State Department says evidence is extremely hard to come by because the stuff is so toxic and areas so remote, that we are lucky to have any samples at all. Meselson, however, finds it strange that no one has come up with a used munition bearing traces of toxin. (*Soldier of Fortune* magazine, which delivered one of the samples to the State Department, says it has scrapings in a jar of an inert substance the toxin was mixed with; it has offered a $100,000 reward to the first Communist to defect with an intact chemical or biological warfare munition.)

Although some find it inexplicable that the Russians would engage in such gross violations of international law for minimal gains, the State Department finds that part easy to explain. Chemicals have long been a prominent feature of the Soviet arsenal. For conflicts in remote, backward areas, they are ideal for terrorizing an unsophisticated and unprotected population, and for smoking out guerrillas in difficult terrain. And mycotoxins are very difficult to detect—witness the fact it took the government 3 years to find what it considers to be definitive evidence.

In his Senate testimony last month, Burt stated that "abroad, as at home, one encounters a persistent reluctance to face up to the fact that one of the most widely accepted norms of international behavior is being callously, flagrantly, and repeatedly violated." Still more evidence may be required to convince doubters that the Russians are using toxins. The UN team of experts looking into the matter is still not being allowed entrance into any of the affected countries; it may take *Soldier of Fortune*'s bounty hunters to come up with a conclusive find.—CONSTANCE HOLDEN

Pajaro Dunes: The Search for Consensus

University and corporate leaders agree on principle of preserving academic values, set agenda for debate on commercialization of biology

The heads of five major research universities and 11 corporations* met in seclusion at Pajaro Dunes on the coast of California late last month to contemplate the ramifications of academia's new found interest in collaborating with industry, particularly in biotechnology. What emerged was "important recognition that these new relationships do pose dangers to traditional academic values," according to Robert Sinsheimer of the University of California at Santa Cruz. Harvard University president Derek Bok called the conference "reassuring in that it readily established a consensus, shared by business, about the importance of maintaining academic values while acknowledging the possibility of creating sound relationships."

The conferees at Pajaro Dunes set no policy, reached few firm conclusions, and failed to agree on some of the more contentious issues, leaving their resolution to individual university faculties. What they did do, according to Stanford University president Donald Kennedy, was "get some general principles on the record" and "set an agenda for further discussion of the issues." Kennedy initiated the Pajaro Dunes conference whose purpose was "to contribute usefully to a more fruitful process of policy-making but not to make policy." From the outset, there was agreement that "it is too early in the game to write detailed rules we might later regret," as one participant put it. What emerged instead is what is being called a "draft" statement its authors believe will advance the debate while acknowledging that it is not "startling" or "astonishing."

*The Pajaro Dunes conference, financed by the Henry J. Kaiser Family Foundation, was organized by five university presidents: Donald Kennedy, Stanford; Derek Bok, Harvard; Marvin Goldberger, California Institute of Technology; Paul Gray, Massachusetts Institute of Technology; and David Saxon, University of California. Each invited members of his faculty and two businessmen with whom his institution has some connection. Genentech, Syntex, Gillette, DuPont, Eli Lilly, and Cetus were among the corporations represented.

Why the Doors Stayed Closed

The organizers of the Pajaro Dunes conference thought about opening the meeting to the press. They decided not to. They also declined requests for admission from students and representatives of public interest groups. The value of the conference, said Stanford president Donald Kennedy, lay in its small size and the opportunity for "full and frank" discussion. In a letter to a reporter, Kennedy acknowledged the validity of an argument that coverage of the conference would be more accurate and complete if the press were present, as it was at the Asilomar meeting on recombinant DNA. However, he noted that the "inhibition of media presence is a real one for some people, and it does not derive from a need to hide wrongdoing. . . . We chose a freer discussion, and therefore a better result, over better reporting of a less good result," he wrote. He rejected outright an argument in favor of opening the meeting based on the fact that some participants were from institutions that receive public funds. The Pajaro Dunes conference was privately funded; it stayed closed.

At its conclusion, challengers voiced their displeasure with the decision and called for a future conference at which the opinions of labor, environmentalists, racial minorities, and others could be heard. "Pajaro Dunes should be the beginning of a debate, not the conclusion of a treaty between these university and corporate presidents," said Al Meyerhoff of the Natural Resources Defense Council. In a letter with more than 30 signatories, including Ralph Nader, Joan Claybrook of Public Citizen Inc., Jonathan King of MIT, and Alberto Saldamando of California Rural Legal Assistance, the group commended the presidents for their efforts so far but also said, "We urge that you lend assistance to us in securing funds to underwrite holding this conference." As of now, the presidents who organized the Pajaro Dunes meeting have no plans for holding another conference.—B.J.C.

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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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operating officers of companies, but we have to find where to draw the line beyond that." (Walter Gilbert, of Biogen, has announced that he will resign from Harvard as of 1 July rather than relinquish his position in the company he helped found.)

Resolution of the conflict-of-interest issue was left to individual universities, each to handle according to its "special circumstances and traditions."

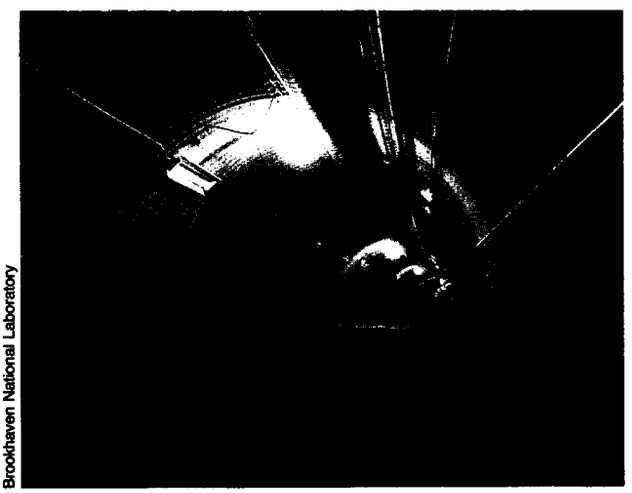
In handing resolution of the issues back to university faculties, the Pajaro Dunes conferees exhort them to continue a deliberative process that is already under way. The Pajaro Dunes statement, in effect, simply codifies the questions. With the imprimatur of the five presidents, it achieves a visibility it might not otherwise have. Its overriding message is that there is, as yet, no certainty about how far to go in writing rules and no presumption that they need to be the same for every campus. Pluralism and a certain measure of confusion prevail.

—BARBARA J. CULLITON

A Requiem for Isabelle

A panel of top U.S. physicists has taken note of the budgetary winds and concluded that the half-built Isabelle accelerator at the Brookhaven National Laboratory on Long Island may have to be abandoned.

The $500 million project, begun in 1978, has fallen some 2 years behind schedule and nearly doubled in price because of inflation and problems with the design of its superconducting magnets. Construction and research to date have cost $160 million.



Brookhaven National Laboratory

A light at the end of Isabelle's tunnel?

A lobbying effort may be the only hope for completion of $500-million project.

The technical problems that initially plagued the project have been solved in the past few months. A new magnet design, adopted in the fall of 1981, has so far resulted in six full-sized prototype magnets that meet or exceed the needs of the accelerator.

The current difficulties stem from a shortage of cash. The Reagan Administration proposed a fiscal year (FY) 1983 high energy physics budget of $429 million, whereas the High Energy Physics Advisory Panel (HEPAP), a group of elder statesmen who advise the government, says $440 is needed to support the U.S. program and continue work on Isabelle. A key objective of the Administration's FY 1983 budget is to increase utilization of existing accelerators from the current level of 35 percent up to 60 or 70 percent. To achieve this and other objectives, a budget increase of $65 million has been proposed. Nevertheless, no construction funds have been set aside for Isabelle. These developments, according to HEPAP chairman Sidney D. Drell, while not absolutely dictating the ditching of Isabelle could mean "this construction project cannot continue." *

The gloomy prognostication came in a final HEPAP report on the future of the U.S. high energy physics program. It is an updated and expanded version of an earlier paper (*Science*, 13 November 1981, p. 769). A key difference is that HEPAP has now had a chance to examine the Administration's budget proposal.

Isabelle was meant to be the cadillac of the next generation of U.S. atom smashers. Its 2-mile-long circular array of superconducting magnets would have guided beams of counterrotating protons to nearly the speed of light and then smashed them together, breaking the protons into their constituent parts.

Despite the financial uncertainty surrounding the machine, work on Isabelle speeds ahead with what remains of the $15 million in construction funds that Congress dished out in FY 1982. Although the finishing touches were put on a 2-mile-long circular tunnel in the spring of 1981, concrete is still being poured for huge experiment halls. The work, according to a spokesman at Brookhaven, "will not grind to a halt" on 1 October because contracts let during FY 1982 will still be honored during the next fiscal year. In addition, Brookhaven officials still hold out the hope that a line item for construction might still be added to the FY 1983 budget. The lobbying effort centers around Representative William Carney (R–N.Y.), in whose district Isabelle resides and who is on the House Committee on Science and Technology. A concerted lobbying effort by the New York congressional delegation might yet save Isabelle, one of Long Island's biggest construction projects. However, a last-minute rescue is perhaps unlikely given the current squeeze on the federal budget.

If Isabelle is abandoned, the question that high energy physicists must ponder is what becomes of the vacant multimillion-dollar tunnel out on Long Island. A crash program for the development of superconducting magnets is still under way at Brookhaven, and speculation now centers on what might be the configuration of an Isabelle II. One possibility mentioned in the HEPAP report is an electron-proton collider or a less expensive proton-proton collider. The cost might reach $250 to $300 million, according to the report. If the cost were to go higher, "completion [of the machine] would be delayed well into the 1990's."

—WILLIAM J. BROAD

*Drell's comments are contained in a cover letter to "Report of the subpanel on long range planning for the U.S. high energy physics program of the high energy physics advisory panel" (U.S. Department of Energy, Division of High Energy Physics, March 1982).

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