The premise of the conference was that collaboration between universities and industry will benefit all parties if the university's ideals are in no way distorted by industry's millions. ". . . research agreements and other arrangements with industry [must] be so constructed as not to promote secrecy that will harm the progress of science, impair the educational experience of students and postdoctoral fellows, diminish the role of the university as a credible and impartial source, interfere with the choice by faculty members of the scientific questions they pursue, or divert the energies of faculty members and the resources of the university from primary obligations to teaching or research," the statement says in a sentence that covers it all.

To these ends, the conference participants had this to say on the following points:

• *Contract disclosure*. One way to satisfy faculty and others that agreements protect academic values is to make public the relevant provisions of research contracts, the Pajaro Dunes statement suggests. However, reflecting the fact that there was not total agreement on this point, the statement offers an alternative. "Another method may be to allow a faculty committee or some other competent body to examine all research contracts with industry and ensure that their terms are consistent with essential academic values. Reasonable people," the document observes, "may differ on the choice of methods to be used. . . ." Indeed, there is no set pattern now. With the exception of a contract between the Hoechst Company and the Massachusetts General Hospital (MGH), whose disclosure was spurred by congressional pressure, Harvard, for example, has elected to keep its contracts confidential. Stanford, on the other hand, has an informal policy of full disclosure.

• *Patents and licenses*. There was a general consensus in favor of universities having an active patent policy, even though filing may require a brief (days or weeks) delay in publication or other public disclosure of research. However, there was anything but consensus over the question of granting a company exclusive license to develop a patent for profit. As one participant noted, "There is something undemocratic about an exclusive license and many of those present, especially faculty researchers, don't like the idea." Nevertheless, the Pajaro Dunes document tends to favor exclusive licenses in certain circumstances. "Some people feel that allowing a single firm the sole right to develop a patent will necessarily remove competition, slow the development of the patent or even prevent development altogether. This theory is exaggerated," it states.

The issue was left unresolved but the fact is that most of the major university-industry contracts presently in force provide exclusive rights to the industry sponsor of research. As Harvard president Derek Bok observed at a press conference following the meeting, "Some people feel that exclusive licensing is a perfectly reasonable quid pro quo for providing a significant amount of money for research, without which the research and discovery would never take place at all." He added, "This issue needs much more debate."

Individual research contracts were not discussed in detail at Pajaro Dunes, but the Hoechst-MGH agreement, which the hospital has called a model of its kind, is noteworthy in its provisions for exclusive license. Under the terms of the agreement, Hoechst has the right to fund *all* of the research in Harvard's new Department of Molecular Biology in exchange for exclusive license to any discoveries that have commercial application. The $50 million-plus agreement is in force for a minimum of 10 years; eventually the department is expected to have a professional staff of some 80 to 100 scientists. The Pajaro Dunes document declares that "universities should be able to negotiate exclusive licenses provided the exclusivity seems important to allow prompt, vigorous development of the patent to occur. . . . Exclusivity should be allowed for only the interval necessary to encourage desired development."

In a telephone interview with *Science*, Bok declined comment on the Hoechst agreement with MGH because, he says, "MGH is an independent hospital with its own board of trustees."

• *Conflict of interest*. Discussion of conflict of interest focused on two aspects of the problem. One was the propriety of a university taking an equity position in a company in which one of its faculty is a major stockholder or officer. The feeling was against. "It is not advisable for universities to make such investments unless . . . there are sufficient safeguards to avoid adverse effects on the morale of the institution. . . ."

The other issue was the potential for conflict of loyalties when faculty members are affiliated with a biotechnology firm. Here, consensus was impossible. As Sinsheimer said, "I don't think you should have faculty members who are

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Spy Chief Warns Labs of Future Soviet Threat

A counterespionage offensive led by the Central Intelligence Agency (CIA) will force Soviet spies in the near future to increasingly target U.S. university-based scientists and engineers for technical and military secrets, Admiral Bobby R. Inman, deputy director of the CIA, told a congressional hearing on 29 March. Inman made the remarks by way of explaining his reasons for recently proposing an increase in voluntary censorship by U.S. scientists. "The academic outflow is currently small," he told the hearing. "But it will increase if our counterespionage efforts are successful."

Currently, Inman said, only about 30 percent of the Soviet Union's intelligence gathering is done through U.S. scientists and scientific exchanges, and of that, only "a very small part of the problem" centers on scientific papers. But the problem will increase, he warned, as the United States cracks down on overt espionage. Inman's remarks were less forceful than those made at the AAAS annual meeting in January, where he warned that if the scientific community did not start policing itself, it would be hit by a "tidal wave" of popular discontent over the "hemorrhage of the nation's technologies" (*Science*, 22 January, p. 383).

The hearing was called by House science and technology subcommittee chairmen Albert Gore, Jr. (D–Tenn.) and Doug Walgren (D–Pa.) to examine the impact of the Reagan Administration's secrecy proposals on science and technology. Inman said he was not making specific recommendations but merely playing the part of a "gadfly." He urged the scientific community to come forward with the proposals on how to reduce the flow of technical information to the Soviets. Gore questioned some of Inman's statements and said the United States should avoid taking "even the first step down the road that has made Soviet science so pitiful." Inman quickly replied that he was asking for nothing of the sort.

Also testifying at the hearing was Frank Press, president of the National

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Academy of Sciences. Scientists' major concerns, he said, is that the proposed expansion of the scope of classified information could force some basic research not directly tied to national security out of universities that avoid classified work. "We should consider how much our security is harmed by denying government access to many of the nation's most brilliant scientists and engineers who work on university campuses," he said. He also noted that the Academy is gearing up to perform a study on the relationship between university research and national security in light of the growing concern over technology transfer.—***William J. Broad***

University Researchers Lobby for Space Science

Alarmed at cuts in many university-based space science programs, nearly 50 scientists, congressional staff members, and university officials met in Washington in February to organize the Space Science Working Group—in effect, although the name does not imply it, a lobbying outfit.

"The downgrading of space science is preferentially hurting the universities," says University of Chicago astrophysicist John A. Simpson, who was the prime mover behind the group. Funding for space science in the universities comes primarily from NASA's research and analysis budget, which has been particularly hard hit in recent years. The Reagan Administration's fiscal year (FY) 1983 budget request for research and analysis in planetary science, for example, represents a 50 percent cut from FY 1981 levels in real terms.

"These budget cuts were buried pretty deeply in the woodwork," says Peter B. Boyce, executive director of the American Astronomical Society. "We plan to bring their effects to people's attention."

The Space Science Working Group will have a full-time staff person in Washington under the aegis of the Association of American Universities. Individual members of the group have been assigned to contact Congress, NASA, the Department of Defense, the Office of Management and Budget, and the Office of Science and Technology Policy. In addition, scientists in the universities will be urged to contact their own members of Congress.

Scientists have traditionally been slow to take such action, notes Boyce. "The long-term benefit in this crisis may be in getting a lot more people aware that they *can* go to their congressman."—***M. Mitchell Waldrop***

New England Education's Competitive Edge Dulled

In New England's days of industrial decline its only growth industry seemed to be higher education. Recently, the region has rallied economically through a buildup of high-technology industry and sophisticated services. But higher education, which did much to make the economic comeback possible, is itself now showing signs of trouble.

The New England Board of Education's Commission on Higher Education and the Economy of New England has recently published a report with the title "A Threat to Excellence," which sums up its message. Increasing competition, particularly from the energy-rich states of the Sunbelt, will make it difficult for New England colleges and universities to keep their lead in educating recruits for knowledge-intensive industry.

The report cites three main problems: (i) A weakening of the region's public school system. (ii) A comparative decline in ability to finance higher education. (iii) A perception that New England is no longer the region of greatest opportunity.

The commission reports a measurable deterioration in the region's secondary schools, noting with particular alarm a decline in inferential comprehension which denotes critical thinking ability. Scores in this category declined nationally in the 1970's, but the decrease was greatest in the Northeast, which dropped from first to third among four regions in the decade.

In financing higher education, New England retains a rapidly diminishing and now marginal lead in per capita expenditures. The rate of expenditure on higher education by oil and gas states has been increasing 40 percent faster in recent years than has New England's. New England in 1979 spent $81 per capita on publicly supported higher education compared to $177 spent by the oil and gas states.

The national average for allocation of tax revenues to public higher education was 11.3 percent. Allocations by all six New England states fell well below that figure; Massachusetts at 4.9 percent ranked 51st and New Hampshire at 5.6 percent ranked 50th among the states and District of Columbia.

Perception of New England as lagging in offering economic opportunity

Joe Di Dio/NEA

Problems in the schoolhouse

is partly subjective, of course, and it is possible to point to the countervailing evidence of the growth of high-technology industry and revitalized mill towns. But migration figures show that the Northeast is no longer as attractive to business leaders as it was a generation ago. And disparities between regional living costs and local tax burdens currently heavily favor the Sunbelt states.

The commission's report is described as "preliminary" and its recommendations are general and reflect the regional basis of its membership. Specifics will have to be thrashed out, but meanwhile the commission urges closer cooperation of industry with schools and higher education, better planning and regional cooperation, pooling of resources by private and public institutions, and more creative use of the tax system to strengthen the educational system. As for improving perceptions of New England as a region of opportunity, the commission insists that the Northeast has genuine advantages as a place to study, work, and live and New Englanders should overcome their native reserve and, in effect, do a better job of blowing their own horn.

—***John Walsh***