have support on Capitol Hill from Senator Terry Sanford (D–NC). Last spring Sanford formed a committee of senators, congressional representatives, and university presidents called the Higher Education Colloquium on Science Facilities to lobby the Bush Administration for a comprehensive plan for improved support of research facilities.

Key to such a plan, says colloquium director Patricia Warren, is that the government get back in the business of direct funding of research facilities, not with earmarked funds, but with competitive grant programs in which universities would submit proposals for facilities. The colloquium has asked President Bush to enlarge the NSF's current $20 million per year matching-grant program for facilities to its authorized annual level of $250 million and to start a similar program at the National Institutes of Health.

But in tight financial times, with the war in the Gulf and the S&L bailout burning up billions, such cries may fall on deaf ears. Instead of relief, administrators may find themselves facing government negotiators filled with a new cost-cutting zeal inspired by John Dingell and his investigators. In that case, according to Rosenzweig: "Universities that are most creative about deciding what they can't do as well as what they can do are the ones that are going to come out of the '90s in the best shape." And among the projects that get slashed for lack of facilities funds, he says, there will be a good deal of cutting-edge science.

■ MARCIA BARINAGA

It Ain't Broke, But Why Not FCCSET?

For nearly a century, the Bureau of Indian Affairs has been keeping detailed records of the growth of tens of thousands of trees as part of an effort to manage forests on Indian land. When members of a committee that coordinates the U.S. global change research program learned of the bureau's data, their mouths fell open. Why? Because the records of tree growth provide a unique indicator of changes in microclimates over the past 100 years, and as Robert W. Correll, head of the geosciences directorate at the National Science Foundation recalls, "it was a major asset we didn't know anything about."

The fact that officials running the federal government's global change program discovered these data buried in a small agency in the Department of the Interior not known for its science programs is one small measure of the new found success of a once obscure body called the Federal Coordinating Council for Science, Engineering and Technology (FCCSET), pronounced "fix-it" by Capitol cognoscenti. FCCSET has been around since 1976, when Congress created the Office of Science and Technology Policy. But it used to be just a talking shop for mid-level bureaucrats. "There was no connection between the information [exchanged] and the people who allocate resources," says Daniel R. Masys, director of the Lister Hill National Center for Biomedical Communications and a member of a FCCSET subcommittee on computer research and development. Then came D. Allan Bromley, the current OSTP director.

Bromley revitalized FCCSET by using it to coordinate big, multiagency programs—in particular, to package their budgets in a single, coherent plan, rather than leaving each agency to plead for it's individual piece. The result: three large, multidisciplinary, multiagency programs that received substantial increases in the Bush Administration's 1992 budget proposal—one in climate change, one in high-performance computing, and one in science and math education. Each owes its identity and direction to a FCCSET committee. The bureaucratic punch of the committees as structured by Bromley comes from the fact that each is made up of cabinet secretaries and heads of independent agencies. As Bromley said in a recent interview with *Science*, "Decisions made in the FCCSET remain made, and don't come unstuck under the final pressures of budget discussions."

The first of the multiagency thrusts to get off the ground was the Committee on Earth and Environmental Sciences, chaired by Dallas L. Peck, head of the U.S. Geological Survey. Starting in 1989, working groups of this committee met frequently to define what each agency's role would be in a coordinated approach to the study of human and natural influences on the global environment. By the beginning of 1990 the committee was able to propose a comprehensive federal global change research program that received from Congress $294 million of the $375 million new money requested for it. This year, the Administration is requesting an additional $231.8 million over last year's appropriation.

The core of the global change program is remote sensing, particularly the Earth Observing System being developed by the National Aeronautics and Space Administration. The 1992 budget request would provide a big increase for efforts to figure out how to handle the torrent of data from these satellites, particularly how to make use of the data in new generations of computer models that predict global climate. There is also new money to accelerate the development of these models.

Another FCCSET committee that successfully steered a new initiative through the federal budget bureaucracy is the Committee on Education and Human Resources, chaired by Energy Secretary James D. Watkins. Last week the education committee released its first report, *By the Year 2000: First in the World,* outlining the roles of some ten federal agencies that support education. The report's title derives from the goal articulated by President Bush in 1989 at the education summit with the nation's governors in Charlottesville, Virginia, that "U.S. students will be first in the world in science and mathematics achievement."

To achieve this goal—which federal officials admit is a long shot—the FCCSET committee proposed making support for precollege education a priority. In particular, the new initiative will focus on teacher training and enhancement, curriculum development, and systemic restructuring of education programs. The next highest priority is undergraduate education, where once again teacher training and curriculum development would receive the

FCCSET INITIATIVES

	1991 Appropriated	1992 Requested	% Change
HIGH PERFORMANCE COMPUTING AND COMM			
HIGH PERFORMANCE COMPUTING SYSTEMS	116	157	+35.6
ADVANCED SOFTWARE TECHNOLOGY	217	265	+22.0
NATIONAL RESEARCH NETWORK	58	92	+57.4
BASIC RESEARCH AND HUMAN RESOURCES	98	124	+26.5
TOTAL	**489**	**638**	**+30.4**
SCIENCE AND MATHEMATICS EDUCATION			
PRECOLLEGE	515	661	+28.4
UNDERGRADUATE	417	477	+14.3
GRADUATE	784	803	+2.4
TOTAL	**1716**	**1941**	**+13.1**
GLOBAL CHANGE RESEARCH PROGRAM			
CLIMATE MODELING	60	95	+59.5
GLOBAL WATER & ENERGY CYCLES	417	521	+24.9
GLOBAL CARBON CYCLE	130	163	+25.3
ECOSYSTEMS AND POPULATION DYNAMICS	106	147	+38.8
OTHER RESEARCH ACTIVITIES	241	259	+7.6
TOTAL	**954**	**1185**	**+24.3**

largest share of new funds. Graduate education, which accounts for the largest portion of federal education support (largely thanks to $203 million spent on military postgraduate schools) receives the smallest boost, but Richard E. Stephens, director of the office of university and science education at the Department of Energy, points out that there will be more support for graduate education coming from proposed increases in research budgets to federal science agencies.

The third initiative in the Administration's budget that bore FCCSET's imprint is the Federal High Performance Computing Program. The 5-year program, put together by the Committee on Physical, Mathematical and Engineering Sciences, would give a big boost to programs in four federal agencies—the Defense Advanced Research Projects Agency, the Department of Energy, NASA, and NSF. The program establishes several "grand challenges" such as aerospace vehicle design and climate modeling that require far more computing power than today's machines can deliver. One key goal over the next 5 years will be to use massively parallel computers to achieve computing speeds of 10^{12} operations per second—about two orders of magnitude faster than current machines. The program will also try to demonstrate the feasibility of a distributed computer network to be known as the National Research and Education Network that will move data around the country at speeds up to a billion bits per second. Eugene Wong, assistant director of OSTP, adds that although the federal role in high-performance computing is limited to technology support, the intention is that it be a catalyst for industry to forge ahead with the next generation of computer products and services.

If Bromley has his way, the three initiatives presented in the Administration's 1992 budget are just a start: "Next year I have every expectation that we will add to that list materials science and technology, biotechnology, and perhaps some other areas." And if this year's FCCSET proposals do as well with Congress as last year's, FCCSET could well become the model for all federal support for interdisciplinary research.

■ JOSEPH PALCA

NIH Budget

A table in last week's issue (p. 618) showing details of budget proposals for the National Institutes of Health included incorrect figures for NIH's total budget. The correct amounts are: 1990: $7.576 billion, 1991: $8.277 billion, and proposed 1992: $8.775 billion. The totals given in the table were for numbers of full-time NIH staff.

Creationist School Lives On

San Diego, California—For the past decade, with the official blessing of the State of California, students at the nation's only creationist graduate school have been earning master of science degrees for thesis research that assumes fossils are the remains of drowned critters left behind by Noah's Ark on a planet that is less than 10,000 years old. The state department of education fought a long battle to revoke the Institute for Creation Research's license, but its effort was recently set back by procedural snafus and a bureaucratic shuffle. As a result, it seems certain that the little institute in Santee, just east of San Diego, will keep handing out M.S. degrees in geology, biology, astrogeophysics, and science education for at least another year. Perhaps even longer: On 19 February, a federal judge will decide whether to hear a suit filed by ICR claiming that it has a constitutional right to award science degrees.

ICR received its license in 1980 when California's standards for licensing nonaccredited post-secondary schools were less stringent. In 1984, the legislature tightened the standards, requiring state-licensed schools to be "comparable to and similar in scope" academically to accredited institutions, says department of education attorney Greg Roussere. But the legislature also gave existing schools such as ICR a 3-year grace period before they faced reevaluation.

The department of education—goaded, according to ICR's dean Kenneth B. Cumming, by "evolutionist vigilantes"—dispatched two different teams of reviewers to ICR in the summers of 1988 and 1989. (ICR offers its classes only in the summer.) The five-person teams—mostly academic scientists serving without pay—examined all course offerings, textbooks, exams, labs, and the library; attended lectures; talked to students; and read some two dozen master's theses produced by ICR graduates during the 1980s.

The first team's work was clouded when a scientist flipflopped, voting once to allow license renewal then voting against it. The second team was more decisive: "We spent 3 days immersed in this and found them wanting on every count," recalls Christopher Wills, a professor of biology at the University of California, San Diego, who served on the second team. "The theses were the most egregious. None involved original research. They were argumentative reviews of the literature from a creationist bias. One of them argued away everything in physics from the 20th century."

Last March, state Superintendent of Public Instruction Bill Honig accepted his staff's recommendation to revoke ICR's license. ICR, however, filed suit, first in federal court on constitutional grounds and then in state court on procedural matters. By November, the department of education was forced to cave in on the second suit because technical flaws in its procedures made the license revocation unenforceable.

In the meantime, the legislature intervened again, taking responsibility for licensing decisions away from Honig's department and giving it to a new agency called the Council for Private Post-Secondary and Vocational Education, which opened its doors on 1 January. Honig agreed to restore ICR's license and let the new council inherit the issue. The council must now review 140 nonaccredited schools—ICR among them—and more than 2000 private vocational schools, many suspected of serious abuses of federal student loan programs. Marion Miller, interim director of the new council, says the group must set up its own operating guidelines and regulations before it begins any assessments. The ICR review, along with all the others, will come "within the next 2 to 3 years."

Roussere will ask the federal court in San Diego next week to dismiss ICR's federal suit since its license has been restored and the new council has not yet taken action. The institute could avoid state review altogether, he says, by calling its offering a master's in theology or in creationism rather than science. ICR, however, wants the court to get on with the First Amendment arguments. ICR, Cumming says, is a "traditional school teaching a traditional science curriculum but from a creationist viewpoint."

"Traditional for the 1600s," retorts Kevin Padian, a UC Berkeley biologist who serves on the board of the National Center for Science Education, a group formed to counter creationist influences in education. "It's not a purge we're after. But there shouldn't still be a question whether dinosaurs and humans lived together in the Cretaceous."

■ YVONNE BASKIN

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