

## ESAKI LEAVES IBM TO BECOME PRESIDENT OF JAPAN'S TSUKUBA UNIVERSITY

When Leo Esaki, the creator of the tunnel (or Esaki) diode, was elected president of the University of Tsukuba, it made front-page news in the Japanese press—not too surprising, given that he is the country's only living physics Nobel laureate. Besides, the circumstances of Esaki's election were most unusual: He is the first president of any of Japan's 97 national universities to come from outside academia, and, what's more, he has spent most of the past 32 years working and living outside Japan. "In physics terms," Esaki says, "it was almost a forbidden transition."

Esaki assumed his new position in April after retiring from IBM, with whom he was a fellow at the T. J. Watson Research Center in Yorktown Heights, New York. A native of Japan, he earned a BS from the University of Tokyo in 1947, and then, while working for Sony Corp, he received a PhD in physics from Tokyo in 1959. Shortly afterward he moved to the US to join IBM, where his research included work on semiconductor superlattices. (The article by Leroy Chang and Esaki on page 36 describes this work.)

### Instant status

Perhaps no other individual could have conferred upon Tsukuba the kind of instant status that Esaki has brought to the school. Like everything else around it, the university is new. Founded in 1973 (the same year Esaki got his Nobel), it is located near the center of Tsukuba Science City, a planned community set up by the Japanese government three decades ago as a magnet for scientific and technical talent (see *PHYSICS TODAY*, July 1990, page 59). To date 45 national research institutes—representing about half of the country's government scientists and half its research budget—and 200 industrial laboratories have been drawn there.

But even with such close proximity



**Leo Esaki**, right, listens to a talk given at his retirement symposium held near IBM's Watson Research Center on 1 May. The event was sponsored by IBM, Esaki's employer for 32 years before he became president of Tsukuba University in April. Seated next to Esaki is C. N. Yang.

to hundreds of labs and research facilities, Tsukuba is not generally regarded as the country's top university. In order to transform the school into a first-rate research institution, Esaki says, it was felt that Tsukuba needed "new blood." That, Esaki says, is what motivated the school's faculty to nominate and elect him. He is now serving a four-year term, after which he could be elected to a second two-year term.

Among other things, Esaki plans to expand and strengthen Tsukuba's graduate education. The student population stands at 12 000 at present, of which a quarter are graduate students. Esaki hopes to arrange for more graduate students to do at least

part of their thesis work at one of the neighboring government or industrial labs. He is also negotiating educational exchange programs with major universities in the US and Europe.

As head of a Japanese research institution, Esaki must also reckon with the fact that the country's basic research does not begin to approach the achievements of its applied research. Esaki attributes this disparity in part to the Japanese government's "relatively meager" contribution to research. In the US, government funding accounts for about half of the country's R&D budget, while in Japan less than 20% comes from the government (although much of that difference is due

to the US's spending on defense-related research).

Compounding the problem, Esaki says, is that within the government each ministry has its own objectives and supports its own research activities, and little effort is made to unify the efforts. The need to boost university-based research funding and to improve basic research has been acknowledged by officials as high up as Prime Minister Kiichi Miyazawa, and in late August the government announced a new spending program of

10 trillion yen (about \$80 billion), of which \$3.7 billion is to go toward research and education. Esaki expects the situation to improve, but gradually.

Six months into the job, Esaki says he is too busy to pursue active research at the moment. But he is taking a scientific approach to his work. "I can learn how to apply mechanisms and systems to what I do," he says. "I sort of enjoy that." His biggest lesson to date: "I'm learning what a bureaucrat is."

—JEAN KUMAGAI

## AGU HELPS SECURE DECLASSIFICATION OF GEOPHYSICS DATA

The American Geophysical Union, working with representatives of other organizations, has played a key role in obtaining the release of several previously classified sets of geophysical data. These include sonar data describing the depth of water along the US continental shelf and data from the GEOSAT satellite determining ocean heights.

Several years ago AGU set up a panel representing different fields of geophysics to identify data sets that deserved to be more widely used. According to John D. Bossler, who is the outgoing head of the AGU Panel on Access to Geophysical Data and the director of the Center for Mapping at Ohio State University, "We quickly gravitated toward classified data because there were four or five sets that were highly sought."

Panel member Paul G. Richards of the Lamont-Doherty Geological Observatory says that Bossler was very effective in dealing with the Navy's Office of Oceanography. The first important data set to be released contained information on ocean depths in the Exclusive Economic Zone—that is, the continental shelf around the US. Next came a band of GEOSAT data—radar measurements of the distance from the satellite to the ocean surface, containing clues to ocean currents, the variability of the ocean surface, the Earth's gravity fields and so on. Most recently all GEOSAT data covering the ocean surface below 30 degrees south latitude were declassified—"very valuable stuff, which will keep a lot of scientists busy for a long time," Bossler says.

The AGU panel has been less successful in getting the Air Force to release seismological data. However, the panel also has played a part in getting the US government to inaugurate a broad review of classified

data pertaining to the Earth's ecosystems. Language recommending a systematic government review of classified data pertaining to the Earth's environment was incorporated into a legislative proposal sponsored by Senator Al Gore of Tennessee and Senator Sam Nunn of Georgia for a Strategic Environmental Research and Development Program, a \$200-million fund that Congress subsequently authorized. Last November Gore held an informal meeting with about 30 Earth scientists, including a representative from the AGU panel, to discuss possible declassification of data. The Council on Foreign Relations has sponsored informal meetings between scientists and members of the intelligence community to discuss ecological reconnaissance data.

As a result of such efforts, Director of Central Intelligence Robert M. Gates agreed to establish a committee to consider declassification of ecological data, and on 5 June President Bush signed a directive ordering that both military and civilian space-based instruments be evaluated to improve "our ability to detect and document changes in the global climate system."

A number of factors are likely to drive the declassification of data further, Bossler says. For one, the collapse of the Soviet Union has to some extent relieved satellites of their original military purpose. Second, instruments such as the ERS-I satellite are now providing European scientists with data comparable to those from GEOSAT, and so the declassification of US Earth science data is only logical if American researchers are not to be placed at a disadvantage.

The bipartisan support won for declassification of geophysical data suggests that the process will indeed go forward.

—WILLIAM SWEET

## SURVEY FINDS FEW REWARDS FOR THOSE ACTIVE IN EDUCATION

Most physicists in academia are expected to wear two hats: one as researcher and the other as teacher. But according to a survey of US physics departments, conducted by the American Physical Society's committee on education, "comparatively few department chairs reward faculty for involvement in [educational] activities."

The survey, which was carried out by the education and employment statistics division of the American Institute of Physics, polled the chairs of all 752 US physics departments during the fall of 1991; the response rate was 71%. The current chair of the APS education committee is William E. Cooke of the University of Southern California.

The survey was a follow-up to an informal poll conducted by the APS subcommittee on educational activities and academic recognition. A report that the subcommittee released in April 1990 concluded that "all departments claim to recognize teaching as well as research and service in the promotion and tenure process, but the formal criteria are not generally a useful guide to what actually happens."

The extent to which faculty are involved in educational activities varies by the type of department. Among departments granting bachelor's degrees, the survey found, over 80% of the faculty are engaged in educational activities beyond regular teaching, such as writing textbooks or developing new kinds of courses. By comparison, less than 30% of the faculty in the PhD-granting departments are active in education outside the classroom.

And what rewards, if any, can faculty expect from such involvement? Very few, it turns out. For one, some department chairs said they do not have the authority to provide such rewards. Also, particularly among undergraduate departments, professors are expected to be active as educators, and so that work is not specifically rewarded. At those schools that do reward educational activities, the survey found, the most common rewards are merit raises, student or secretarial support and travel support to meetings.

The survey also looked at the importance of teaching ability in hiring and promotion decisions. Not surprisingly, nearly all of the PhD-granting schools said they look first for research accomplishments when hiring new faculty, while over three-quarters of