Four new centers for supercomputing

A few years ago, astrophysicist Larry L. Smarr had to go to Munich, West Germany, to gain access to a computer that was fast enough to do the calculations he needed for his theoretical study of black holes. Ironically, the supercomputer he used had been manufactured in the United States.

Now, the University of Illinois at Urbana-Champaign, where Smarr directs the new $75 million Center for Supercomputing Applications, will soon get its own supercomputer. This week, the National Science Foundation (NSF) announced that Illinois is one of four institutions that will share about $200 million over the next five years to establish "national advanced scientific computing" centers.

The other centers will be at Cornell University in Ithaca, N.Y., at the University of California at San Diego where 18 universities and research institutes will contribute to the center, and at a facility, run by a consortium of 12 universities, near Princeton, N.J. NSF selected these four winners from about two dozen proposals submitted as part of a nationwide competition.

"We are establishing four 'Fermilabs' for theorists," says John W.D. Connolly, director of NSF's Office of Advanced Scientific Computing, referring to the multimillion-dollar facility that particle physicists have long used for their experiments.

"It's been a long time coming," says Smarr, who along with people like Cornell physicist Kenneth G. Wilson lobbied for two years to get NSF and Congress to recognize the need to equip universities with state-of-the-art computers (SN: 9/29/84, p. 200). Wilson now heads the Center for Theory and Simulation in Science and Engineering at Cornell.

To match NSF funding, the new centers are expected to raise a total of $200 million from state governments and industry. Cornell's center, for example, will receive more than $30 million in equipment and services from IBM Corp.

Cornell's supercomputer will feature the pioneering combination of an IBM 3084QX computer with a number of special scientific processors manufactured by Floating Point Systems of Portland, Ore. This experiment is of particular interest to the computer industry because IBM does not yet manufacture a supercomputer. The other centers will be using supercomputers provided by Cray Research Inc. or Control Data Corp.

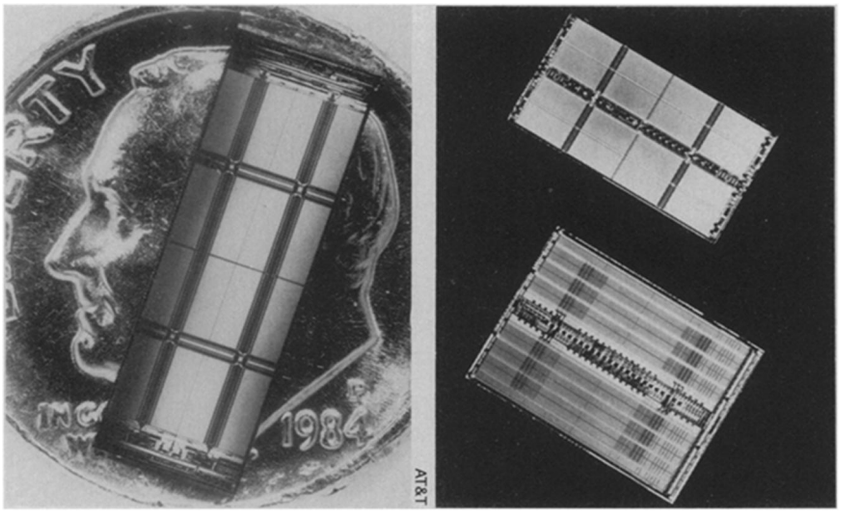
"We are taking a major step in providing to scientists and engineers throughout the country the kind of supercomputing power needed to strengthen our research activities," says Erich Bloch, NSF director. "We expect that the solution to many important unsolved problems will now be possible."

NSF and university officials insist that the new supercomputing centers will be devoted strictly to basic research by university scientists and engineers. Each center, however, will emphasize slightly different applications.

Researchers throughout the country will have access to the supercomputing centers by applying either to NSF or to the centers. Proposed high-speed communications networks may even make it unnecessary for them to visit the centers to do their work. Such a network, says Smarr, would provide "a new computing environment," which for researchers would be "like using a personal computer backed by the full power of a supercomputer." In the San Diego system, for instance, about 200 users, sitting at their desks in places as far away as Hawaii or Maryland, would be able to use the computer at the same time.

However, the most important function served by these new centers, says Connolly, may turn out to be the training of students and researchers in the use of supercomputers. — *I. Peterson*

The great megabit microchip derby



The race toward commercial production of a computer memory chip that can store more than 1 million bits of information — four times as much as the best currently available chips can hold — is getting hotter. Several Japanese and U.S. companies described their latest entries recently at the International Solid State Circuits Conference held in New York. Smaller than a dime, AT&T's dynamic random access memory (DRAM) chip (left) allows individual memory cells to be accessed within 80 billionths of a second. IBM, which announced its first megabit DRAM chip last year (bottom, right), has a new one (top, right) that is smaller and operates twice as fast as the original model. Although the experimental IBM chips were fabricated on existing production lines, commercial production of the chips is at least a year away. Who will win the race is still unclear.

Frost-free bacteria lawsuit

The first signs of spring in the air are making University of California scientists, as well as backyard planters, eager to begin their gardening. But the field-test plans of Steven Lindow and colleagues at Berkeley are still up in the air. The U.S. Court of Appeals must decide whether the scientists will be allowed to perform their field test of spraying sixteen 40-foot rows of potato, tomato and snap bean plants with a common plant bacterium genetically engineered so that it cannot trigger ice formation. They propose that such bacteria could reduce frost damage on crops (SN: 8/27/83, p. 132).

The National Institutes of Health (NIH), the federal agency that has been regulating research on genetic engineering, has now filed a motion for a partial stay of last spring's preliminary injunction (SN: 5/26/84, p. 325) that has prohibited the University of California experiments. These field tests, originally planned for autumn 1983, had already been postponed by a threat of legal action. The argument brought against NIH was that the agency had failed to prepare an "identifiable environmental document." NIH has now submitted to the appeals court a 60-page "Environmental Assessment and Finding of No Significant Impact."

If the court grants a partial stay of the preliminary injunction, the director of NIH would then reconsider the experiment for approval and the university would request an experimental use permit from the Environmental Protection Agency. The NIH motion asks for a quick decision, noting, "Since this field test can only be conducted when the temperature is at or near freezing, the experiment would be delayed for yet another season if approval were not possible by the first part of May 1985." □