the decision will be made no later than July. Meanwhile biologists for the University of Arizona and the US Forest Service will be keeping close tabs on environmental consequences, and by next spring, we should have a reading on the respectives fates of the red squirrel and the Mount Graham Observatory.

—WILLIAM SWEET

IUPAP RECOGNIZES BIOLOGICAL PHYSICS, ELECTS YAMAGUCHI

MIT's Mildred Dresselhaus, the head of the US delegation to this year's meeting of the International Union of Pure and Applied Physics, says she often hears it said that "IUPAP is good at getting information from the troops, but the troops don't seem to get much information about IUPAP."

IUPAP does indeed seem to be an important but somewhat obscure and quite unusual organization. Its triennial general assembly meetings attract an extremely elite representation of physicists, who occupy themselves during the working hours of the conferences with the deadeningly mundane tasks of organizing commissions and electing new officers. Yet in the breaks between meetings and in the evening hours, the atmosphere pulses with the excitement of high politics, and one senses that deals are being made that will have surprising effects years later.

Three years ago, when IUPAP's 19th general assembly meeting took place in Washington, DC (in association with the Corporate Associates meeting of the American Institute of Physics), the outgoing president was D. Allan Bromley, who one year later would be named science adviser to President Bush. The newly elected president-designate was Yuri Ossipyan, who two-and-a-half years later would be named science adviser to President Gorbachev.

At that meeting it was decided to hold the next general assembly in Dresden, East Germany, where—or so it is widely believed—the first shot of the Cold War was fired in February 1945. When the meeting actually took place at the end of September this year, the Cold War had just been officially declared over, and a divided Germany was about to be made one again. It was a very historic moment, as Dresselhaus said in a written report after the meeting: "Both optimism and uncertainty dominated the air, and the topic of German unification was frequently discussed, both in terms of physics and in a broader sense, starting with the opening address. . . ."

IUPAP's business

Politics apart, what makes it worthwhile for a physics leader to spend three or four days every three years at an IUPAP meeting? First of all, says Praveen Chaudhari of IBM, there are the conferences sponsored by IUPAP, which over the years have become increasingly prestigious. "Sponsorship by IUPAP has come to assure a certain minimum quality," Chaudhari told PHYSICS TODAY at Dresden.

Second, said Chaudhari (who will become head of the US IUPAP delegation in January 1991), largely because of the reputation its conferences have acquired, IUPAP has come to be capable of leveraging access to countries that otherwise are closed to outside scientists, and of leveraging travel visas for scientists otherwise confined to home.

IUPAP is part of the International Council of Scientific Unions, which was founded in 1931, at a time when racism was rampant in the world, on the basis of strict racial nondiscrimination in the scientific communities. A well-known and well-regarded organization all over the world, ICSU currently has 20 member unions such as IUPAP and the International Union of Geodesy and Geophysics, and its principal activities include sponsorship of interdisciplinary research programs and conferences, production of publications and development of standards and nomenclature. In some parts of the world (if not currently in the US and UK), IUPAP also benefits from its association with UNESCO, which since 1946 has provided a little bit of funding for IUPAP-sponsored conferences.

Like other member unions of ICSU, IUPAP establishes commissions to oversee fields it deems worthy of conferences—and, by implication, of government or industrial support. Based on the commissions' recommendations, IUPAP sponsors about 30 meetings per year.

Perhaps the most noteworthy thing that happened at the Dresden meeting was the designation of a new commission for biological physics. The proposed mandate for the new commission said, "Biophysicists come from both the physical and biological sides and very often have a far better training in biology and biochemistry than in physics. The goal of *biological physics* is the exploration of the concepts and laws that underlie the structure and function of biological systems. Biological physicists most often are physicists by training."

Hans Frauenfelder of the University of Illinois, Urbana–Champaign, was elected chairman of the new commission. Frauenfelder, who also is chairman of the governing board of AIP, originally was a nuclear physicist who came to biological physics via research using the Mössbauer effect. His main interest is the dynamics, or what he calls the "energy landscape," of proteins. That is, he studies the energy changes that accompany transformations of protein structure.

This year's meeting also considered a motion from the South African delegation to establish a commission on "physics of the Earth," which would embrace environmental physics, minerals physics, cloud physics, aerosol physics, atmospheric physics and ionospheric physics. The general assembly declined to establish a commission but recommended that the IUPAP council give physics of the Earth special attention, and it noted that many activities relevant to the field could be explored and promoted under the aegis of C10, the commission on the structure and dynamics of condensed matter.

Leadership changes

The outgoing president of IUPAP is J. Larkin Kerwin, a space physicist at L'Université Laval in Québec, Canada. During his three-year tenure Kerwin reviewed and rewrote the mandate of every international commission, and the new mandates were adopted by the assembly in Dresden. Kerwin has been a senior officer in a succession of positions in IUPAP since 1963, when he was elected associate secretary general.

In his opening address to the assembly in Dresden, Kerwin reminded his distinguished audience of how we are seeing come true, in just one generation, the visionary expectations outlined in a US Congressional report in 1959—"marvels such as manned spaceflight, meteorological and other remote-sensing satellites, space-based systems for planetary navigation, permanent space stations and manned expeditions to other planets."

The newly elected president-designate of IUPAP is the Japanese particle physicist Yoshio Yamaguchi, who will take office in three years, succeeding Ossipyan. Yamaguchi is a theorist who independently of Murray Gell-Mann and Yuval Ne'eman applied the SU(3) symmetry group to the

hadrons. Yamaguchi also has made many original theoretical contributions to strange particles, cosmic ray physics, nuclear physics and pion physics.

Yamaguchi currently is affiliated with Tokai University near Tokyo, having retired from the University of Tokyo, where he completed his doctoral work in 1953. He was director of the Institute for Nuclear Studies of the University of Tokyo from 1983 to 1986, and he was a member of the committee that established the National Laboratory for High Energy Physics (KEK). He has been a member of the physics research committee of Japan's science council and was president of the Physical Society of Japan, 1986–87.

Yamaguchi was a member of the scientific council of the International Centre for Theoretical Physics, 1987–89, and was chair of the International Committee on Future Accelerators, 1987–90. He currently serves on CERN's scientific policy committee.

Miscellany

Because of the exceptional individuals who show up for IUPAP meetings, the conferences are a good place to pick up hints of what is to come in various parts of the world. Among this year's gleanings:

▷ Ossipyan told us that the Academy of Sciences of the USSR has now been put on its own feet as a completely independent organization. Among other things this means that it will have to go, hat in hand, to the central and state legislatures for money. We asked Ossipyan, who also is head of the Institute for Solid State Physics in Chernogolovka, whether Soviet physicists are worried about the prospect of having to rely on the fickle public for support. He said that while the reputation of physics has suffered somewhat because of Chernobyl, he is not too worried.

▷ S. R. Seretlo, dean of the science faculty at the University of Fort Hare in South Africa, said that there was a meeting last July in Harare, Zimbabwe, of people in the basic sciences from all over southern Africa. Seretlo, a Black South African, said that the aim was to identify centers of excellence throughout the region that will be interracial. As a result of the dramatic political changes taking place in South Africa, Seretlo said, there now is a sense that there will be more possibilities for scientific cooperation in southern Africa.

Last but not least in this year's IUPAP news: The two German delegations are being consolidated into a single delegation, which will reduce total national membership in the organization from 43 to 42. The implications of German unification for German physics, and for Europe's general position in pure and applied physics, will be the subject of a forthcoming news report.

—WILLIAM SWEET

SPENCER TAKES REINS AT SEMATECH WITH INTENTION OF WINNING RACE

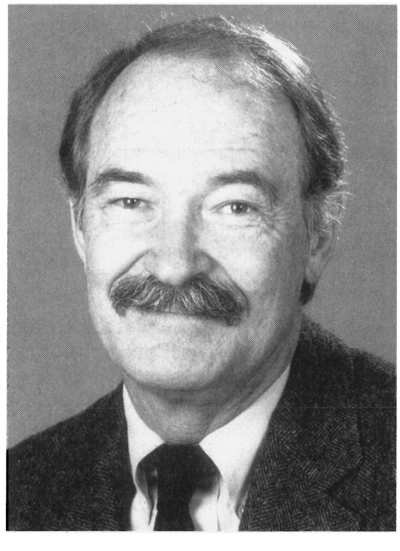
SEMATECH Inc, the US semiconductor consortium, has selected William J. Spencer, group vice president of research at Xerox Corp, to be its president and chief executive. The top position at SEMATECH had been vacant since June, when Robert N. Noyce died of a heart attack.

Spencer said he was prompted to take the job at SEMATECH because of its importance to the US. "I see SEMATECH as an important experiment: We're trying to determine if US companies and the government can collaborate on a business that is critical not only to the semiconductor industry but also to the country."

Spencer, who is a physicist by training, has worked on a variety of semiconductor research projects. After earning a PhD in physics from Kansas State University, he began working at Bell Labs in 1959, studying defects in ferroelectric and piezoelectric materials using x-ray diffraction. He also worked on timing circuits for the early communications satellites, including the Telstar satellite launched in 1962.

From 1973 to 1981 Spencer was at Sandia National Laboratory, where he was involved in building a semiconductor processing facility. After moving to Xerox in 1981, his initial task was to set up a semiconductor processing lab at the company's research center in Palo Alto, California, after which he directed the center. In 1986 he moved to Xerox headquarters in Stamford, Connecticut, to oversee the company's international research operations, which account for about $1.2 billion per year.

William J. Spencer



As head of SEMATECH, Spencer says he hopes to continue the work begun by his predecessor Noyce, who was also a family friend. "Noyce gave SEMATECH credibility and he did an extremely good job of setting its mission and direction," Spencer told PHYSICS TODAY. When he begins his new job this month, Spencer says he expects to spend about half of his time on the road, lobbying in Washington and visiting member companies. Much of the day-to-day business will be left to Turner Hasty, SEMATECH's chief operations officer.

Technical goals

SEMATECH was formed in 1988 by a group of 14 US semiconductor manufacturers to carry out research that would be shared by its members (see PHYSICS TODAY, February 1988, page 51). The consortium has focused on complementary metal-oxide semiconductor technology. So far the consortium boasts of prototype CMOS devices having circuit linewidths of 0.5 microns, built and tested entirely with US equipment. By the end of 1991 the consortium hopes to refine the 0.5-micron technology for manufacturing, with the eventual goal of achieving 0.35-micron chip technology by 1993.

In general SEMATECH has chosen projects that a consortium can do better than any one company, and it has tried to avoid being too narrow in its research focus. "We're really looking at generic technology that all of our member companies can use," Spencer says. Of the 100 or so processes involved in making a chip, SEMATECH has focused on a handful that it considers to be the most critical: optical lithography; manufacturing methods and systems; furnaces and implants; and multilevel metals. Member companies are expected to contribute technical know-how when appropriate; for example, IBM has shared its 4-megabit DRAM