

Education

NAS committee decries low Federal support for pure math

Federal funding for basic mathematical research has dropped roughly 33% in constant dollars since the late 1960s, the National Academy of Science's Committee on Resources for the Mathematical Sciences reported in June. While the United States has remained a world leader in mathematics, the committee says that this is because "the country is still reaping the harvest of the investment . . . made in the mid-to-late 1960s." Since then, the committee argues, investments "have not been adequate to assure renewal of the field, to provide the seminal work supporting expanded applications, or to pursue the remarkable opportunities in prospect."

According to the committee, the decline in Federal funding for basic mathematics has affected graduate studies most severely, because faculty are overloaded and most PhD candidates have had to teach to support themselves throughout their graduate programs. The report implies that a decline in the quality of graduate life, caused mainly by excessive teaching demands that leave students too little time for pure research, has been connected with a drop in enrollments. From 1972-73 to 1982-83, the total number of mathematics PhDs awarded by US universities declined from more than 1000 to fewer than 800, and the number of US citizens receiving PhDs in mathematics fell from more than 800 to fewer than 500, the committee estimated.

The committee recommends that Federal support for basic mathematical research and graduate education should be increased over a 5-year period by about \$100 million to about \$180 million—more than double current spending, which came to \$78 million in fiscal 1984. Specifically, the committee would like the government to assure:

- 15 months of "unfettered research time" plus 2 preceding summers of unfettered research time for each of the 1000 students who commence work on a PhD thesis each year
- Postdoctoral positions averaging 2 years duration at "suitable research centers" for a quarter of each year's

800 PhDs

► At least 400 research grants for "young investigators," that is, mathematicians with 3 to 5 years post-doctoral experience

► Enough "supported research time" so that established mathematicians and young investigators would be able both to conduct their own research and "provide the requisite training" for

PhD students and postdocs

► Support for "associated research needs of the investigators."

Committee chairman Edward E. David Jr, president of the Exxon Research and Engineering Company and former science adviser to President Nixon, said in an interview that the committee's recommendations should not be interpreted merely as a self-serving plea

Applied math programs attract more money



Jacob T. Schwartz, professor of mathematics and computer science at New York University's Courant Institute of Mathematical Sciences, poses with a robot. The Courant Institute is one of four institutions that recently received multi-million-dollar NSF grants to do work in computer science; its Division of Applied Mathematics will use the \$4-million grant to develop a "battery of mathematical tools" directed at fundamental advances in robotics—increased visual acuity, motion planning, tactile control, arm and finger coordination, manipulation of soft objects, and programming languages. The University of Arizona (recipient of \$3.6 million from NSF), will expand research on experimental computer languages; the University of Rochester (\$3.9 million) plans to buy a large multicomputer to support investigations on complex models, computer image processing, knowledge representation, natural-language understanding and computer architecture, and the State University of New York at Stony Brook (\$4.4 million) plans to build a data-oriented computer system to support research in graphics, very-large-scale integration designs, office automation and natural-language processing.