SCIENCE

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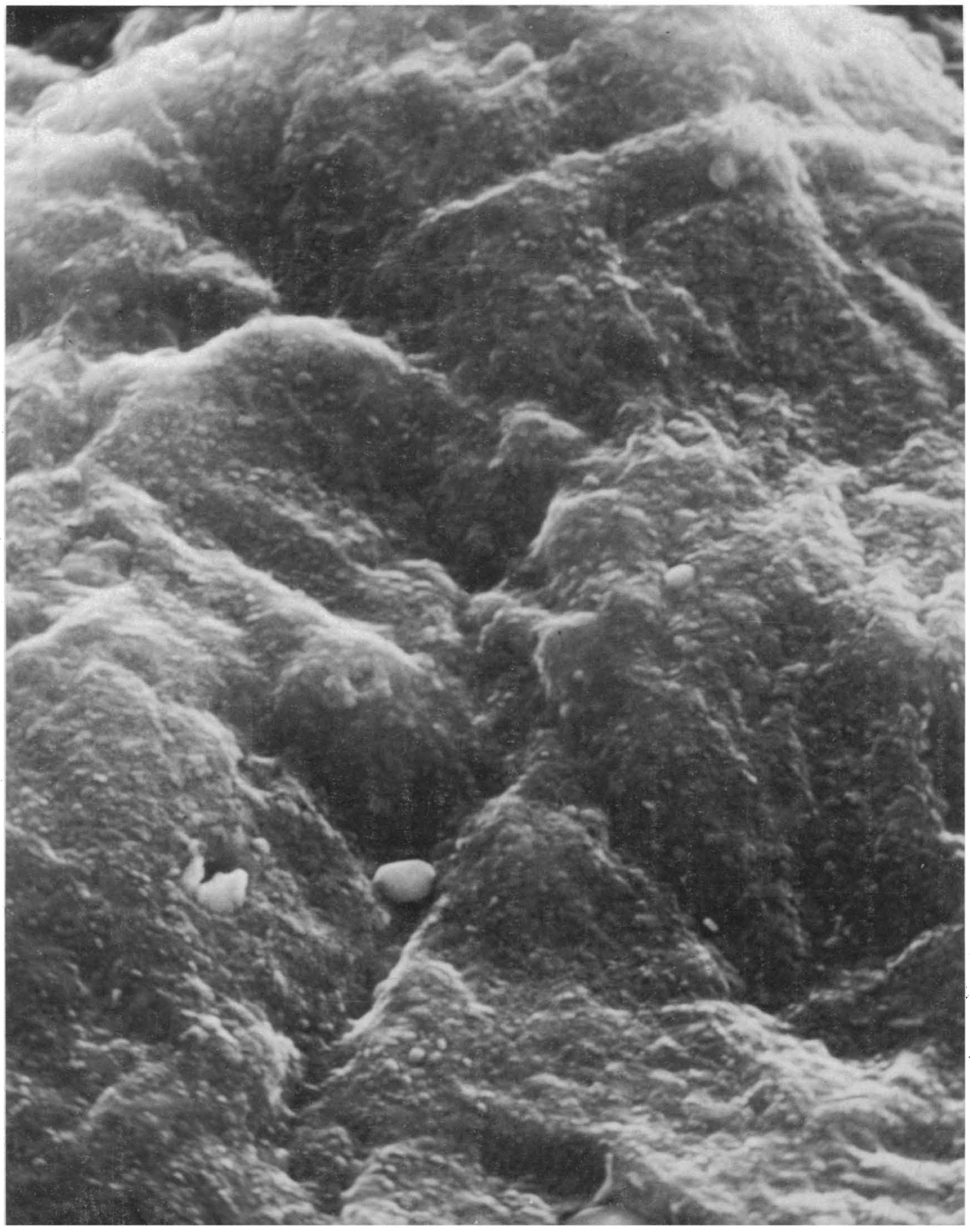
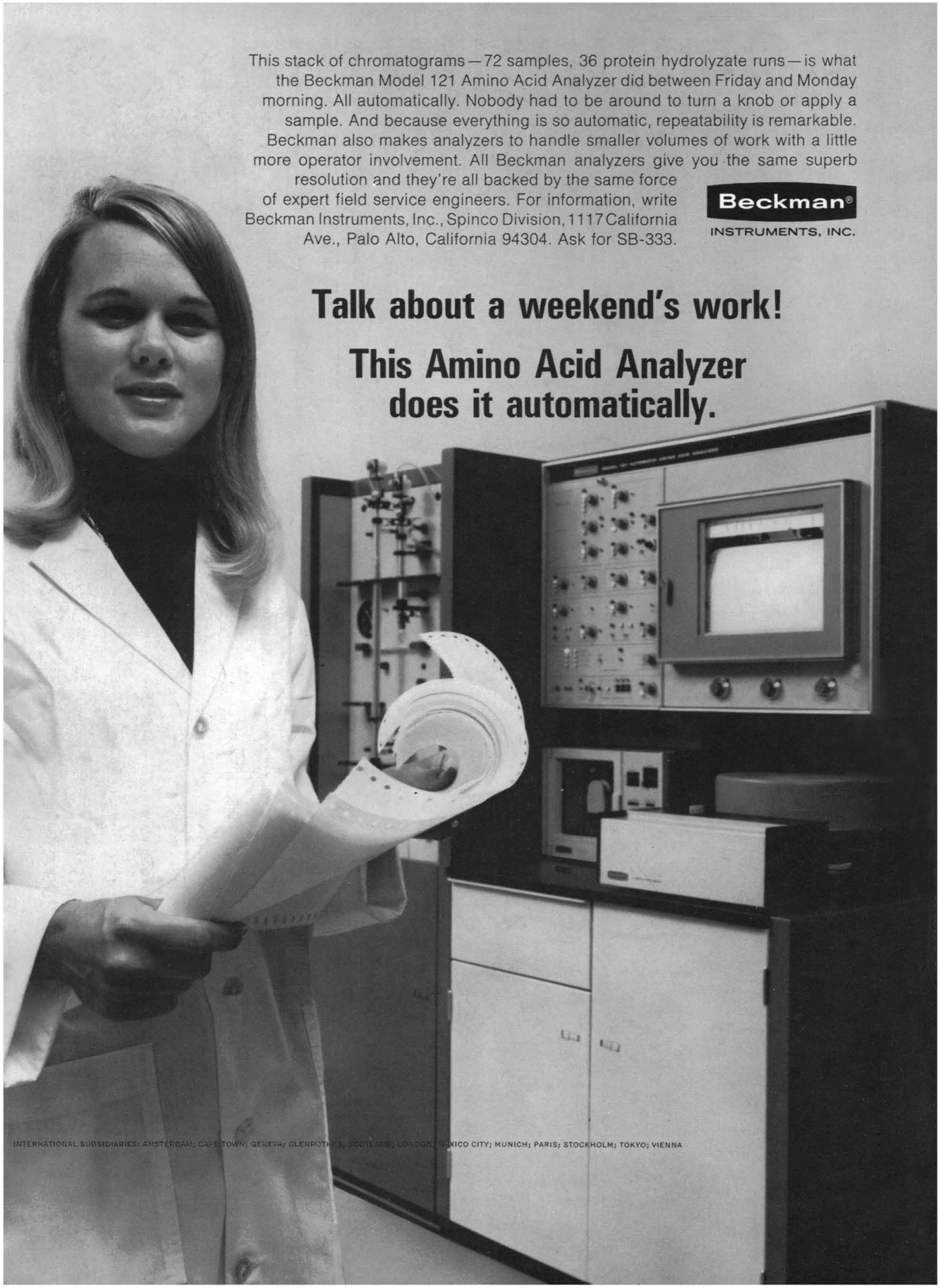
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

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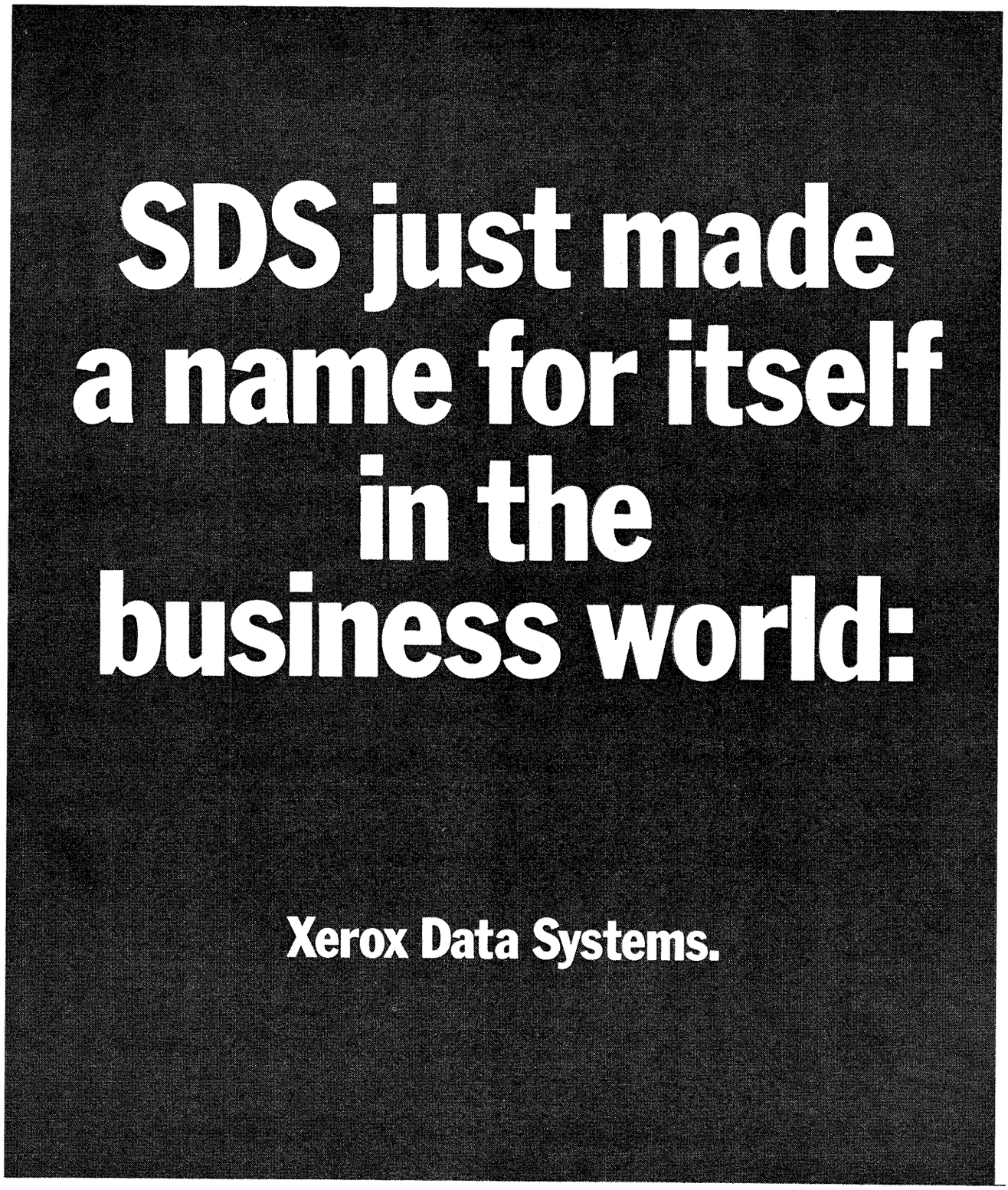

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Polyethylene replica of the surface of skin of a human forearm, showing the more firmly attached epidermal cells and two structures which resemble bacteria (about × 9000). See page 252. [Emil Bernstein, Gillette Research Institute, Inc., Rockville, Maryland]

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closed early both times. It will be offered again this fall. The intensity of student interest and the effectiveness with which they have sought out and used faculty resources available to them is most impressive. The result of their activity has been to transform the consciousness of the campus with respect to the implications of population growth.

One's estimate of the probability of producing any lasting effect through teaching can vary a good bit and mine is not very optimistic. However, I think it is necessary to behave as if it were greater than zero. Certainly it is greater than the probability of significantly influencing the action of such groups as the Chamber of Commerce, city councils, or the State Lands Commission, at least in southern California.

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NIH: Ethics of Budget Cutting and Retrenchment

For many years the National Institutes of Health have provided training grants to departments in a large number of universities to support graduate students in the natural and medical sciences. These programs were adopted to decentralize procedures for awarding fellowships to students so as to reduce the need for direct evaluation of applicants by NIH panels and committees. The training grants also aided in the advance of knowledge in the health sciences and have materially contributed to meeting the nation's needs for an increased number of scientists.

The custom of awarding training grants to universities instead of awarding fellowships directly to students has resulted in a transfer of fiscal responsibility. In selecting students and awarding stipends under training grants the universities have had to make a commitment to support the student for the entire period leading to the Ph.D. degree—generally 4 to 6 years. Training grants have generally been awarded for 5 years with a complete review during the fourth year. By this time, however, a university would have continuing commitments to students already admitted, ranging from 1 to 3 years beyond the expiration of the grant and, if letters of acceptance had already been sent to students admitting them in the fifth year of the grant, its responsibility to them could extend for as long as 4 years beyond the termination of the training grant.

During the current period of retrenchment and budget cuts, many training grants have not been renewed and others have been approved for renewal but have not been funded. This is placing an undue and unfair burden on the universities to provide stipends for the substantial numbers of students to whom they have made continuing commitments. In accepting the principles of the training grant programs, the universities filled their pipelines with graduate students and had to make commitments in good faith extending beyond the period of the grant. The National Institutes of Health are ethically and morally responsible and probably could be held legally responsible for continuing stipends to graduate students already appointed until they complete their degrees.

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Is the AAAS Council Facing Its Responsibilities?

The Council of the AAAS is composed of about 550 delegates from the affiliated societies, the sections, and the state academies. It meets once each year, usually performs routine business, hears committee reports, and adjourns in less than a day. Councillors are asked to come from throughout the nation during the holiday season for such sessions, and frequently the attendance is poor.

This dismal state of the Council operations is in particular contrast to its possibilities. At a time when science is harassed by government and public agencies, the Council could be a major force for defending and encouraging science and its applications for improving human welfare. No other body in existence has such major possibilities. Why are its potentialities virtually untapped?

The main reason is that it is not well organized. About 10 years ago, a major reorganization was attempted, and the basic power of the Council as the governing body of the AAAS was restored.

A Committee on Council Affairs was established which was to meet regularly and organize the Council. The councillors seeking the changes were forced to accept one major and fatal decision, the chairman of the Committee on Council Affairs was to be the president-elect of the AAAS. Most presidents of the AAAS have been excellent choices for their office, but few or none have had experience with the AAAS Council or the time to carry out their duties as chairman of this committee.

If the Council is to assume an active role, the primary step is to allow the Council to choose its own chairman of the Committee on Council Affairs which should meet frequently and act as the executive body between Council meetings. The Council should have numerous active committees with staff help from the AAAS. An excellent organization pattern is offered by the American Chemical Society, whose main office is only one block from the AAAS headquarters. Both its Board and Council have numerous active committees. The bustling crowded corridors of the ACS building are a startling contrast to the staid, quiet corridors of the AAAS building.

The Council in its present form is too large and many of the members attend only one session, if at all. Provision must be made for fewer councillors who would serve minimum terms of 3 years and be removed if absent.

These changes and the proper choice of individuals could make the AAAS Council a great and powerful Parliament of Science capable of voicing the needs, possibilities, and responsibilities of science and scientists. It would be able to face Big Government as an independent critic of government operations in the best traditions of our democracy.

Can this be done? It can. The Council has the power. I have sat through too many dull unproductive Council sessions. Action will be asked at the next Council meeting to bring out the needed changes. I ask councillors who share this vision of an unparalleled opportunity to write to me. This action is independent of the current activities of the Committee on Council Affairs. However, any resolutions offered will be submitted for consideration by its members.

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Apollo and Post-Apollo

With the magnificently successful Apollo 11 mission, the U.S. space program reached a crossroads, and the question arose: Where do we go from here? This has formed the agenda of a number of high-level committees. The administration's answers have been outlined by a Space Task Group (STG) headed by Vice President Agnew and presented in a report entitled "The Post-Apollo Space Program: Directions for the Future" (*Science*, 5 and 26 September).

Perhaps by design, the report gives a blurred vision of the future. One is left with the impression that the principal objective of the Space Task Group was to justify a long-term continuation of a manned space program. In this attempt they were not very convincing.

When the Apollo program was initiated, observers at home and abroad believed that the United States had fallen behind the U.S.S.R. in science and technology. The decision to place a man on the moon during this decade was a dramatic challenge. Succeeding steps toward the goal gave boosts to national pride and a sense of dignity to man everywhere. As a means of bringing stature to the nation, the space program has been more effective than much more costly military efforts.

The space agency has repeatedly made claims concerning "spin-off" from the Apollo program. Usually cited are advances in management techniques, development of very precise guidance systems, stimulus to the development of integrated solid-state circuits, and advances in cryogenics. While deprecating the importance of Apollo in stretching technology, one knowledgeable observer commented that this was to have been expected since the manned program necessarily emphasized reliability over innovation.

Because scientific discovery has had a very low priority in the Apollo program, it is not surprising that scientific accomplishments have been relatively meager. The lunar samples are proving very interesting, but they are scarcely worth the $500 million a pound that some news stories have assigned them.

By reason of the success of the U.S. space program in both manned and unmanned efforts, the opportunities available are different from those of 1961. During this past decade the participation of man was essential. Now, however, earth-orbital travel is routine, and further trips to the moon cannot recapture the glamor of the first.

The manned space program outlined in the STG report does not appear to be a good mechanism for attaining international prestige or for further stretching the technology. Three kinds of ventures are mentioned: trips to the moon, space platforms in earth orbit, and exploration of Mars. The building of space platforms would stimulate development of cheaper and reusable vehicles, but this is essentially repetition. The trip to Mars would require development of complex life-support systems and probably various sources of nuclear power, and is a greater but more costly challenge.

In contrast to the diminished importance of man in space, the significance of unmanned-spacecraft efforts has risen. These vehicles are comparatively versatile and much less expensive. They are increasingly involved in many joint enterprises with other countries (70), in the form of communications satellites, weather satellites, and scientific experiments. New practical applications are appearing, such as a proposed use in air traffic control. The unmanned vehicles devoted to exploration of the distant parts of the solar system will stretch the technology. Finally, the unmanned program has been, and will continue to be, the more productive of scientific accomplishments.—PHILIP H. ABELSON

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