Letters

NASA and Education

The 22 November issue contained an article under "News and Comment" on NASA and education. Acknowledging with gratitude its complimentary statements regarding NASA and respecting the reporter's objectives, we feel obligated to correct certain important inaccuracies and to clarify somewhat the purpose of the NASA predoctoral training program.

The article has identified the NASA predoctoral training program specifically with the broad problem of federal aid to education and the general augmentation of science education. That such written or spoken comments, through a misunderstanding of the originator or through his choice of words, can create suspicion and bias against the program is quite evident. We are not now nor do we intend to become involved in the general problem of federal aid to education within the context of current legislation on the subject. NASA's training program is designed to assist in the training of some of the scientists and engineers which the space program will require in future years if this agency's mission is to be accomplished.

Reference is made to the report of the President's Science Advisory Committee which recommends a goal of 7500 Ph.D.'s per year by 1970 and to NASA's expectation that 4000 graduate students will eventually be in its own program at one time. This is indeed our desire and expectation. However, it should be pointed out that the NASA training grants are made for 3 years and that we are striving for a level of 4000 students in training in order to achieve an output of 1000 Ph.D.'s per year. Since about 3400 doctorates were awarded in EMP fields in 1962, the goal of 7500 requires an increase in output of about 4000 Ph.D.'s per year, of which NASA hopes to provide about one-fourth. It seems, therefore, unlikely that NASA will be the largest single contributing agency by 1970.

A specific inaccuracy in the article is in reference to the amounts of money awarded. The NASA program was identified as being one of the "most lucrative to be had from the federal government." The stipend is fixed at $2400 per year. NASA also provides an additional student allowance for dependents and escalation, to be administered in accordance with university policy, but in no case may it exceed $1000 per student per year. The NSF Cooperative Graduate Fellowship program is equally lucrative since it provides for an annual stipend of $2400 per year and the participating institution may, at its discretion, supplement the fellow's stipend at a rate not to exceed $1000 for a fellow on 12-month tenure. Other examples of so-called "lucrative" fellowships may be found on page 18 of House Document No. 159. The statement that NASA's institutional allowance averaged $4000 per student is completely unfounded. Grants made in fiscal 1963 included an institutional allowance averaging $2508 per student per year.

Another statement referred to the development of a "political constituency" and an "end-run" around congressional suspicions of federal aid to education. Whether or not it was intended, we cannot refrain from suggesting that unwarranted damage can be and perhaps has been done to an important program by such a casual statement.

The last paragraph referred to Representative Fountain's contention that grant's should be awarded only to the best and that the criterion should be excellence—not acceptability. It is agreed that excellence should always be a primary governing criterion. We in NASA, faced with accelerating advances in science and technology, must make every effort to broaden the base of scientific resources available to the nation's space programs. Scientific and engineering manpower, as represented by Ph.D.'s trained in space-related fields, is one of our resources which may face serious depletion if training opportunities are curtailed. It is well known that approximately 150 colleges and universities in the United States grant doctorates in space-related sciences or technology. NASA, therefore, takes the position that all available capability must be utilized commensurate with acceptable standards of excellence. It unfortunately is true that the greatest capacity for producing Ph.D.'s at an increased rate is concentrated in a small number of the larger institutions. However, we believe that if we were to direct all of our attention to the giants and perpetuate the situation, with full knowledge that many of the smaller schools have the capability and are eager to make excellent contributions to the advancement of this nation's knowledge of space, we would be derelict in discharging our responsibilities.

We are anxious that the scientific community be fully informed concerning this training program. The reporting which is necessary to effect this communication must be both objective and accurate.

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Government and Science: How Science Policy Is Developed

Your recent editorial (*Science*, 22 Nov. 1963) and speech make clear that there is a need for a better understanding of the role of the President's Science Adviser and the way in which science is administered in our government. I shall try to light a small candle rather than curse the darkness.

The present mechanisms for developing national science policy must be understood in their historical context. Scientists connected with the development of the atomic bomb and of the applications of science during World War II recognized the fortuitousness of the White House support they received and saw the need for a permanent advisory mechanism near the President and for a permanent mechanism for the civilian support for science. Although they failed in their early efforts to create a direct connection between science and the President, the National Science Foundation provided the basis for federal support of science. A policy officer was established close to the Secretary of Defense to evaluate numerous questions of weapon technology, but the importance of science and technology was ignored in older departments like the Department of Commerce and the