

DuBridge Discusses Science Budget, Support and Organization

Lee A. DuBridge, the President's Science Adviser, believes that we are unlikely to see any rapid growth in US science soon. The budget situation will be tight for two or three years, and no major new expenditures are in sight.

He anticipates that the fraction of total US academic science that is supported by the National Science Foundation will grow, and that changes in the structure by which science funds are administered in Washington are unlikely. DuBridge thinks that a reduction in the rate of rise of PhD production is justifiable; he hopes to develop quantitative criteria soon.

Recently DuBridge talked with *PHYSICS TODAY* on topics ranging from the Federal science budget and organization to physicists' responsibilities and the public attitude to scientists. Here are his answers to our questions:

What about the suggestion that NSF should have perhaps a third or a half of the Government's funding of research and the rest could be left to the mission agencies?

Well, this is a difficult question, and I think it is clear that changes will not occur rapidly. The mission agencies have a valid interest in basic research. I think they have a valid responsibility for helping support the scientific base of the country on which their own future technologies will be built. But it is desirable also to have one agency whose sole mission is the strength of American science, and that is the National Science Foundation. Over the years its fraction of the total support of research has of course grown, and the fraction supported by DOD has declined. DOD supported 80% of the university research in the country a number of years ago. That's declined to something like 20%.

I anticipate that the fraction of the total academic science budget of the country supported by NSF will grow for a variety of reasons. But it's risky to make sweeping proposals for change because many Congressional committees are involved, and they may or may not agree with the changes. If one dropped out of the budget some of the science support of the mission agencies, there is

no assurance that the committees that deal with NSF would agree to increase the NSF budget by corresponding or larger amounts. So changes have to be made with careful consultation, and with some care as to the speed at which they occur. But I think there is general agreement in the Administration that a phased-in increase of NSF's proportion of the total research support is desirable.

One suggestion that comes up frequently these days is the idea of tying the R&D budget to the gross national product.

Yes, that's a question we are going to be carefully considering in PSAC [President's Science Advisory Committee] and in the Bureau of the Budget. Ever since World War II it has been clearly the implied policy—though often not very explicitly stated either in legislation or in Executive orders in an overall way—

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LEE DuBRIDGE told *PHYSICS TODAY*: "... it is unreasonable to expect a resumption of the rapid rate of growth of the early 1960's. We must learn to live with restricted budgets."

AEC Classifies Brueckner Idea For a Fusion Reactor

Theorist Keith Brueckner has filed nine patent applications for a controlled-fusion reactor. AEC promptly classified the applications Secret-Restricted Data and is permitting theoretical calculations to continue. Brueckner told *PHYSICS TODAY* that he is not allowed to discuss the technical content openly. He did tell us, "It's a new way of containing and releasing fusion energy. It's a theoretical idea only, which has been supported by limited computer runs."

Although the US controlled-thermonuclear research (CTR) program has been declassified since 1958, AEC automatically classifies all possible military applications of atomic energy.

Brueckner got the idea while working part time (he is a professor at the University of California in La Jolla) as technical director of the KMS Technology Center.

After the patent applications were filed in November, KMS representatives met with the AEC commissioners in February and proposed carrying out a research program under AEC security regulations. Funds would come from

several different commercial organizations.

AEC General Counsel Joseph Hennessy told *PHYSICS TODAY* that AEC is completing a technical review and will then confer with KMS again. One aspect being studied is whether the potential weapons applications of the idea can be separated from the reactor concept. Because Brueckner has been a consultant to many AEC laboratories and a member of AEC advisory committees (including the CTR standing committee, of which he is no longer a member), Hennessy said AEC is also evaluating the question of who owns patent rights.

Several years ago AEC classified the development of the ultracentrifuge, which is used to separate uranium isotopes. It then limited development (under security control) to a few US firms. Meanwhile the Dutch, French and Germans proceeded with commercial development of the technique. AEC is required by law to classify any atomic-energy work with potential military applications.

—GBL