in fact, Nixon suggested that $2 billion be spent for manpower activities under his proposed new revenue-sharing plan in order to rescue manpower programs from "a thicket of narrow categories.") The answer the reporter got was that revenue-sharing is not yet here, so the Administration will continue to act in the meantime under a centralized system. Another reporter noted that there seemed to be a "job bank" for scientists and engineers and he wondered if there were any for "the ordinary working Joe." He was told there were not.

The reason for aiming special help at the scientists and engineers, according to federal officials, is that they are employable, in contrast to many of the unemployed; they have skills which should be put to use on crucial problems; they are unaccustomed to being out of work and hence don't know how to find a job; and their services will be badly needed in the coming decade. The Labor Department estimates that some 1.5 million engineers will be needed by 1980—a jump of 50 percent from today's level. Thus the existing talent must be put to work and additional talent must be attracted into the profession. As Lovell told the press conference: "We anticipate over the next decade a need of probably 70,000 to 80,000 scientists and engineers every year to meet the basic needs of the economy as it grows. We are producing currently at the rate of about 35,000 a year from college. So we are facing a shortage situation that would just be tragic if young kids start making career decisions on the basis of the current situation which is not a permanent situation."

That analysis, which was seconded by Labor Secretary Hodgson and Science Adviser David, raises the interesting question of why the Administration, if it really believes there will be a shortage of talent later in this decade, has nevertheless sharply cut back on the number of traineeships and fellowships for science and engineering students. The answer to that, according to David, is that the Administration has not cut back its support of students—it has simply changed the mechanism of support, from traineeships and fellowships to research grants. "We estimate that we will be supporting as many students, graduate students, next year through research assistantships, fellowships, and traineeships, and so forth as we were this year," David claimed, "even though we have shifted funds from traineeships and fellowships into research." David said it is "very appropriate that people go into the fields in which research is being done in universities—this is a way of steering them into the places, into the fields where there is important work to be done." The fields in which David expects a particular need for trained manpower to develop over the next decade include computers, health, educational planning and technology, and energy.

Some representatives of professional societies who attended the day-long conference said later that they were unhappy with the Administration's apparent unwillingness to spend much money to spur conversion of aerospace talents to domestic needs. Some of these professionals are no doubt pinning their hopes on legislation introduced in the Senate by Sen. Edward M. Kennedy (D–Mass.) and in the House by Rep. Robert N. Giaimo (D–Conn.) and Rep. John W. Davis (D–Ga.). The legislation would appropriate some $450 to $500 million over a 3-year period to finance retraining programs, provide grants to small businesses, fund research and planning of conversion programs, and establish nonprofit community corporations which would hire unemployed professionals and put them to work on domestic problems. Although similar legislation was bypassed in the closing rush of the last Congress, sponsors claim it has a much better chance of succeeding this year.

—PHILIP M. BOFFEY

M.I.T.: Wiesner to Succeed Johnson in Presidency, Office Restructured

In electing Jerome B. Wiesner as its 13th president, M.I.T. has chosen a man who is preeminently an insider. Wiesner moves up the final rung to the presidency from the office of provost after an association with M.I.T. which dates back to World War II. And in the world beyond Cambridge Wiesner, who was President Kennedy's science adviser, has figured prominently in the group of university scientists that has influenced science policy and science politics for more than two decades.

Wiesner, 55, will succeed Howard W. Johnson, who has served as M.I.T.'s president since 1966. Johnson and Wiesner were generally regarded as an effective partnership in dealing with a succession of student protests in recent years in a style described by one faculty member as "conciliatory but firm."

Simultaneously with the announcement of Wiesner's election came word of the selection of Paul E. Gray to a revived M.I.T. chancellorship. Gray has served as an associate provost and had recently been named dean of engineering. His role is described as deputy to the president, and creation of the post denotes a restructuring of the M.I.T. presidency to distribute the increasing burden of the office. Wiesner and Gray will take office on 1 July when Johnson will become chairman of the M.I.T. Corporation succeeding James R. Killian, who is retiring.

Wiesner's career provides the ingredients for an archetypal résumé of the publicly involved scientist-engineer of his generation. Born in Dearborn, Michigan, he won his bachelor's, master's, and doctor's degrees at the University of Michigan. At the beginning of World War II Wiesner joined the staff of the Radiation Laboratory at M.I.T. and occupied jobs of ascending responsibility in radar development work. In 1945 he went for a year to Los Alamos, and after the war he returned to M.I.T. to teach electrical engineering. By 1952 Wiesner was director of the Research Electronics Laboratory, successor to the Rad Lab and an important model both for interdisciplinary research and for university involvement in government-sponsored R & D work.

Wiesner's work in microwave theory established his professional reputation —he was elected to the National Academy of Sciences in 1960—and he was a founder of one of the high technology companies that were spun off from

NEWS IN BRIEF

● **EUROPE'S CERN II OK'D**: After 8 years of planning and arguing, CERN, the European Organization for Nuclear Research, has voted, amid much jubilation, to start construction of a 300-Gev accelerator. The new machine, known as CERN II, will straddle the Swiss-French border adjacent to the existing CERN laboratory in Geneva. It is more than ten times as large as the present CERN 20- to 30-Gev accelerator and will be built over an 8-year period, starting this summer, at a cost of about $256 million. Ten of the 12 member states of CERN are paying for the program, with West Germany, the United Kingdom, and France picking up more than 65 percent of the cost. The director-general of CERN II is John B. Adams, long associated with the European organization and with Culham Laboratory in England.

● **GERMAN TALENT DRAIN EASING**: The alarming exodus of scientists from West Germany to the United States and other countries is slowing down, and many are returning home, the West German government notes. Figures reflect a sharp reduction in the number of scientists emigrating to the United States—from 770 in 1968 to 320 in 1969. Officials note that the cutback in U.S. research spending, as well as new opportunities in rapidly growing German universities and technical schools, is encouraging Germans to stay at home. A German diplomat in Washington says there has also been a discernible, but not yet quantifiable, trend of American scientists seeking employment in the Bundesrepublik.

● **NEW PUBLICATIONS**: The Assembly on University Goals and Governance of the American Academy of Arts and Sciences has issued a report containing 85 suggestions for the revitalization and reorientation of colleges and universities. The report may be obtained from *Dædalus*, 7 Linden Street, Cambridge, Mass. 02138. *Legislation, Achievements and Problems in Education*, a survey made in 1970 of public school problems throughout the country, may be had from the Education Commission of the States, 1860 Lincoln Street, Denver, Colorado 80203.

M.I.T. in the 1950's. His association with the company, which became part of Itek, ended before the decade was out.

During the 1950's Wiesner was active as a consultant to government, particularly on air defense problems. He moved up through the advisory hierarchy to service on the Gaither Committee, which made an influential report on the national defense posture, and on the President's Science Advisory Committee (PSAC).

Wiesner knew John F. Kennedy as a Massachusetts senator and was a Kennedy adviser during the 1960 presidential campaign. When Kennedy was elected, Wiesner was appointed special assistant for science and technology. His friendship with the president and Kennedy's expansionary attitude toward science and technology gave Wiesner a closer relationship to the president than any science adviser before or after.

During Wiesner's tour in Washington the scope of the White House science office enlarged considerably. The Office of Science and Technology was established, and PSAC was asked for advice on a broader range of issues. From its beginnings, PSAC had been consulted on scientific manpower and education issues and on some civilian technical problems, but the committee had dealt primarily with technical and technological aspects of national security issues. In the Kennedy years, PSAC's agenda broadened to include public policy issues which anticipated concerns later in the decade—such as energy problems, water use, pesticides, and pollution.

Wiesner, a Pugwash regular, was deeply concerned with nuclear arms control matters and, as science adviser, involved himself deeply in the effort that led to the nuclear test ban treaty. Wiesner was not, however, a Merlin of the Kennedy Camelot who invariably called the turn on scientific-technical issues. He was strongly identified with the losing side, for example, in the bitterly argued decision that the Apollo program should adopt a lunar-orbit mode rather than an earth-orbit alternative for the astronauts' trip to the moon.

Wiesner's predecessors in the science adviser's job had acted primarily as personal consultants to the president, operating mostly behind the screen of executive privilege. Wiesner was not particularly accessible to the press or a frequent attraction on the speech-making circuit, but he did appear more frequently before congressional committees as an advocate of Administration proposals, particularly as his own interests developed in such issues as education legislation.

After Kennedy's assassination, Wiesner remained in Washington for a few months but in 1964 returned to M.I.T. as dean of the School of Science. He was regarded as one of the leading prospects in the ensuing search for a successor to M.I.T. president Julius Stratton. Johnson was chosen and took office in 1966, and Wiesner was named provost. The M.I.T. provost is the school's chief academic officer but, as one faculty member put it, "the job is defined by the man," and Wiesner tackled a broad range of financial and administrative problems.

M.I.T.'s campus was comparatively quiet until the fall of 1968 when an AWOL serviceman took sanctuary in the M.I.T. chapel and created a rallying point for militants. This began a period of protest, which produced the 1969 "March 4" research halt at M.I.T. and elsewhere and was to focus primarily on military research done through M.I.T.'s extensive and complex relationship with the federal government. The key issue for protesters became the two "special laboratories," the Instrumentation Laboratory and Lincoln Laboratories with an aggregate budget of $120 million a year, which the institute operated under contract to the federal government. A study by a group that was representative of several segments of the M.I.T. community led to a decision for ultimate transfer of the Instrumentation Lab outside the institute's management structure; the contract relationship of Lincoln Laboratories was to be retained but the lab's involvement in military R & D is not to extend to development of specific weapons systems.

Faculty observers say that Johnson and Wiesner worked well as a team during periods of confrontation, with Johnson operating more as "strategist" and Wiesner, who worked hard at being visible and available to students, providing direct contact between administration and protesters.

The search for a new M.I.T. president began last September when Johnson announced he intended to step down at the end of the current academic year. Dr. James B. Fisk, president of the Bell Telephone Laboratories

and a life member of the M.I.T. Corporation, headed a search committee of eight corporation members which also recommended changes in the structure of the presidency. It appears the selection process was democratized somewhat by the involvement of two other committees—a special faculty advisory group and special advisory panel made up of Corporation members, faculty members, and students.

Some observers in the faculty say that the choice of Gray will be welcomed by a conservative constituency in the faculty who feel that administrative policies during the protests were too permissive or who disapprove of Wiesner's political activities. In recent years Wiesner has been outspoken in his criticism of the Vietnam war and has been a leader of the opposition to ABM deployment. Wiesner has also been active in Democratic party matters. It should be noted that, although Gray's political views have a more conservative cast than Wiesner's, he has been deeply involved in administration and policy matters at M.I.T. during the difficult times of recent years and is very closely identified with curriculum experimentation and reform which are prominent issues now at the institute.

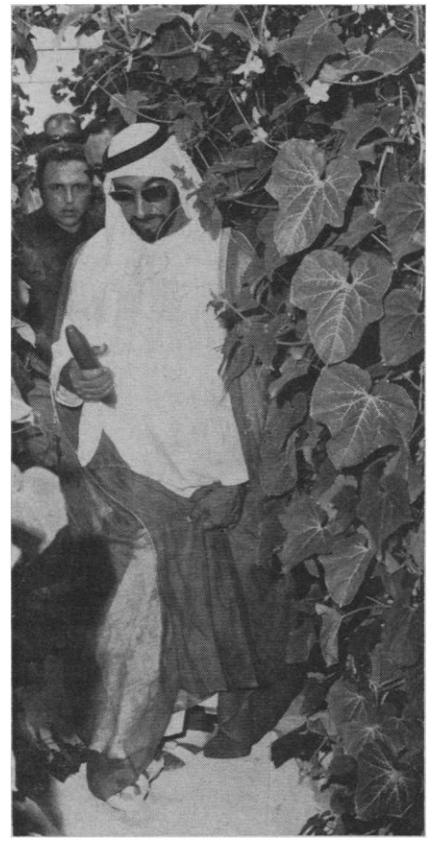
If Wiesner's political stance does not seem to have seriously disturbed the selection committees, his friends say he pondered deeply the implications of becoming a candidate for the presidency. As provost of M.I.T. he could express his views as a private citizen relatively freely. As president he will represent his institution and must necessarily be more circumspect. At a press conference following the announcement of his election, Wiesner said that as president he would no longer involve himself in partisan politics and would take a role in other public issues ony as time permitted, and he didn't expect there would be much time.

M.I.T. is the paramount American technical university. It has very strong intellectual and financial resources, but its new president will face very serious challenges in meeting budgetary problems, modifying M.I.T.'s relationship with the federal government, finding sources of funding for work on health and urban problems, and reforming curriculum and governance. In reflecting on Wiesner's election it seems that it is probably no coincidence that other major private universities, looking for men the times required for their presidents, also chose from within their own communities. At Stanford it was provost Richard Lyman, and at Harvard, law dean Derek Bok, and each, like Wiesner, was a "popular choice" who had proved himself in crisis management.—JOHN WALSH

Arid Land Agriculture: Shaikh up in Arizona Research

Tucson, Ariz. Scientists at the University of Arizona's Environmental Research Laboratory have tapped a novel source of research support funds: Shaikh Zaid Bin Sultan Al-Nahya, ruler of Abu Dhabi. Shaikh Zaid gave the laboratory over $3 million for the construction of a power-, water-, and food-producing facility in his oil-rich desert shaikhdom, south of Kuwait on the Persian Gulf. Construction of the Abu Dhabi facility will give the Arizona scientists a chance to use the experimental techniques they have developed for desert agriculture. And as part of the deal, the Shaikh will continue to pay for a portion of the laboratory's research program.

The relationship between Shaikh Zaid and the University of Arizona began with a 1967 *Time* magazine article describing the Environmental Research Laboratory's research station at Puerto Penasco, Mexico, on the Gulf of California. At the station, the scientists were successfully growing vegetables in the barren coastal desert by using small quantities of desalinated water in controlled-environment greenhouses. When an aide told the Shaikh about the *Time* article (the Shaikh reads neither English nor Arabic), he became so excited at the possibility of having fresh vegetables grown in his country, which has an annual rainfall of 1 inch, that he invited the director of the research station, Carl N. Hodges, to Abu Dhabi. After some negotiations, Shaikh Zaid deposited $1.5 million in a Tucson bank toward construction of a desalinization and vegetable-growing station in Abu Dhabi. Located on a totally barren island known as Jazirat as Sa'diyat (the Isle of Happiness), the station produced its first experimental harvest last year, and full-scale production will begin soon.



Shaikh Zaid Bin Sultan Al-Nahya, ruler of Abu Dhabi, examines one of the first cucumbers grown in his country.

Abu Dhabi occupies a tiny part of the world's 20,000 miles of arid coastline that many people believe could supply large quantities of food if fresh water could be supplied cheaply enough to allow irrigation. In an attempt to develop techniques of inexpensive desalinization of seawater, the staff of the Environmental Research Laboratory began experiments in 1963 at the Puerto Penasco station using solar energy to purify the seawater. Although sunshine could have been used to remove the salt from the water, the scientists at Puerto Penasco eventually realized that a much more easily captured source of energy was being wasted—the diesel engines that were used at the station to pump water and generate power for lights. So