

aluminum—also releases less toxic fumes and less smoke than conventional fabric. The blocking material does not necessarily prevent a fire from eventually breaking out, but it does slow down the growth of a fire, allowing more time to evacuate. According to the senior FAA official interviewed, the agency may shortly propose a new standard after one more series of tests is completed.

The official said that until recently the agency's research was hampered because its scientists lacked a proper test facility. But 2 years ago, the FAA finally completed a sophisticated fire laboratory in Atlantic City, New Jersey, where researchers can simulate large fire in a C-133 transport aircraft under reproducible conditions.

Critics have pointed out, however, that there are basic improvements in fire safety that could be made right now without awaiting the results of long-term research. The Air Canada DC-9, for example, did not have a smoke detector in the lavatory where the fire broke out—possibly because the motor in the toilet overheated. In 1977, the National Academy of Sciences committee recommended that the agency require smoke detection equipment in unattended places such as the restrooms and cargo bays. The Academy report said, in describing a scenario remarkably similar to the Air Canada accident, that a restroom fire "poses a significant threat" to passengers and the aircraft.

An FAA spokesman, Fred Farrar, said that smoke detectors are not required in restrooms because "in our view, there are plenty of people around who make good smoke detectors. I'm not being facetious." Representative Mario Biaggi (D-N.Y.) introduced legislation after the Air Canada accident that would require commercial airlines to install smoke detectors and automatic fire extinguishing systems in the restrooms.

The FAA also has not yet required aircraft manufacturers to place exit lights near the floor. In 1972, the safety board urged such a regulation based on the obvious fact that smoke rises and obscures the exit lights near the ceiling. Robert Dille, chief of the FAA research center in Oklahoma City, said his group has been looking at the problem and has experimented with lights on armrests and luminescent material on the floor. "It's better to have the lights lower," Dille conceded. But, he said, there is little urgency about the problem at the FAA because the need for floor lighting "is such a rare event."

The FAA has maintained that new

standards are largely dependent on advances in technology. But the safety board has said that the agency has been slow to push new rules even when the technology is developed. In 1980, for example, the board said that equipment to protect the vision and breathing of the pilot and crew during a fire was then available. Dille said the agency is still testing various masks and goggles.

Matthew McCormick, a safety board official, noted in an interview that the FAA has failed to require heat-resistant windows that NASA developed in the early 1970's. In a plane crash, the integrity of the windows is especially important in order to keep a fire in the fuselage from entering the cabin. The current acrylic windows now used on planes and considered by the FAA to be the most vulnerable part of an aircraft to a fuel fire collapse in 40 seconds. The NASA windows remain intact for 4 to 6 minutes, an increase that would greatly add precious time to evacuation. The FAA still wants to perform more tests on the NASA windows and has not yet completed a full-cost analysis of the material.

The top FAA official says that criticism of the agency has been unfair. He charged that Congress and the news media have given the public the "false impression that enormous savings of lives could be achieved with improvements." He added, "Aircraft aren't perfect, but they're the safest conveyance known to man."

In addition, he said, "We spend more on fire safety R & D than any other safety program." An examination of the budget figures of the past 3 years reveals that fire research accounts for about half of the total budget allotted for aircraft safety. The total amount of research dollars for fire safety, however, is quite modest: in FY 1981, the FAA spent \$6 million; FY 1982, \$2 million; and in FY 1983, \$6 million. The Reagan Administration proposed this year to phase out the Center for Fire Research at the Bureau of Standards, but Congress is acting to restore the funds.

Burnett of the safety board has taken a somewhat less critical position of the FAA than his predecessor, James King, whom the FAA regarded as a thorn in the flesh. But even Burnett expresses frustration about the aviation agency's slow pace. The FAA has done "a great deal of research," Burnett testified last year. "We think that they are just not using what they already have. Certainly we haven't achieved the final solution yet, but do we have to wait for eternity in order to begin the process of improving?"—MARJORIE SUN

More Tales from the Academic Pork Barrel

The University of New Hampshire may soon get a \$15 million grant from the Department of Education to build a new space and marine science center. Oregon Health Sciences University has equally ambitious construction plans. It hopes to build a \$20.4 million biomedical library and information center, courtesy of the Department of Health and Human Services. What makes these facilities unusual is that proposals to construct them have not been reviewed by the departments that will put up the money, nor have they been approved by the relevant congressional committees. Yet, on 10 June, the Senate voted funds for the projects without debate.

The universities took proposals for the facilities directly to their senators, thus bypassing the lengthy and uncertain review process that is usual for federally funded projects. An amendment providing funds for the two centers was offered to a budget bill on the Senate floor, and it sailed through.

This exercise in pork barrel politics is the latest example of a phenomenon that seems to be occurring with increasing frequency. Last month, Catholic and Columbia universities won approval from the House for funds to construct new research facilities. Their proposals, which similarly bypassed formal review, were championed by key legislators and promoted by a Washington consulting firm, Schlossberg-Cassidy and Associates (*Science*, 3 June, p. 1024).

Officials from the University of New Hampshire talked with their Senator, Warren Rudman (R-N.H.), about 18 months ago, and informed him of the need for a new science facility. According to Len Fisk, the university's director of research, funding for space research on campus has grown by 700 percent in the past 5 years, and that for marine science has risen by 200 percent. Laboratories and classrooms are scattered over the campus, Fisk said, creating a "generally intolerable situation."

Officials from the University of Oregon have also been talking with their Senator, Mark Hatfield (R-Ore.), about the need for a new facility. Their goal is to build a Biomedical Informa-

tion Communication Center to link several departments and provide a regional source of medical and biomedical information.

An aide to Hatfield said that the senator has asked his staff not to discuss the proposal because it still has many hurdles to face in the budget process, and he "does not want to raise a lot of hopes." The aide said that Hatfield has "been talking to the university for quite some time about this," but no formal proposal has been submitted to the Department of Health and Human Services.

Hatfield and Rudman are both well placed to champion the proposals. Hatfield is chairman of the Senate Appropriations Committee, and Rudman is a member of the appropriations subcommittee that handles health and education funds. Both senators saw a chance to move when a supplemental appropriations bill, providing additional funds for several departments for the current fiscal year, came up for a vote in the Senate. What spurred them into action was yet another piece of pork barrel politics involving Boston College.

Boston College received a loan a few years ago from the Department of Education to build a new library, but needs an additional \$13 million to finish the project. It is represented in Washington by none other than Schlossberg-Cassidy, and has some powerful patrons, including House Speaker Thomas P. O'Neill (D-Mass.) and Senator Edward M. Kennedy (D-Mass.).

Kennedy approached Senator Thomas Eagleton (D-Mo.), who agreed to sponsor an amendment to the supplemental appropriations bill to provide a \$7.5 million grant to the college. Hatfield, Rudman, and Eagleton then struck a deal. A combined amendment providing funds to all three institutions was drawn up. Rudman and Hatfield delivered identical speeches on the Senate floor, and nobody spoke in opposition.

The money is not yet in the bank. House members of a House-Senate Conference Committee must agree to the funds, and President Reagan may veto the entire bill. But the message seems clear: why go through the uncertain process of peer review when members of Congress are eager to cut some pork for the universities back home?—**COLIN NORMAN**

Survey Shows R & D Up Even if Sales Were Down

A new *Business Week* survey shows that top U.S. companies last year increased spending on R & D despite declining sales. The 776 companies listed in the survey in the magazine's 20 June issue spent a total of \$36 billion on R & D last year, up 11.5 percent from 1981. The gain in real terms over inflation was put at 5 percent. Despite sagging rates in some industrial sectors, the R & D figures continued a string of annual increases begun in 1975. The trend indicates that U.S. companies are overcoming a tendency to slash R & D spending in an economic downturn.

Total U.S. spending on R & D as a percentage of gross national product (GNP) rose to 2.7 percent last year from 2.4 percent in 1981 according to preliminary estimates from the National Science Foundation. The figure has been recovering slowly since the late 1970's when it dipped to about 2.2 percent of the GNP. The United States seems to have regained a lead over West Germany, which spends about 2.5 percent of its GNP on R & D, and Japan, now spending a little over 2 percent. But the U.S. figures include military and space R & D expenditures and, exclusive of these, U.S. civil R & D appears still to lag behind that of its chief industrial competitors.

Among the U.S. companies listed in the survey, the producers of peripheral equipment for computers as a group scored the biggest percentage increase in R & D spending—33.4 percent—after managing a 19.9 percent boost in 1981. Companies in the semiconductor manufacturing category, currently being challenged by the Japanese, increased spending by 12.8 percent, substantially less than the 17.8 percent rise in 1981.

In total dollar spending on R & D, General Motors led at \$2.2 billion. This actually represented a 4.3 percent decline in the company's R & D investment from 1981. The other top spenders on R & D were AT&T at \$2.1 billion, IBM at \$2 billion, Ford at \$1.8 billion, and Du Pont at \$879 million.

Companies that led the list in R & D spending as a percent of sales and of

dollars spent per employee were concentrated in electronics and information processing, none of them industrial giants. Head of the list in respect to dollars per employee was Cray Research, the supercomputer maker, with an expenditure of \$20,958 each, more than \$6,000 over the number two company.—**JOHN WALSH**

Merrell Dow Stops Marketing Bendectin

Merrell Dow Pharmaceuticals, tired of defending itself against what it considers baseless lawsuits, has pulled Bendectin off the market, thus leaving no approved drug for the treatment of morning sickness in early pregnancy.

Company president David Sharrock said in a statement that "Merrell Dow, with great reluctance, has decided to cease the production of Bendectin, a drug which for 27 years has provided relief from nausea and vomiting during pregnancy" even though the drug is "safe." Although the preponderance of medical opinion backs Merrell Dow's position regarding Bendectin's safety, allegations that it causes birth defects have led to adverse publicity and a number of lawsuits. The company won in the first Bendectin case to go to trial but lost a second one when a jury in Washington, D.C., ruled on 27 May that the drug had caused birth defects in a girl named Mary Virginia Oxendine. Merrell Dow is contesting the verdict as being inconsistent with scientific evidence but has decided it cannot afford to continue selling Bendectin.

Bendectin is a "victim of these litigious times," said Sharrock, noting that the cost of hiring a large team of trial lawyers and paying insurance premiums that are "rapidly approaching U.S. dollar sales levels" has made the drug a "burden" on the company.

Although drug stores generally have adequate supplies for women currently taking Bendectin, there will be no new sales by the company. Physicians will have to return to old fashioned ways of treating patients, according to a spokesman for the American College of Obstetricians and Gynecologists. Among the suggestions are vitamin B₆, Coke, and saltines.—**BARBARA J. CULLITON**