

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.

unusual, although the trend now is toward a larger proportion of students. Hampshire will expect every faculty member to do his teaching duty, and the equivalent of three courses is to be the normal teaching load. Since students will usually take three courses in the regular term, the Hampshire course is expected to be somewhat more demanding for faculty and students. Older students will be involved as teaching assistants in some courses, and educational technology will be utilized wherever feasible. Heavy stress has been placed on students proving themselves able to pursue independent study, and it is really on the ability of students to work independently that the concept of controlling the size of the faculty without sacrificing educational quality depends.

Other departures from conventional college practice are intended to achieve economies plus other aims. No expensive varsity intercollegiate sports program will be mounted, although Hampshire will play team games against other schools. During October soccer games were scheduled against Amherst freshmen and Goddard College, the latter game pitting co-ed teams against each other. Sports in the main, however, will follow the Outward Bound formula developed in Germany and Great Britain, which stresses outdoor activities such as hiking, rock climbing, and kayaking and is intended to build self-confidence and physical hardihood. Plans are for Hampshire to serve as the site of a summer language program which will serve all five institutions in the consortium and provide economic, year-round use of the college plant. A new science building now under construction at Hampshire is to be given an open plan and movable equipment, which will encourage interdisciplinary work and optimum use of equipment. Student housing is also being given as much flexibility as possible.

Increased flexibility in the academic structure is also a chief aim. The conventional departmental organization has been abolished and disciplines grouped in three "schools," the School of Natural Science and Mathematics, the School of Social Science, and the School of Humanities, and a program in language and communication. The traditional machinery through which a student satisfies requirements in a major field of study and accumulates the requisite number of credits for graduation has also been scrapped. Hampshire students will progress through



Franklin Patterson

three divisions, being graduated when they have satisfied examinations in all three divisions. Students in Division I, "Basic Studies," will be acquainted with disciplines of all the schools and acquire the skills for pursuing independent study. In Division II, "School Studies," the student will concentrate on one or more disciplines according to a plan he develops in consultation with his adviser and faculty. In Division III, "Advanced Studies," the student will be expected to spend about half his time on a major project and also involve himself in "integrative" seminars. Most students are expected to spend 1 year in Division I, 2 years in Division II, and 1 year in Division III, but it will be possible for a student to take

more or less than 4 years to complete requirements.

Grading at Hampshire is to be on a distinction-pass-fail basis with options open to those who fail to do more work and try again. Examinations at Hampshire are expected to range far beyond the old blue-book mode. Students, in fact, will help to design their own exams, which could take the form of a report on a field project, a computer program, or a novel.

The Hampshire faculty and administrators stress the point that the college plan is no recipe for academic self-indulgence. Robert C. Birney, dean of the School of Social Science, a political scientist who came to Hampshire from Amherst, says "We've gotten away from course hours, credits, and grades and now there's no way to fudge anything in the system." Students are examined in their strongest suit and this, he says, "sets up terrific pressure. We are getting through to them that nobody else is planning their education for them, that this is really the opportunity everyone has been promising them. As the awareness sinks in, there will be a feeling of loneliness."

After less than 3 months of actual experience at Hampshire with only 250 first-year students, it is much too early to say how closely the edifice will resemble the blueprint. Most important, perhaps, at this point is the creation of attitudes and of atmosphere. The visitor gets the impression that administra-

Scientists Protest Security Bill

A group of scientists last week presented a petition, signed by 750 of their colleagues, to Senator Edward M. Kennedy (D-Mass.) protesting the Defense Facilities and Internal Security Bill which passed the House on 29 January and is now before the Senate Judiciary Committee (*Science*, 27 February 1970).

The bill, one of the rare legislative products of the House Internal Security Committee (formerly the House Un-American Activities Committee), classifies as a defense facility any place where classified military projects are carried out—including factories, laboratories, educational institutions, dams, and canals. All employees of such facilities would be subject to tight security regulations, with strict penalties for a broadly defined range of subversive activities. Opponents of the bill, including the American Civil Liberties Union, have questioned its constitutionality.

There seems little chance that the bill will be reported out of the Senate Judiciary Committee before the close of the current session. But the originators of the petition decided to present the protest anyway because the bill might be reintroduced in the next session.

Kennedy, a member of the Judiciary Committee, accepted the petition, thanked the scientists for their concern, and pledged he would do everything possible to block passage of the bill.—R.J.B.

NEWS IN BRIEF

● **Ph.D. CUTBACKS:** A Modern Language Association commission, appointed to explore the job market in modern languages, recommends that no new Ph.D. programs in English or foreign languages be established and that enrollments in existing programs be curtailed in face of the current scarcity of teaching positions. The commission's report is backed by an MLA survey revealing a 23 percent decline in the number of new full-time positions in English from last year to this year. The report, which also recommends ways to help graduates find jobs, appears in the November *Publications of the Modern Language Association*.

● **STUDENT COSTS RISE:** While the rise in charges for students attending state colleges and universities was not as great this year as last, university officials hold out little hope that tuitions will level off. Statistics are contained in a joint report on 1970-71 student charges by the American Association of State Colleges and Universities and the National Association of State Universities and Land-Grant Colleges. Copies may be obtained from Suite 700, 1 Dupont Circle, NW, Washington, D.C. 20036.

● **RADICAL SCIENTISTS AND THE AAAS:** Scientists and Engineers for Social and Political Action (SESPA) are planning some political action at the AAAS Chicago meeting in December. SESPA's publication, *Science for the People*, has called on its members to send proposals for meetings and demonstrations and to submit articles critical of the conference's undertakings.

● **ENVIRONMENT CORPS:** The Peace Corps and the Smithsonian Institution have announced a joint program whereby teams of volunteers will be sent to developing countries to work on projects relating to conservation, wildlife preservation, resource development, watershed and forestry management, and pollution prevention. Some 200 volunteers, most of whom will come from postgraduate schools in biological sciences and natural resource management, are expected to participate in the program next year. Send applications to the Office of Ecology, Smithsonian Institution, Washington, D.C. 20560.

tors, faculty, and students are acutely aware of this, and, as one faculty member put it, "Now we're just getting the plan off the ground; everybody is in there pitching."

The spirit at Hampshire reflects a sharp awareness that the college scene has changed dramatically in the last decade. According to President Patterson, the "dawning realization that we were involved in real cultural change" brought some revisions of assumptions. Perhaps the most specific instance was something of a retreat from the original emphasis on instructional technology. "Autoinstruction was modish in the 1950's, and I did think we would use more of these devices than I do now." Patterson doesn't rule out instructional technology, however. The availability of tape cassettes and cable television, he says, opens broad new possibilities. Patterson went on to observe, "Clearly this is something many students today feel comfortable with," and facilities and equipment at Hampshire are being made available in ways meant to encourage students to take the initiative in using and developing technology.

As far as underlying philosophy goes, Patterson says, "It may be utterly essential to the institution which deals with young adults to adopt new forms of educational curriculum which have validity because of changes in the general society." For his own part, he says he feels he is "more sensitive now than in 1966 to the need for balance in undergraduate life between affective, emotional experience and intellectual experience."

The translation of theory into practice, of course, depends heavily on the faculty. In recruiting faculty, says Patterson, the college wanted people who had solid academic credentials but who were "not committed to the professional life model" familiar at research-oriented universities. Hampshire faculty members are expected not only to be good teachers but to play a part in the total life of the college.

A major Hampshire innovation is the abolition of tenure. Faculty are hired on contracts which run 3 to 7 years. Application for a job usually requires submission of a short description of what the applicant would hope to accomplish as a Hampshire faculty member.

The question of the method of reappointment is one that can yet be answered only in theory. The formula calls for a review committee in each school, on which students will be rep-

resented. The comments of these committees along with the recommendations of the dean of the school would be forwarded to the dean of the college and the president and, ultimately, to the trustees. Patterson says that keeping a faculty member will depend less on quantity of publications than on "aspects of teaching and other service." Faculty ranks at Hampshire will be limited to professor, associate professor, and assistant professor. The plan calls for maintenance of a ratio of one professor to two associate professors to four assistant professors, so that upward mobility will be limited and young faculty at Hampshire may live somewhat dangerously as far as career advancement goes. It is possible, however, as one faculty member predicted, that "de facto tenure" will develop.

This year there is the equivalent of 30 full-time faculty members on the roster, and these members have been heavily involved in designing the curriculum and, particularly, in preparing courses for Division I students.

Disenchantment with High School

There obviously is serious concern among faculty and administrators at Hampshire that many students are disenchanted by their experience in high school. As Everett M. Hafner, dean of the School of Natural Science and Mathematics, put it, "for some it was come here or nowhere. They saw the opportunity to make their own metamorphosis coincide with the metamorphosis of the college."

Science presents a special problem. Patterson notes that the "impulse toward science has slackened"—in part because science instruction is "unhappily didactic" and in part because "students as well as scientists understand that applications of science can be terrible as well as beautiful."

Hampshire offers none of the old standby courses in freshman chemistry, physics, or biology, and no science survey course for the scientifically unwashed. Rather, the curriculum is built of a variable mixture of seminars, workshops, lectures, and tutorials with apparently no rigid boundaries or barriers separating instructional forms. Hampshire is putting emphasis on small-group instruction in the first year on the theory that students will be able to handle independent study later on.

A 2-day visit to Hampshire and brief opportunities to observe classes and to talk to students provide a slim basis for comment, but the impression

this visitor gained was that faculty had put considerable imagination into designing courses and were putting a lot of skill and energy into teaching them and that students were an intellectually lively and responsive lot. In a story of this dimension, it is impossible to describe courses in detail. But, to generalize, the Hampshire way is to stress interdisciplinary and cross-disciplinary approaches, give students direct experience of the processes of science, and relate work to the problems of society.

In Thoreau's Wake

It is difficult to find a typical course, but an interesting one is a workshop in ecology taught by biologist Raymond Coppinger and mathematician William Marsh. Many Hampshire faculty members are using the central New England region as a laboratory; the area around Amherst is a particularly fruitful one since it is a still-rural area being subjected to rapid urbanization and industrialization.

One activity of the ecology group was a retracing of Thoreau's trip recounted in his "Week on the Concord and Merrimack Rivers." The Hampshire group compared observations with those made by Thoreau nearly a century and a half ago and gathered a fair amount of harder data by taking water samples and temperature readings. Samples of organic and inorganic wastes were farmed out to other seminars for analysis, and an effort was started in cooperation with students interested in environmental law to determine what action on polluters was possible in the region. Not untypical of the reaction of students to this and other field projects was that of one student who, Coppinger says, "complained about doing a lab report (before the river trip) and now wants to write a book about it."

One unsettled issue raised by Hampshire's stress on education as a lifelong resource is, of course, that of the link between Hampshire and graduate and professional schools.

The faculty is looking ahead to the time when this will pose a practical problem, and a committee is corresponding with graduate schools on the matter. Dean Hafner points out that medical schools are themselves in the throes of reform and he and other faculty seem to feel that graduate schools will be increasingly receptive to students with backgrounds like those acquired at Hampshire.

Hafner points out that, although

Hampshire won't offer a physics major, a student can "come to Hampshire and start with some classical things." Later if he needs courses in electromagnetic

theory or quantum mechanics, for example, he can go to other consortium institutions for them, probably to the University of Massachusetts. Microbiol-

Biochemist Sues Ochoa and NYU

Albert J. Wahba, a biochemist now at Sherbrooke University, Quebec, is suing New York University and his former department chairman there, Nobel laureate Severo Ochoa, for \$250,000. Wahba claims he was unjustly fired last year from his nontenured position as research associate professor in the department of biochemistry at NYU School of Medicine because he refused to include Ochoa's name on a paper that he had submitted for publication.

The paper in question has since been published without Ochoa's name in the *Cold Spring Harbor Symposia on Quantitative Biology* (Vol. 34, 1969). Immediately after Wahba had submitted the paper, Ochoa, who was principal investigator on the NIH grant supporting Wahba's work, demanded that the paper be withdrawn. According to court documents Ochoa claims that he made the demand because other work in the department contradicted Wahba's findings. Wahba, however, says he knows of no such work and that Ochoa simply wanted his name on the paper.

Wahba in his formal complaint contends that, on 2 September 1969, Ochoa prepared a letter for him to sign addressed to James D. Watson, director of the Cold Spring Harbor Laboratory (Cold Spring Harbor, Long Island), asking that the paper be withdrawn. According to Wahba, Ochoa told him that if he didn't sign the letter by 9 a.m. the following morning "he would have performed the last experiment of his life." Ochoa in his reply to the charges denies making the threat, claiming that he merely told Wahba that if he didn't sign the letter he could no longer continue as a member of the department of biochemistry. In any event, Wahba did not sign. Ochoa then telephoned Watson asking that the paper be withdrawn, but Watson refused and the paper was published. On 29 October 1969 NYU informed Wahba that his faculty appointment would not be renewed.

Wahba's status in the department before he was fired is another point of contention. Wahba's court papers describe him as an internationally recognized research investigator with his own laboratory and graduate students. But Ochoa's papers claim that Wahba performed research under Ochoa's direction and control and was "from time to time provided with laboratory facilities."

Attorneys are now taking depositions in the case, which will go on the calendar of the U.S. District Court, Southern District of New York, early next year. The trial, if there is one, will not be held for at least 2 years because of the court's backlog of cases.

Wahba's suit was reported at length in the 17 August 1970 issue of *Chemical and Engineering News*; that article caused considerable concern among several of Ochoa's colleagues. A group of 29 researchers, led by David Nachmansohn of Columbia University College of Physicians and Surgeons and Daniel E. Koshland, Jr., of the University of California, Berkeley, sent a letter to *Chemical and Engineering News* protesting the article. The letter, since withdrawn on the advice of Ochoa's attorneys, charged that the article was "a sensational account of slanderous and still unsubstantiated accusations." The scientists said that they were concerned "not only because of our affection and high regard for him [Ochoa], but also because such sensational charges against a leading scientist hurt the entire scientific community."

Ochoa, 65, received the Nobel Prize in Medicine or Physiology along with Arthur Kornberg in 1959. Still active in his field, Ochoa publishes several papers each year.—ROBERT J. BAZELL

ogist Lynn Miller expressed a feeling seemingly widely shared among Hampshire science faculty that "If we identify a group of students who want professional training, then it is incumbent on us to design their education for preprofessional preparation."

Hampshire seems to stand in no danger of not attracting qualified students. There were more than 2000 applicants for the 250 places available this year, and the ratio will be higher next year as the word on Hampshire gets around.

A main question confronting Hampshire, however, is whether the special favor of private benefactors and private foundations will make Hampshire simply another small private college which will attract carefully selected, suburban middle-class, low-risk, high achievers. In other words, will a Hampshire education be a further privilege for the already privileged?

Given the good intentions behind Hampshire, this is a rude question and one that probably would not have been asked at all in 1958. But this is 1970. The question must have been in the minds of the foundation officers and federal officials who gave Hampshire

its remarkable financial send-off. And it makes Hampshire's silver spoon a special burden.

Talks with administrators and faculty at Hampshire reveal that they are certainly aware of the problem. One admissions officer stated it directly when he said, "We try to avoid a 'Hampshire type.' If we take only highly motivated kids we haven't proved anything."

The first entering class seems by and large a fairly high-powered lot. Faculty members find them astonishingly experienced in community-service and social-action activities. As one professor put it, "They're a pretty entrepreneurial group."

Not surprisingly, the young people who heard about Hampshire and applied for admission tended to come from what are regarded as good schools. The first group splits roughly 50-50 between private and public school products, and one faculty member estimates that 40 to 60 percent of them have had experience with tutorials or other forms of independent study.

Like all private institutions, Hampshire worries about pricing itself out of the general market. The cost of tu-

ition, room, and board this year is \$3800, and the trend everywhere is up. Some \$120,000 has been earmarked for scholarship aid at Hampshire this year, and about a quarter of the students receive help in varying degrees. Hampshire is working hard on the problem of achieving heterogeneity but its commitment to covering costs essentially out of tuition creates a special bind. The Hampshire experiment is intended to benefit undergraduate education at large, but inevitably it will have to be judged according to its admissions pattern as well as its balance sheet.

Hampshire started with the advantages of a superb physical setting and intelligent planning. In its early days, students, faculty, and administrators seem to share a sense of enterprise and community which is refreshing to encounter at a time when things are otherwise on many campuses. There is also a healthy strain of realism operating at Hampshire—and so it may not be churlish to quote the science faculty member who said starting a college is "like marriage. First euphoria, then a letdown. The question is what happens in steady state."—JOHN WALSH

Campaign GM: A New Pitch to University Shareholders

The opening of the second round in the "Campaign to Make General Motors Responsible," which created at least a mild stir on a number of university campuses this past spring, was announced in Washington last week. The campaign's immediate objectives have been redefined in a way calculated to attract greater support from GM's institutional shareholders.

In one of their two principal proposals last spring the young "public-interest" lawyers running the campaign called for the election of a Negro leader, a consumer representative, and an environmentalist to GM's board of directors. In their other proposal they sought to have GM establish a committee on corporate responsibility which the campaign leaders and the United Auto Workers would have helped to select. The company argued, with good reason, that the effect of these proposals would be to inject into decision-

making at GM persons who had little or no investment in the company and no direct interest in its financial success.

Campaign GM's three current proposals cannot be so easily dismissed on those grounds. These proposals would:

- Require GM to list on its proxy statement those candidates for the board of directors nominated by shareholders at large as well as those nominated by management. Shareholders, nearly all of whom must vote by proxy if they are to vote at all, no longer would be presented with a single slate of candidates, in the manner of elections in the People's Republics.

- Permit GM's three "constituencies"—its employees, consumers, and dealers—each to nominate a candidate for the board of directors. Consumers are defined as persons whose ownership of new GM cars, buses, and

trucks is on record with the company.

- Require GM to publish in its annual report detailed information as to the company's progress in minority hiring, auto safety, and development of nonpolluting vehicles. Certain specific information could be omitted if disclosure would put the company at a competitive disadvantage.

Leaders of Campaign GM have asked that the proposal on disclosure and the "corporate democracy" proposal on abolishing single-slate elections be adopted by the board of directors immediately—merely as guarantees of existing shareholder rights. Short of this, GM is asked to include these proposals on the proxy statement which stockholders will receive prior to the annual meeting next May. Action on the "constituent democracy" proposal, which is acknowledged to be a new departure, should await the shareholders' meeting, campaign leaders have told GM.

If the GM management should act favorably on any or all of these proposals—and this seems most unlikely—it will not be for fear of being outvoted. The Campaign GM proposals of last May got less than 3 percent of the