes, why do we not require our students to take these courses? How do we expect immature high school students to make their own correct choices when nearly every department in institutions of higher learning requires the more mature college students to follow rather closely prescribed curricula, which allow in most instances for only a few elective courses through their whole college career?

I believe we educators too often underestimate the capabilities of our students, and on requiring more mathematics and science in the high schools we would find not only that students could manage these courses but that they would even greatly enjoy them. The re-

sults would be well worth the extra effort, for it would lead to a laity better informed on scientific questions and at the same time help to fill the sadly depleted ranks of scientific personnel.

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Employment and Education Fair in Science

AT the initiation of the New York Branch of the American Association of Scientific Workers a job and educational conference was held at the New Lincoln School on Saturday afternoon, September 13. Sponsored jointly by the AASeW, the American Council on Human Rights and Committee to End Discrimination in Science and Health, the fair has made a definite contribution toward the achievement of equal opportunities for Negroes in science.

Alexander Sandow, professor of biophysics at New York University, addressed the opening session. "The very fact that such outstanding men as Benjamin Bannaker, James Derham, Elijah McCoy, Jan Matzeliger, Granville T. Woods, Ernest E. Just, Charles Drew, and George Washington Carver have arisen," said Dr. Sandow, "serves to emphasize the tremendous loss which science in our country has suffered through the practice of discrimination." He pointed out that as long as discrimination exists there can be no true democracy and called upon scientists to work to bring about an end to this practice in their own fields. Miss Valjeanne Taylor of the American Council on Human Rights and Cuthbert Pitter of the Committee to End Discrimination in Science and Health were co-chairmen of the meeting.

Some 20 outstanding Negro and white scientists participated as consultants on the panels held in the fields of physics, biological sciences, chemistry, psychology, and engineering. Among the panel consultants were I. Fankuchen, professor of crystallography at the Polytechnic Institute of Brooklyn, Peter Bergmann, professor of physics at Syracuse and at the Polytechnic Institute of Brooklyn, Harry Grundfest, associate professor of Neurology at Columbia University, and Lester Florant, research engineer at the Allen B. Dumont Laboratories.

The most important part of the fair was that in which the panels were in session. Here Negro scientists and prospective scientists sought council in the panels on questions dealing with job and educational opportunities in science. Despite serious individual problems the registrants seemed most concerned with developing general approaches to the problem of discrimination. A Negro engineer emphasized the need for a more positive approach which laid stress upon the present professional and scientific activities of his people as a means of encouraging young people to enter the field as a career. Other speakers urged white and Negro scientists to take the offensive in opening

up new job opportunities where they do not now exist.

Plans have been made to continue the work begun by the fair. A continuations committee which includes many scientists among its members has been set up for this purpose.

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Science versus Administration in Certain U. S. Foreign Aid Efforts

IT WAS to be expected that the foreign aid programs would receive the immediate and critical attention of the new administration. The American people perhaps do not realize what a powerful position the various foreign aid agencies, as a group, have occupied in the nation's international relations. The influence which our economic aid activities have had on those relations in the separate countries that have received the aid should not be underestimated.

There certainly should be little opposition to the idea, *per se*, that certain kinds of aid ought to be extended by the United States to various other nations. Our foreign aid efforts to date have contributed much toward the postwar development of some countries. It must be realized, nevertheless, that a particular program in whatever country is no better than the management of it or the soundness of its purpose.

The scientists of our own country are indispensable to the government's foreign economic aid efforts. Their interest in the programs has been essential to the development of the American foreign aid activities. The confidence of scientists in the government's aid efforts, however, can be based only upon the soundness and the effectiveness of the various programs. The program accomplishments of an American foreign economic aid organization in any country can be limited by the quality of the local administration of the program and by the support of that administration in Washington, regardless of the collective efforts of the technical field staff.

The contributions of science in the foreign aid efforts, therefore, can be greatly restricted, and the personnel affected by such restrictions can experience professional humiliation, whenever the administration of any particular technical aid program is placed by the government in the hands of persons who are professionally unqualified to administer such a program. The Mutual Security Agency (MSA) general agriculture program in Thailand has been representative of such a situation.

One of the ultimate purposes of any agricultural development program is to make those developments directly beneficial to the farmers. Americans, however, are foreigners to the other peoples of the world; and our intentions and activities in any country outside our own will usually be held in doubt by the rural populations of that country until we have properly demonstrated, in the course of time and by good works, just what our intentions are. Therefore, an all-

out "immediate impact" agricultural aid campaign at the "grass-roots" or "village level" in an economically undeveloped and slow-moving country is a risky matter in foreign relations.

It must also be remembered that, among other important considerations, no occupation brings a man closer to his religion than farming. Many Asiatic rural customs and religious beliefs are still closely associated with farming practices. Unrestrained tampering with this way of rural life through the importation and distribution of *untested* fertilizers, mechanical equipment, seeds, and ideas on farming practices is inviting possible outcomes we have not planned. Agricultural aid efforts, furthermore, at the "grass-roots" in a modern national economic development program soon lose impetus, when not supported by agricultural research and training programs and by certain agricultural economic considerations.

Certain countries in the Asiatic regions (such as Formosa, Indonesia, Japan, and to a limited extent, China and the Philippines) have carried on agricultural research as far back as the early part of this century. Our technical people probably have profited from this work in rendering aid to those countries. Such a stockpile of technical knowledge has not been available to our technical personnel in other areas.

Thailand has not been economically desperate, but the development of the country depends considerably on foreign technical guidance and on a proper amount of imported equipment. Thailand is over 90 per cent agricultural, yet the accumulation of scientific data and the application of the methodology of science to agricultural problems are only in the beginning stage. Original plans for American economic aid to the Kingdom, therefore, stressed the development of a sound general agricultural program on a long-term basis. This scheme provided for agricultural research and training programs which would, in turn, support a later extension service to the rural population. Only rarely could Thai farmers be properly advised on the basis of U. S. agricultural conditions or data. Only in a very limited manner could American efforts to aid general agriculture even attempt an "immediate impact" as of 1950-51.

The higher level MSA-Thailand administrative support of a soundly based general agricultural aid program for the Kingdom began to be withdrawn in late 1951. A confusion of new government "policies" overwhelmed the field operations. Reflections were cast by the program administrators upon the professional competence of the agricultural scientists, as a subtle campaign seemed to be in effect against the current agricultural technical activities and against the leaders of the research and training program.

The unethical administrative tactics employed against members of the agricultural technical staff make it interesting to speculate about just what was going on—and *for that matter still is*. The refusal of the leaders of the research and training program to cooperate in the proposed "give-away" and the "dramatic" tactics in the field operations only widened the