Letters

MURA: The Importance of Encouraging Scientific Enterprise

The fate that is apparently about to overtake the Midwest Universities Research Association (see *Science*, 31 Jan., p. 450) represents a deplorable deviation from a policy our government has hitherto followed with great success—the policy of encouraging and financing independent groups of scientists who have taken the initiative in scientific pioneering, rather than confining its support to its established institutions in the hope that these would foresee all possibilities and meet all needs.

This country's success in developing radar when it was needed resulted from this policy. The atomic bomb was developed under this policy. The citizen-scientists who foresaw and best understood the possibilities were given the responsibility to create new laboratories and to do things their way so that the best ideas in the country could be brought to focus on the problems. We backed these projects as the dean of a graduate school backs a competent research professor—the dean relies on his confidence in the professor's ability and is not inhibited by his own limited understanding of the research.

Before MURA there was no organization in the Midwest interested or competent in the advancement of high-energy physics. MURA was the result of a grass-roots movement by scientists in that area of the country; it now has a scientific team of great potentiality, and its accomplishments have dominated the development of accelerator science for 8 years. It has developed into a powerful combination of university staffs and scientists which is the custodian of detailed knowledge, techniques, and skills necessary to forge ahead to a new frontier in the physics of high-energy particles, namely, the generation and handling of very intense beams of high-energy particles.

The principle of backing the competent pioneers has not been applied to MURA. While others throughout the world have looked to MURA to carry a major share of the responsibility for the United States high-energy program, constituted authority has wished several times in past years that MURA would go away. The productivity and enthusiasm of the organization has enabled it to survive until the most recent federal budget. MURA's plans have been reviewed and revised to pieces, and the budget is being used to stop the enterprise. As a result the country may lose an energetic scientific enterprise and disperse a talented team. It will be a discouraging thing for enterprising scientists in the future and a dangerous thing for the progress of our country's science if this is allowed to happen.

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Mohole

I have read with considerable interest the series of articles on the Mohole Project (10, 17, and 24 Jan. 1964). The author, D. S. Greenberg, is to be congratulated on a fine accomplishment in the telling of this story. The task of trying to condense so complex a history into a few pages must have been immense and I am sure that many of the facts were difficult to come by. Perhaps I can supply a few explanatory facts which will straighten out certain points and help to fill out the picture.

1) On page 224, column one, reference is made to a "paper" of June 1961 from an erstwhile chairman of the AMSOC Committee to the National Academy, and it is stated that I "told a congressional committee last spring that the paper clearly supports the position that AMSOC intended an intermediate *program* to be carried out by an intermediate *ship*." Actually, I did not make such a statement. The letter in question seemed to me also a rather ambiguous communication which, as Greenberg aptly says, came "to mean all things to all partisans," and I simply told the congressional committee (last fall, not last spring) that in June 1961 "the AMSOC Committee had recommended an intermediate drilling program and had even included the prompt construction and operation of an intermediate vessel in their budget for the fiscal year 1962." This was simply a factual statement of a matter of record with no attempt at interpretation. I might agree with the view attributed to Dr. Haworth that this letter "called for an intermediate program but *not necessarily* [italics supplied] for an intermediate ship to carry it out."

The point is in any case immaterial since, regardless of the interpretation of this somewhat ambiguous letter of June 1961, the AMSOC Committee had early in 1962, before the June 1962 contract was signed by NSF with Brown & Root, transmitted to NSF its very clear and unanimous recommendation for both an intermediate program and an intermediate vessel. There could have been no doubt of AMSOC's views long before NSF was ready to sign the final contract. The AMSOC concept of the whole project should also have been clear to NSF, since it was presented to NSF several times early in 1962 and was later published in the July-August 1962 issue of *Geotimes*.

2) On page 334, column one, the statement is made that "AMSOC itself had developed a split on the issue of an intermediate versus an ultimate ship." This is not correct. As the Committee record shows, AMSOC voted repeatedly, unanimously, and without exception in favor of an intermediate vessel for the Mohole Project, and never voted in any other way. I do not doubt, however, that many attempts have been made to create the impression of such a split.

3) Page 334 might seem to imply an official conflict between AMSOC and Brown & Root. In my opinion, there has been no such conflict nor any basis for the existence of such a conflict. AMSOC's only official contact with Brown & Root was through NSF, and presumably Brown & Root as a contractor did only what it was told to do by NSF. AMSOC recommended to NSF, and if Brown & Root did not carry out AMSOC's recommendations