

hilarating expansionary ethos by which we all live. Throughout our brief history, a passion for personal and collective aggrandizement has been the American way. One can only guess at the extent to which forebodings of ecological doom have contributed to the revulsion that so many intelligent young people feel these days for the idea of "success" as a kind of limitless ingestion. In any case, most of the talk about the environmental crisis that turns on the word *pollution*, as if we face a cosmic-scale problem of sanitation,

is grossly misleading. What confronts us is an extreme imbalance between society's hunger—the rapidly growing sum of human wants—and the limited capacities of the earth.

References and Notes

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NEWS AND COMMENT

Academic Research: OST Aide Sees No Shift in Financial Situation

A candid and gloomy analysis of prospects in federal support for academic research was publicly presented last week by the staff man who handles basic science affairs in the White House Office of Science and Technology (OST). Included in it was what is apparently the first public revelation of an OST decision to regard 6 percent in federal funds as an acceptable annual growth rate—5 percent of which would be to compensate for inflation. (A 15 percent annual growth is the figure routinely specified in recent years by many research administrators as the minimum necessary for maintaining present efforts and accommodating newcomers to the ranks of research.) Not precluded within the 6 percent figure, and, in fact, clearly foreseen, is the likelihood of actual declines in certain fields, particularly in the physical sciences. All in all, the analysis, delivered by Carl York, OST's technical assistant for basic science, stands out as the most discouraging financial forecast recently delivered to the scientific community. York did not indicate whether his observations are to be regarded as official or personal, but, in either case, he is in a position to speak knowledgeably, and his remarks merit careful notice, particularly since the administration's budget for the coming fiscal year will be finally settled during the next few weeks.

York spoke at a Washington press conference held by the American In-

stitute of Physics to offer a preview of several papers on science finance and manpower scheduled for delivery at the American Physical Society meeting that opened 23 November in New Orleans.

"Barring another 'sputnik-like surprise' as in the late 50's," he said, "no single act will swerve the present administration from a policy of a balanced budget. If then, the physical sciences in the universities must look for essentially no dollar increases and an effective inflationary decrease in their funding, the possibilities which are available to us for a solution of the problems of financing Academic Science are very restricted.

"With these boundary conditions firmly in mind, a course of action has been chosen. Industrial firms have long been faced with the problem of funding and justifying the funding of their research effort against a background of a fluctuating market. Many of them have developed what is known as a 'level-of-effort' to fix the amount of support for their basic research endeavors. . . . The percentage happens to be around 6 percent, although no one seems to know exactly where this number came from." York went on to state that it has been proposed that federal research expenditures be linked to the gross national product. However, he added, because of various difficulties in doing this, the President's science adviser Lee DuBridge [since

retired] proposed the following solution:

"He suggested that . . . in 1968 Academic Science in the United States was very strong, but it had already suffered some effective cutbacks by a decrease in appropriations from the preceding year. And so, in terms of the federal budget, that year should be taken as a benchmark to begin making policy. He then pointed out that approximately 5 percent per year would account for the inflationary trends in the economy and finally that the academic enterprise needed some room for growth. Under the pressure of the boundary conditions . . . he accepted as a minimum rate of growth an additional 1 percent per year. . . .

"The policy proposal which DuBridge has suggested, based on the level of effort concept, was that in making up the federal budget an analysis of [what] was done agency by agency . . . would be performed." If appropriations for a given agency fell below what was deemed minimal desirable growth, the agency "would be encouraged" to seek a compensating amount in the following budget. "This feedback process would greatly stabilize the overall funding available to colleges and universities," York continued, "and would in fact help enormously with their planning. The usual system of free enterprise which entrepreneurs love so much would be maintained. If the administration wished to increase its efforts in the area of urban housing, then HUD [the Department of Housing and Urban Development] would be encouraged to increase its budget for the universities.

"The problem here for the physical scientist is perfectly clear. His demands on the federal dollar must be so much more compelling than those of his colleagues that he can beat the social

scientist out of the money. After a considerable amount of effort and studying the alternatives, the conclusion has been reached that there is no way to protect either the physicist or the sociologist from changes in national priorities and goals. That is the hard political fact that the scientist must face, but it may make a scheme of the type suggested by DuBridge workable."

York concluded "that it may be possible to stabilize the overall funding for higher education in this country, but it is not going to be possible to do very much about stabilizing the expenditures in any given field of science."

The analysis is keyed to the period in which OST was directed by DuBridge—to whom York said "enormous credit" should be given for having obtained a 9 percent increase in federal support for academic research last year. Not made clear was whether the 6 percent guideline still pertains under DuBridge's successor, Edward E. David, Jr., or whether it was ever accepted by the Office of Management and Budget or simply was a rule of thumb for OST's own guidance. Whatever the case, this is the season for despondent rumors concerning the intentions of the budget planners, and this year is no exception. Those who know are tight-mouthed as to specifics, but with a huge deficit impending and the administration asserting its determination to work toward a balanced budget, there is no reason to believe that academic research will be singled out for especially favorable treatment. On the subject of federal assistance for research training programs, York simply noted, "The position which we have taken in OST during the formation of the 1972 budget is that the level of 1971 should be maintained at a constant value until a better understanding and a more sophisticated analysis of the country's manpower needs can be made." For physics, the professional concern of his audience, York had no good news. "If we look at the data for 1969," he said, "and ask what fraction of the total expenditure for academic science actually went to the field of physics, we find that a little less than 14 percent was spent on physics." To which he added that "it must be recognized that physics clipped off 1/7 of the total, which is a remarkable track record. In comparison, chemistry received only 6 percent of the total." He

Market Research: Ford's Gift Horse

While students in science and engineering regularly conduct experiments in their fields, students of business usually have had to be content with merely studying the techniques of their future profession. Ford Motor Company is changing all that by introducing its Pinto Project for the Academic Community. Business students and their professors are now able to participate in the marketing of Ford's newest product.

"We at Ford are very pleased that some 160 colleges and universities are participating in the program and have responded so enthusiastically to this opportunity for a new learning experience," said A. L. Whiteman, Ford's merchandising manager in a press release describing the



project for the
Academic Community

Pinto project. The learning experience involves free use of a Pinto, Ford's new compact car, by a professor of business and his students for 6 weeks. Along with the car goes \$250 expense money, a 4-inch-thick book of facts on the Pinto, some statistics on the

college student as a consumer, and various promotional materials, such as books of matches and models of the car. The professor is supposed to build a term project for his class, focusing on the car and its salability in the campus community.

The Pintos were distributed to 160 campuses in 16 regions across the country on the basis of project proposals submitted by the professors. Although the exact nature of the projects was not specified by Ford, the company did offer several suggestions, such as developing the proper "media mix" for the Pinto in the campus community, investigating various sales-promotion strategies, taking opinion polls of potential student buyers, and conducting test drives to determine student reaction to Pinto's performance.

Most of the projects now in progress incorporate at least some of these suggestions. Ford is offering a prize of \$1000 for the best project submitted in each region and a grand prize of \$5000. The money will be given as grants to the departments.

College Marketing Corporation, a New York firm specializing in selling to the youth market, administers the Pinto project for Ford. College Marketing's president, Thomas A. Twomey, Jr., describes the project in a press release as an "educational service to the academic community. The Pinto Project," he says, "affords professors and students an opportunity to confront a current and unique real-life business problem in the classroom, along with textbooks."

In pursuing their real-life business problem, the professors and students provide Ford with a mass of marketing research on the new compact in the campus environment where Pinto's competitor Volkswagen has long been firmly entrenched. Another advantage for Ford in this project is cheap advertising for its product. To facilitate "exposure" of the Pinto, Ford provides each participating professor with press releases on the project, to be handed out to campus and local newspapers. Since the car cannot be used continually for test drives, Ford suggests that the car be available for promotion at fraternal, athletic, and other student activities. The actual use of the car, however, is determined by the professor in charge.

None of several participating professors interviewed by *Science* expressed qualms about providing Ford with the free marketing research. Allan Shocker, assistant professor of business at the University of Pittsburgh, was typical in his reaction to the project. Shocker said that Ford had not presented the Pinto Project in an offensive or commercial way, and he mentioned that the materials provided by Ford increased the motivation of many of his students and afforded him the opportunity to test some of his own theories of marketing.—ROBERT J. BAZELL

added, "but I don't wish to indulge in invidious and meaningless comparisons."

What does all this tell us about the realities of the much-discussed matter of federal science policy making? York's statement must be regarded as authoritative, since he is in a position to know whereof he speaks. Nevertheless, it is interesting to note that when the highly capable head of a major federal agency responsible for supporting academic research was asked to comment on what the address depicts as OST policy, he said he had never heard of it. He did agree, however, that there is no reason to expect finances to improve next year.

Science policy ruminating has devel-

oped into an academic cottage industry, one that even provides its grave practitioners with opportunities to appear as witnesses on Capitol Hill, which, no doubt for many of them, is a highly esteemed relief from the obscurity of the campus. However, the relation between their prodigious output and the actual makings of science policy or practice appears to be in the vicinity of nonexistence. The pastime is harmless enough and may even be justified as a dignified diversion for those who have tired of the real business of research or research administration. But if the scientific community is as financially malnourished as it claims to be, and if the consequence of this state is as disastrous for

the nation as science's leaders contend it is, then perhaps it is time to try something besides multi-hundred-page reports that even many of the faithful have tired of reading. For one fact is apparent: political Washington does not share the scientific community's view of the value or plight of science. This being so after long efforts at courteous persuasion, then other means might profitably be considered. Prominent among them, of course, is the use of organizations, money, and votes in behalf of those legislators who are disposed to act on the assumption that the national research enterprise merits additional support. After all, such political action is an old American custom.—D. S. GREENBERG

Hampshire College: A Quest for Quality, a Balanced Budget

Amherst, Mass. Hampshire College is in its first year of operation, and one might borrow from *A Tale of Two Cities* and say it is the best of times, it is the worst of times for a liberal arts college to open its doors. The financial squeeze on higher education, public disquiet about events on campus, and the identity crisis of the liberal arts college all seem to cast a pall.

Hampshire, however, has been given a specially auspicious start in life. The college underwent a gestation period of more than a decade. It received unprecedented prenatal financial support from private donors and foundations. And it had the sponsorship and the assurance of future cooperation and reflected prestige of four neighboring institutions—Amherst, Mount Holyoke, Smith, and the University of Massachusetts—whose consortium (now called Five Colleges, Inc.) Hampshire joined.

Hampshire was founded as an innovating institution. Its leaders shy away from the word "experimental," which in higher education often denotes pedagogical eccentricity or a permissive attitude toward academic accomplishment. But the college's announced objectives are to explore problems of liberal arts education and to demonstrate the financial advantages of interinstitutional cooperation. And the practical

question it has set out to answer is whether a small private college can survive essentially on income from tuition and fees. The enterprise might be called Project Breakeven.

The idea for Hampshire College is usually traced from 1958, when faculty from the four neighbor Connecticut River Valley institutions collaborated in producing a "New College Plan" which set forth a set of ideas for a new model liberal arts college. Several of the basic ideas put forward were taken up subsequently by other colleges, notably the "4-1-4 plan" (for two 4-month terms separated by a 1-month winter term) which Hampshire has adopted. Planning for Hampshire crystallized after 1965 when a gift of \$6 million was received from Harold F. Johnson, an Amherst graduate with a background in international law and government and a taste for privacy (no entry in *Who's Who*). Later gifts from foundations, corporations, and private individuals, including a record \$3 million challenge grant from the Ford Foundation and about \$10 million in federal grants and loans for buildings and planning, gave Hampshire a dowry of more than \$24 million.

The Johnson gift was not restricted for use as endowment or for any other particular purpose, and it provided the

means for acquiring some 500 acres of prime river valley woods and pasture about 3 miles from the town of Amherst and not far from the slopes of Massachusetts' Holyoke range. In 1966, Franklin Patterson was appointed Hampshire's first president. Patterson was professor of government and education at Tufts and had served as staff director of the Carnegie Commission for Educational Television. After a concentrated period of study and consultation, Patterson produced a comprehensive plan for the college. The result, published in book form under the title "The Making of a College,"* was written in collaboration with Charles R. Longworth, who had been an assistant to the president of Amherst College and became vice president of Hampshire.

Hampshire was to be a residential coeducational liberal arts college with a first year enrollment of about 250, which would rise to about 1400 by 1975 and possibly to an eventual 3300, although already a preference for the lower ceiling seems to be developing.

Ways to achieve financial self-reliance were, of course, given much thought. Heavy emphasis is naturally placed on the sharing of resources with other institutions of Five Colleges, Inc., but the crucial factor for Hampshire will be a maximization of faculty whose salaries form the major element in the operating budget. When enrollment reaches 1440, plans call for a faculty of 90, a faculty-student ratio of 1 to 16. At more affluent liberal arts colleges, ratios of 1 to 10 have not been

* M.I.T. Press, Cambridge, Mass., 1970; \$4.95.