tor R & D currently stand at an all-time high of $28 million, most of it going for short-range magnet research. For Brookhaven alone, an additional $5 million is slated for next year.

Outside supervision of the whole planning and funding process has recently been suggested in a report† by the Government Accounting Office (GAO) because, according to the report, without it "the physics community has emphasized construction while other key program elements such as long-range accelerator R & D, accelerator utilization, and experimental research support have suffered." GAO recommends that the President's Office of Science and Technology Policy take on this task.

In 1966, an observer said that the process whereby a federal agency asks groups of high energy physicists how to dispose of the public purse is like "asking a hungry cat to make recommendations about the disposition of some cream." In recent years, U.S. budgetary strictures have set a $300-million-a-year limit on the appetites of high energy physicists. Problems such as those with Isabelle point out the necessity of keeping a close watch not only on how much money is spent but also on how it is spent, lest the hungry cats spill what little cream is left. Whether the current difficulties will lead to reform in the long-range planning of and research for particle accelerators remains to be seen. As does the more immediate question of whether increased research for Isabelle this late will be able to extricate her from what appear to be intractable problems.—WILLIAM J. BROAD

†*Increasing Costs, Competition May Hinder U.S. Position of Leadership in High Energy Physics* (EMD-80-58, Government Printing Office, Washington, D.C., 1980)

Gene Goldrush Splits Harvard, Worries Brokers

Many Harvard faculty oppose a plan for the university to enter the gene splicing business; brokers see danger signals

"The whole matter violates the role of the university in our society so extensively and so terribly that I don't see how anything can come of it. The university would no longer be a nonprofit organization. It would mean that in everything we do, in our laboratories, in our scholarship, we are joining with the university to make a profit."

That is the reaction of one member of the Harvard faculty, biologist Woodland Hastings, to the proposal by Harvard president Derek Bok that the university should establish and hold part interest in a gene splicing company. Hastings' reaction seems to represent the majority view among the Harvard faculty, though maybe not among the administration. Ten of the 17 members of his subdepartment have subscribed to a letter he has written asking Bok to drop the plan, and others are making their own protests.

The Harvard faculty was invited by Bok last month to debate the general pros and cons of the university becoming directly involved in a gene splicing venture. What prompted the debate is a specific proposal from Harvard biologist Mark Ptashne that the university join him in setting up a gene splicing company. Bok has to make a decision by the end of the month, however, apparently before the debate can be concluded.

Universities already have numerous commercial involvements, ranging from investments to patents and licensing agreements, consulting and other business activity by faculty. What makes the Bok proposal apparently unique is that Harvard would be involved with members of its own faculty in a commercial enterprise.

The main outlines of discussion about the issue are clear enough. On the one hand, as the alluring example of Genentech makes clear, Harvard could hit the big time by taking an equity position in a gene splicing company operating under the Harvard coat of arms. On the other hand, ciritcs argue, such an involvement could compromise academic freedom, distort the direction of research, influence hiring and promotion, and discredit the impartiality of Harvard faculty when they speak out on matters of public interest.

Ironically, Ptashne's purpose in asking his university to be a partner was to avoid some of the disadvantages inherent in setting up a private company. Ptashne was not available for comment, but he is said to believe that Harvard's involvement might avoid the secrecy and other perils of commercialization, as well as giving the university a fairer share in the profits on inventions made in its laboratories. When faculty members form their own companies, as in the cases of Genentech and Biogen, their institutions gain little. A leading figure in Biogen is Ptashne's colleague and sometimes competitor, Walter Gilbert.

According to a discussion memorandum prepared by Harvard general counsel Daniel Steiner, the first advantage of such an arrangement is that the university would make money. Further, Harvard's participation would, in his view, help ensure that the faculty's attention was not diverted from their research and teaching duties, and prevent excessive secrecy.

Daniel Branton is one faculty member who thinks the proposal deserves a hearing. "I don't see why suitable rules cannot be worked out whereby the integrity of the university is maintained," he says. Others are more doubtful. "There are clear problems of conflict of interest in hiring. What do we do with a good but not outstanding professor who is making a lot of money for the university?" wonders Otto Solbrig, a member of the faculty council.

Solbrig also worries that a direct commercial involvement by Harvard would confuse its image in the public eye: "When we speak out for or against such things as nuclear power or air pollution we are listened to, in part, because people see us as members of an institution which is impartial. I think this technology [genetic engineering] will have good and bad impacts on society. If I speak about it, will people believe me? They will say, 'Universities are just like industry, they have an interest in it.' "

Another critic of the gene splicing company idea is historian of science Everett Mendelsohn. Creation of such a company would create an unprecedented kind of feedback into the university which "almost certainly would distort the direction of research," says Mendelsohn. He foresees problems of secrecy arising between faculty members com-

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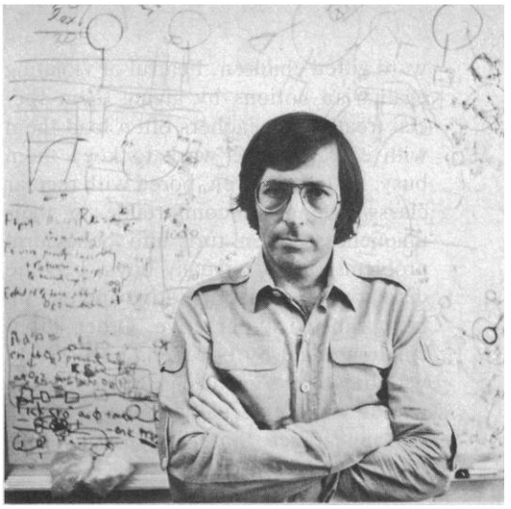
mitted to the Harvard company and their colleagues who were signed up with private gene splicing companies. He is also unhappy at the example that may be set for other universities. "Harvard's decision is not just a selfish decision of its own because, for better or worse, Harvard provides a pace setting image." The university set an excellent example when it declined to accept classified research in its labs; Mendelsohn fears the opposite effect of a decision to admit industrial research on campus.

Other critics feel the whole notion is naïve. They wonder how it would help for Harvard to play the nice guy in the business arena and finish last.

Faculty opinion seems weighted against the Bok proposal at present. According to one observer, the overwhelming majority of scientists have objections to the plan, while those in the humanities and social sciences say it is the scientists' affair but are privately very apprehensive. The faculty council has asked for two committees to be set up to study the issue, but it is not clear how far the administration intends to listen.

What has drawn Harvard into this quagmire is the heady expectations of a genetic Eldorado, which were made even more feverish by the extraordinary reception accorded last month to Genentech's first public offering of its stock. Genetic engineering is at present enjoying high fashion in the business world. The Dow Chemical company recently announced a $5-million contract with Collaborative Genetics, a small genetic engineering company based in Waltham, Massachusetts, which specializes in yeasts. Dow's rival, Monsanto, has purchased a $20-million share in Biogen, a small but multinational gene splicing company. The National Distillers and Chemical Corporation announced last month a $100-million project to produce alcohol from corn by a continuous fermentation method that eventually will use genetically engineered yeasts developed by Cetus, another leading gene splicing company.

These activities reflect a basically healthy development, but one that is not without its dangers. Investors' response to Genentech, whose shares leaped from $35 apiece to $89 in a matter of minutes, is seen by some observers as a danger signal. Companies with less solidity than Genentech might attempt to profit from investors' excessive hopes for genetic engineering. Not only may the wrong companies get the investments, but a lot of people could lose their money when the speculative bubble bursts.



Rick Stafford Photo

The Ivy League Gene Co.

Mark Ptashne has made Harvard a tempting offer.

As for academe, the growing pains caused by the commercialization of molecular biology are obvious enough. "It would be much better to keep the field clear of all commercialization. I feel it will lead to much less warmth, if there ever was any, to a lot less trust, and a lot less fun," says an NIH researcher involved in a hot money field of molecular biology. As Harvard seems to be discovering, money is nice, but maybe it's less painful to let others make it.

—NICHOLAS WADE

A New Visibility for Gifted Children

Programs proliferate for the exceptionally able, but few know how best to nurture the "severely gifted"

Einstein didn't talk until he was 4 years old or read until he was 7. Thomas Edison was regarded by both his parents and teachers as retarded. How many modern day Einsteins and Edisons are being overlooked now by their teachers, shunned by peers for their odd ways, allotted by society to the weirdo pile where their extraordinary talents may never have a chance to unfold?

There is a marked upsurge of interest these days in the phenomenon of gifted children and how best to nurture their abilities. The Office of Gifted and Talented in the Department of Education, established in 1972, got its first substantial budget this year—some $6.2 million. Many states and localities have developed an active interest in providing special programs for gifted students. The suicide this year of a gifted Ohio teenager, Dallas Egbert, has resulted in creation of a foundation in his name whose purpose is to supply clinical psychological services to gifted children. Gifted children have become the "growth stock of the education business," according to educational psychologist Joseph Renzulli of the University of Connecticut. Psychologists and educators tend to agree that the trend is in reaction to widespread deterioration in the quality of public education—in other words, a backlash against mediocrity.

Now, many people are coming to believe that investment in nurturing the gifted is an investment in the future of the country. Says Harold C. Lyon, director of the Office of Gifted and Talented, "they are our most valuable and neglected natural resource."

Despite the existence of government programs to aid every conceivable type of minority, the general attitude has been that exceedingly bright and creative children can perfectly well take care of themselves. "Talent will out," or "the cream always rises to the top" have been generally accepted aphorisms, but those involved in the field insist that the talents of many gifted children can easily be stifled and their motivation snuffed by conformist educational systems devoted to catering to the needs of the majority.

The fact is, according to experts in the field, gifted children have a tough row to hoe, and the more exceptional they are, the tougher it is for them, both educationally and emotionally. An unusually able child in a class of average children is often made to feel like an oddball. Even teachers, perhaps threatened by superior brains, often respond with hostility to-

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