in the Swedish Royal Academy of Sciences, financed by the Swedish government. The ICSU executive committee has appointed Thomas Rosswell of the University of Linkoping, currently the secretary-general of ICSU's Scientific Committee on Problems of the Environment (SCOPE), to be the full-time executive secretary of IGBP.

Following discussion of the results of a meeting held in Ringberg Castle, West Germany, last year on the future of ICSU, the general assembly gave its approval to the creation by its executive committee of a working party on relationships with the scientific community and the mass media as a way of raising the organization's visibility, both with the public and the scientific community.

The general assembly also approved the idea that ICSU should seek support for a series of special lectures, to be given particularly in Third World countries. A separate proposal for awarding either prizes or honorary membership to selected individuals met with little enthusiasm and was subsequently dropped. So, too, was a proposal that emerged from the Ringberg discussions to launch a new policy journal, *Science International*; ICSU's current newsletter will be expanded to improve the dissemination of information about its activities.

The general assembly, which is made up of representatives from each of ICSU's 21 member scientific unions, as well as 71 national academies and research councils, gave its provisional approval to the creation of a new inter-union Committee on Biotechnology. This decision will be reviewed at the next general assembly, which will take place in Japan in 1988.

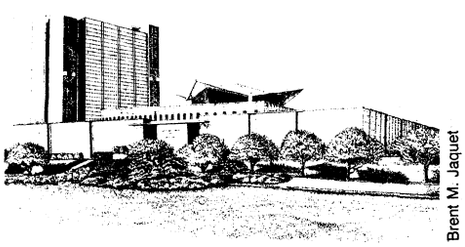
In the election of new officers, physicist M. G. K. Menon, scientific adviser to Indian Prime Minister Rajiv Gandhi, was chosen as president-elect over chemical engineer Heinrich Zollinger, a former chairman of the Swiss National Science Foundation. Menon received 77 votes out of the 106 cast, and will take over as President at the Japan assembly.

A resolution proposed by the International Union of Crystallographers, which would have required all ICSU-affiliated bodies to refuse to sponsor conferences in countries that require visa applicants to formally register their opposition to apartheid, was not put to a vote after discussions with the executive committee and ICSU president John Kendrew. However, the general assembly passed a resolution emphasizing its commitment to "nondiscrimination" as a principle for ensuring the free circulation of scientists, and said that such a commitment was a condition of membership for all scientific and national bodies. ■ **DAVID DICKSON**

Regulating Software for Medical Devices

Computer software used in the operation of medical devices poses new regulatory challenges to the Food and Drug Administration. At present, though, according to FDA commissioner Frank E. Young, the agency hopes to pursue a path of "least possible regulatory action."

Young outlined a tentative policy at a banquet celebrating the 150th anniversary of the National Library of Medicine. Calling medical devices "probably the most complicated area that the FDA has to deal with," Young listed a variety of new computer-assisted devices, such as heart pacemakers which are reprogrammable from the outside. In many of these cases, use of the device is inseparable from the software, in which case the software has to be regarded as part of the device.



Brent M. Jaquet

National Library of Medicine.

Young made it clear that an expert system used as an aid to diagnosis would be no more subject to regulation than a textbook. But it is another story "when computer products move to direct patient care," he said. "When AI [artificial intelligence] is intended to be a total substitute for the judgment of the professional and directs the action in diagnosis and therapy, then software quality control is important."

Young cited a case where two patients were overexposed to an electron beam linear accelerator because of faulty programming. The infusion rate of a substance such as insulin could also be wrong because of errors in the software package. Quality control is an issue in any device in which decisions are based on computer monitoring or are made by the computer. When the floppy disc is sold separately from the apparatus, such as Magnetic Resonance Imaging, the FDA would "look at it as attached to the device" for regulatory purposes.

Young said some software occupies "gray zones"—such as devices monitoring cardiac output or calibrating chemotherapy. But "in principle, any time the physician's judgment can override the judgment of the computer or override the procedures, then FDA has little or no responsibility." He also said the agency had no responsibility over the use of computer-assisted devices in teaching or nonclinical research, or over devices manufactured in particular institutions for their own purposes. ■ **CONSTANCE HOLDEN**

Congress Critical of Foot-Dragging on Critical Materials

Secretary of the Interior Donald Hodel has been named by President Reagan to be the chairman of the National Critical Materials Council. The appointment, made last week, came more than 2 years after the congressional act that provided for the formation of the council was signed into law. It also came one day before a House subcommittee called hearings to check on progress toward implementing the act. The understaffed council has long since missed an April 1985 deadline for the preparation of an advanced materials R&D plan.

Once limited to those strategic metals, such as chromium, whose main sources were overseas and unreliable, the term critical materials now spans the range from the basic metals, such as aluminum, to the advanced, high-technology alloys, ceramics, and composites on which the economic health and national security of the United States reside. The Critical Materials Act of 1984 addressed every aspect of these materials from technical to public policy questions. In particular, it established the critical materials council to help the government form coherent plans for dealing with materials-related issues ranging from the environmental consequences of mining operations to the optimum deployment of federal R&D funds.

In the hearings on 17 September, chairman of the House subcommittee on transportation, aviation, and materials George Brown (D–CA) argued that hundreds of thousands of jobs and tens of billions of dollars were at stake in the competition between the United States, Europe, and Japan to capture the markets for products using these materials. Brown was plainly distressed over what he characterized as "business as usual" in the United States when other countries were moving ahead.

The three-person critical materials council was filled only last November, just after an earlier round of hearings, and two of the members left within a short time. This left only Thomas Moore, who is also a member of the President's Council of Economic Advisors, as acting chairman and one staff person.

In his testimony before the subcommittee last week, Moore reported that Hodel was

looking forward to working aggressively with Moore and the new third member of the council, Deputy Secretary of Energy William Martin. Brown, who said he intended to "keep the heat on," indicated there would be more hearings in the spring. ■

ARTHUR L. ROBINSON

The M.D. Class of '86: Smaller, Deeper in Debt

The number of U.S. medical school graduates decreased slightly this year for the second year in a row. Data collected by the Association of American Medical Colleges (AAMC) indicate that the number of new physicians was down to 16,117 this year from a peak of 16,343 in 1984. Projections based on current enrollments indicate that the decline will continue. Applicants for admission to medical school this year numbered 32,893, 3,051 fewer than in 1985 and a third less than in the top year of 1974.

The downturn appears to mark an end to an era in which medical schools upped their enrollments and students competed for admission in increasing numbers. In recent years, most medical schools have capped enrollments or made small reductions in class size.

AAMC officials note that the schools have been subjected to strong financial pressures. Inflation in the late 1970's and early 1980's put a strain on medical school budgets. Federal capitation grants—payments based directly on enrollment—were progressively reduced in the later 1970's and ended in 1980. Many state legislatures have tightened support of state medical schools. The latter action seems to have been influenced by a shift from earlier warnings of a shortage of physicians to predictions of a surplus.

Students were directly affected when medical schools reacted to financial pressures by sharply increasing tuition charges. The higher costs of medical education are also reflected in the increased indebtedness of graduates. AAMC figures show that 82% of this year's graduates have incurred average debts of over $33,000, a 37% increase above the average debt of graduates in 1982. The heavier debt burden, along with the high cost of starting in private medical practice is apparently affecting the form of practice graduates chose. Traditional private clinical practice was chosen by 58% of the 1986 class, down 7% from 1982. The rest expect to work in medical service organizations, including hospitals and group health maintenance organizations. ■

JOHN WALSH

Software Engineering Research Center Has Florida-Purdue Axis

A new software engineering research center established by the National Science Foundation will have a split personality or at least a double address—the University of Florida and Purdue University in Indiana. The center is being set up with a 5-year grant totalling $500,000 from NSF. Its sponsors, in addition to NSF, are industry, academic institutions, and the Florida state government.

The geographic gap separating the partners is unusual for such NSF centers, but is likely to be less so in the future, according to an NSF source. As the number of centers in the foundation's Industry-University Cooperative Research Centers program has increased—by present count there are 39—industry has urged that the centers combine institutions with complementary capabilities. Purdue is rated strong in software metrics—measuring the performance of software programs. Florida has an acknowledged expertise in data base technology. These were seen as mutually reinforcing the center's prospects of achieving its objectives. These are to increase the productivity of those engaged in writing software and improve the quality and reliability of the product. NSF will be receptive to similar institutional pairings in the future.

In addition to NSF funding, the new center has a pledge of $300,000 over 5 years from the Florida High Technology and Industry Council. Further support will come from $30,000-a-year membership fees from industry sponsors. So far, the center has signed up 11 members. ■ JOHN WALSH

Activists Rebuffed in Monkey Court Case

A federal appeals court on 4 September ruled that an animal rights group does not have legal standing to contest animal use in research. The ruling may be a definitive setback for activists seeking judicial intervention in this area.

The case was originally brought by People for the Ethical Treatment of Animals (PETA) in 1981. The group has been trying to control the disposition of 15 monkeys that were in the custody of the National Institutes of Health for 5 years following the investigation of Maryland researcher Edward Taub (Taub was later cleared of charges of maltreatment). NIH shipped the animals off to the Delta Regional Primate Center in Louisiana last July.

The case was the first of its kind to be addressed by a federal court and is a "very substantial decision in terms of the legal reasoning" according to Richard Verville, a lawyer for 69 groups that filed an amicus brief. The court said that the Animal Welfare Act clearly establishes the Department of Agriculture (in consultation with NIH) as the exclusive mechanism for handling alleged violations.

The court also came down strongly on the side of research, noting that accepting PETA's case could set a precedent for a spate of similar lawsuits. "To risk consequences of this magnitude in the absence of clear directions from the Congress would be ill-advised," said the court. "In fact, we are persuaded that the Congress intended that the independence of medical research be respected and that administrative enforcement govern the Animal Welfare Act."

PETA intends to press for a rehearing and has said it will try to take the case to the Supreme Court. Verville says, however, that although the opinion is only binding in the fourth circuit, it is comprehensive in scope and is likely to be "very persuasive" to state as well as other federal courts. ■

CONSTANCE HOLDEN

Senate Committee Boosts NSF's Budget Prospects

A Senate appropriations subcommittee has voted to add $10 million to the President's $1685.7-billion budget request for the National Science Foundation for fiscal year 1987. The move has improved the foundation's budgetary outlook, for it could help to offset a cut of $135.7 million approved last month by the House. A final compromise between the House and Senate figures will probably not be reached until FY 1987 begins, however. NSF's budget, like that of the rest of the federal government, will be incorporated in a massive continuing resolution that is likely to become caught in a political tussle.

Congress must pass a continuing resolution by midnight on 30 September, when FY 1986 ends. But White House officials predict that the President will veto the funding bill the first time around because of cuts in defense spending and excess spending in other areas. With November elections approaching, members are likely to cut a deal quickly so they can leave town by mid-October. ■ MARK CRAWFORD