SCIENCE

22 April 1977

Volume 196, No. 4288

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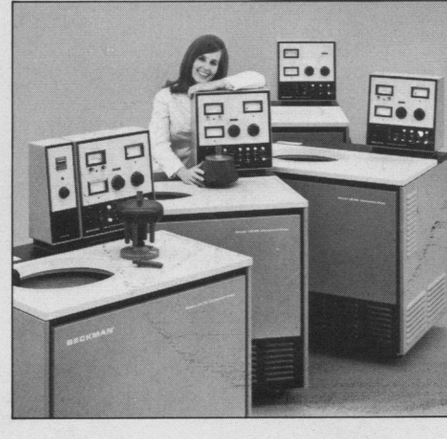

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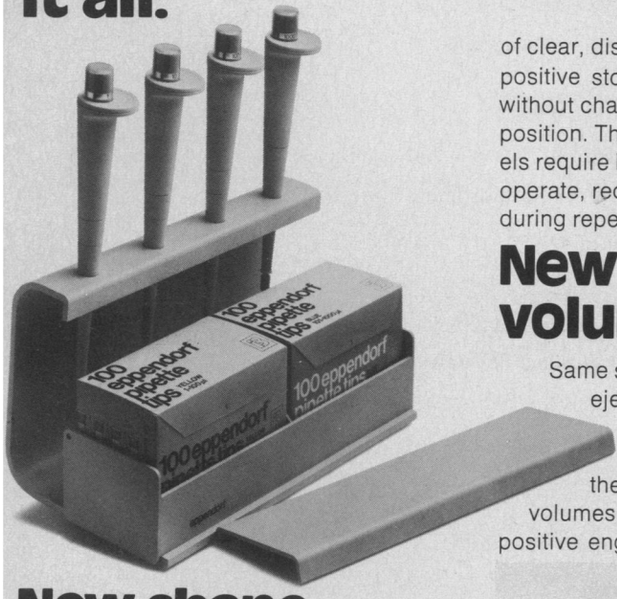

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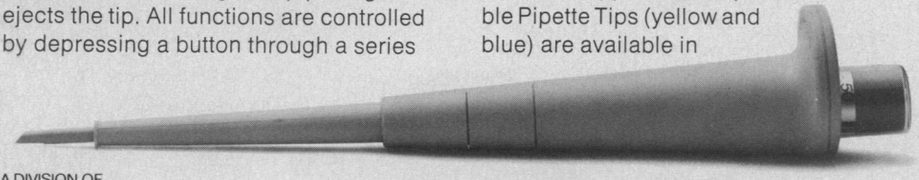

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Volume 196, No. 4288

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COVER

Tomato plant afflicted with a lethal necrotic disease, which is probably the same as that which (in 1972) annihilated the field tomato crop in the French Alsace. Causal agent is a small RNA encapsidated within cucumber mosaic virus, dependent for its replication on, but not part of, the viral genome. See page 429. [J. M. Kaper, Plant Protection Institute, Agricultural Research Service, Department of Agriculture, Beltsville, Maryland]

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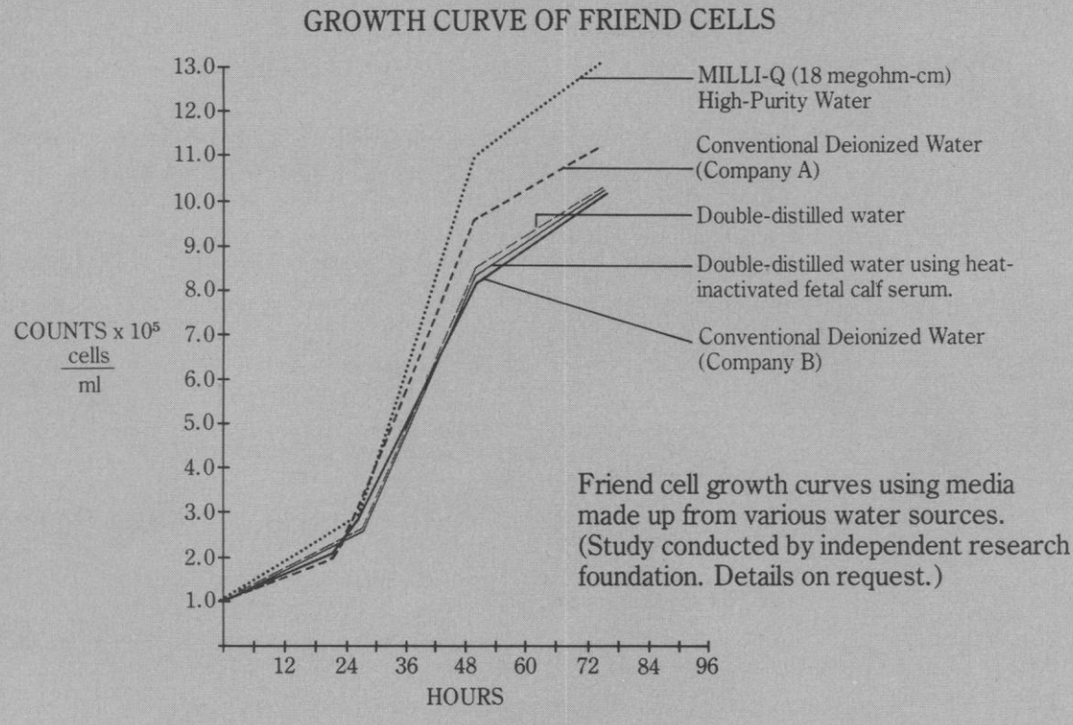

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The colloquium will provide a forum for constructive discussion of selected topics in the report, including future trends in R&D budgeting, the congressional role in R&D budgeting, and problems in rationales and criteria for R&D budget decisions.

Featured speakers and panelists will include appropriate officials from the Executive Branch, Members of Congress, and leading figures in the scientific, technical, and public policy communities.

PRELIMINARY AGENDA

Wednesday, 15 June

10:00 a.m. Opening session; opening address.

12:30 p.m. Lunch; major address.

2:30 p.m. *R&D Budgets and Future Outlook.* This session will consider current budgets and future outlook for R&D. Selected speakers, panelists, and participants will address major issues in the FY 1978 budget; the trends and 5-year outlooks for federal R&D; and their implications for national needs, scientific progress, and R&D institutions.

5:30 p.m. Reception and buffet dinner; major address.

7:30 p.m. *Congressional Role in R&D Budgeting.* This session will address questions of current interest regarding the role of Congress, its committees, and associated agencies in R&D budgeting. Discussion will focus on the congressional vs. the executive role; the proper balance and degree of control over R&D programs; problems and limitations; and effective interaction between scientific and technical communities and the Congress.

Thursday, 16 June

10:00 a.m. *How Should R&D Decisions Be Made?* This session will attempt to develop a consensus among representatives of the scientific and technical community, the Executive Branch, and the Congress on how R&D budget decisions should be made. Issues to be addressed will include conditions to be met and avoided, a "straw man" conceptual system of processes, criteria for R&D budget decisions, and unresolved questions that require attention.

1:00 p.m. Lunch; major address; closing of program.

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- ☐ $40 Single Registration (includes FY78 report and Proceedings of Colloquium)
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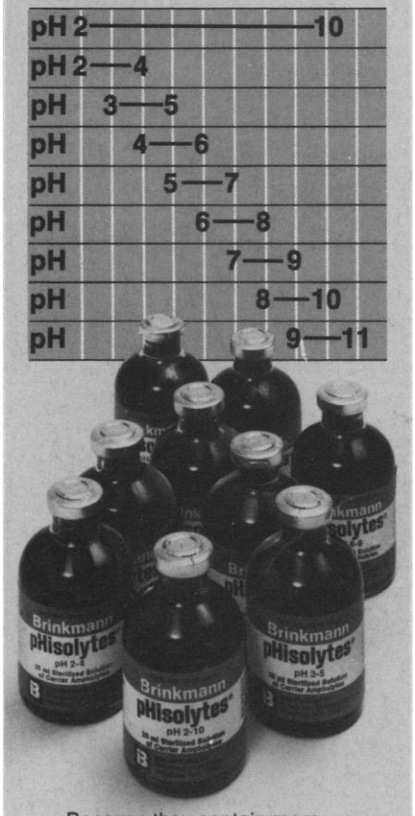

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LETTERS

Academy Energy Study

In connection with Philip M. Boffey's article of 28 January (News and Comment, p. 380), we would like to clear up a possible misunderstanding concerning the nature of the interim report of the NAS–NRC Committee on Nuclear and Alternative Energy Systems (CONAES) and the role of the 250 or more "participants" in this study. The study is being conducted on three levels: the 16-member CONAES committee; four panels; and some 30 "resource groups," 27 of which report to one or more of the panels, with the other three reporting to the main committee.

The interim report is solely the responsibility of the parent committee, and no participant aside from the 16 members of the committee should be inferred to be responsible for its conclusions or for the conclusions that will appear in the final report to be issued this summer.

It is intended that reports from each of the four panels will be published by the Academy at approximately the same time as the report of the parent committee, and the panel reports may include contributions from many of the resource groups. The panel reports will be the responsibility of the relevant panel members, and will not necessarily agree with the views arrived at by the parent committee after its review and analysis of the panel and resource group inputs.

It is regrettable that, whereas Boffey's article carefully stated the limited conclusions of the interim report, several stories in the general press contained speculation concerning the agreed-upon conclusions of CONAES that went well beyond any statements made in the interim report.

HARVEY BROOKS, EDWARD L. GINZTON
Committee on Nuclear and Alternative Energy Systems, National Academy of Sciences, Washington, D.C. 20418

"Scientific" Social Anthropology

Gina Bari Kolata's article "Social anthropologists learn to be scientific" (Research News, 25 Feb., p. 770) ascribes certain policies of judgment and action to the Program Director for Anthropology of the National Science Foundation (NSF). I am writing because of a real concern over the policies that are evidently being pursued by this office of NSF.

The burden of the article is that, in an apparent attempt to improve the service of her office, the Program Director for Anthropology has been advising applicants that they should design their studies so as to be "more scientific." Unfortunately, Kolata is not explicit as to what is meant by "scientific" in this practice, but given the history and nature of anthropology, and some recent individual instances with which I am familiar of grant applications to NSF, I gather that it means the formulation of research proposals in the form of the hypothetical-deductive method. The arbitrary imposition of any specific paradigm of methodology on all research projects is dubious; on some social anthropological projects, the requirement is positively destructive.

There are at least two major areas of work in social anthropology to which this approach is prejudicial. First is that known as general ethnography, and second is the so-called "interpretive" approach. The first is scientific exploration that falls into the "context of discovery." Ethnography in its most general sense is the description of the ways of life of peoples of the world. It has been one of the major sources of basic anthropological information. It has ranged in kind from its earlier history of reports of missionaries, explorers, colonial officers, and travelers to contemporary detailed explorations of specific aspects of life in which a systematic series of approaches are used that have become known generally as "ethnoscience." The approach, while historically more concerned with the "exotic societies," has long since become a major methodology for the study of all societies, our own complex and urban way of life included.

The implication in Kolata's article that it is unscientific "to study a particular group simply because it is disappearing or because no one had ever described it before" is simply disastrous. Human society is marked, to a degree uncommon among life forms, with constantly emerging new cultural forms, answering to new conditions and as yet little understood mechanisms. Our best evidence for study is these forms. Of particular importance are those representing adaptations to earlier and now disappearing life conditions on the planet. There are many strong scientific reasons for promoting the investigation of groups that are disappearing or have never been described before. (Not entirely independent of their real scientific importance, there is an additional humanitarian concern, since these groups are often living under increasingly difficult material and environmental circumstances.) For NSF to openly pursue a policy that deters such investigation probably reflects the behavioristic fad that has so marked much of social science in the past quarter-century. It has had some beneficial consequences.

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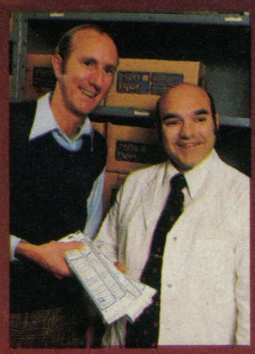

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In this instance, however, its effect is to discourage exploratory scientific work of the greatest importance to our understanding of man.

The second area of concern is a newer anthropological development, referred to as an "interpretive" approach, whose leading exponent is Clifford Geertz of the Institute for Advanced Study at Princeton. It rests on the premise that human activity fundamentally pursues a stochastic path; that much of it is therefore "new," innovative, and not previously acted out. As such, there is much in it that is predictable only in a limited, trivial, or banal sense; many of the most important things to be studied are those very aspects that have not yet occurred with any frequency, are not members of any identified category of phenomena, and therefore cannot be subjected to much of the methodology that has emerged from the positivistic approaches that have dominated the natural sciences during the past century. It is very unlikely that Geertz, certainly among the most distinguished anthropologists of his generation, could propose work that would meet the "scientific" criteria that are evidently now being applied by the NSF Anthropology Program.

The arguments, however, are even greater than recent developments in anthropology would suggest. At the same time as theory within anthropology has been placing greater emphasis on the open-ended nature of human behavior and evolution, the natural sciences have been moving in a parallel direction. One need not go to the extreme position of Jacques Monod to assert this. The work of individuals such as the late Conrad Waddington in biology and Ilya Prigogine in statistical mechanics and physical chemistry has clarified the nonlinear quality of much natural activity and represents areas of scientific investigation that could never have emerged if a strict hypothetical-deductive method had been required for them.

Since NSF is central to much anthropological research, I would urge its officials to seriously reconsider their policies and institute an orientation and series of criteria for evaluating proposals that will encourage broader and more exploratory anthropological investigation as well as the work of those who choose a more traditional positivistic path. We have recently been accused by a foreign colleague of "showing signs of a hardness of the arteries"; the policy of the NSF Anthropology Program seems to support that assertion.

RICHARD N. ADAMS
Department of Anthropology, University of Texas, Austin 78712

In Kolata's article of 25 February, Nancie Gonzalez is described as making an effort to teach social anthropologists how "to think like scientists," touring 60 universities in order to propagate her views of what the field should be. Gonzalez' approach to the NSF Anthropology Program has long been a source of deep concern and profound misgivings to some anthropologists, since her statements suggest a misconception of what both science and anthropology may be.

Kolata remarks that "in order to get more money from NSF, social anthropologists will have to think more like scientists." No one disputes that proposals in all fields should be clearly written, logically argued, and based on thorough scholarship. Yet social science is neither biology nor physics. The study of society involves factors of value and history radically different from research in those sciences apparently endorsed by Gonzalez as models we must emulate. Are we to assume that NSF has an official policy subscribing to a simplistic and rigid view of social science harking back to 19th century positivism or, even more disturbing, to an authoritarian insistence that those dispensing funds may dictate to scientists what science is or is not?

Gonzalez' pronouncements and tours of campuses underscore something we have suspected for many months, that the NSF program in anthropology may be in the process of becoming unduly influenced by a narrow and ill-informed view of what an entire scholarly field should be. This is not our conception of the task of an NSF program director.

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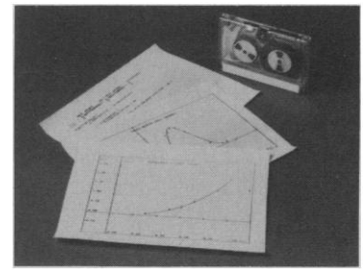

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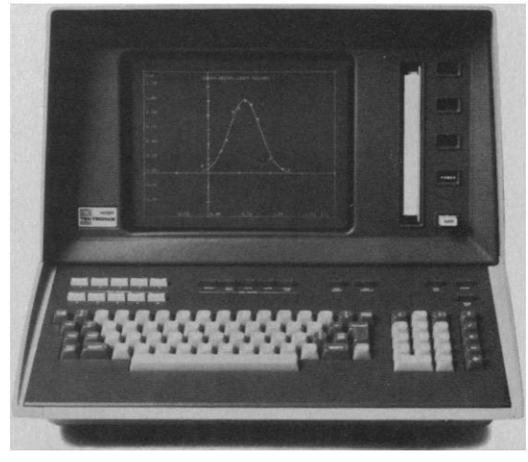

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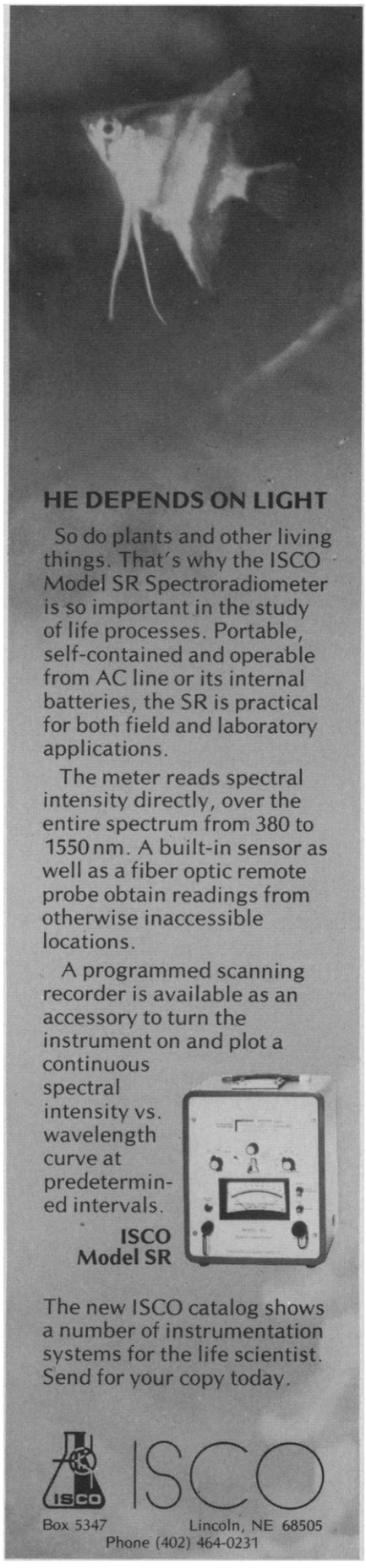

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Adams is tilting at windmills, largely because he seems to have read into Kolata's article things that were not there and not intended. Neither I nor previous Anthropology Program directors at NSF have ever controlled policy in the ways he suggests. Anyone who has ever been on one of our advisory panels will attest to the fact that the Program responds to the field and to the unsolicited proposals received, which compete one against the other in the review process. The Program Director largely follows the advice of this panel, and over the years it has been the *panel* which has tended to reject proposals that do not provide adequate rationale for doing the research in the first place.

It might be instructive to quote the very simple statement concerning research which we send to would-be applicants who get in touch with us before submitting a proposal.

> A good research proposal is focused on specific phenomena and on a specific scientific question or questions that the research proposes to answer. The proposal explains the relationship and importance of its particular scientific question to other scientific questions of interest; it gives a brief account of attempts by other scientists to answer the same or related questions and says what the proposer thinks are the reasons for success or failure of these other attempts. The proposal describes the kinds of things one should know in order to answer the question(s) posed, and how the investigator plans to go about gathering these data. It also mentions possible areas of application *if* they can be foreseen. Finally it describes the amount of money needed and how it will be spent in order to achieve the expected results. It ends by stating the available sources of support and the specific request for remaining funds from NSF.

The statement does not mention hypotheses, nor does it preclude any of the kinds of research Adams defends. I quite agree with him that rigorous adherence to a single theoretical or methodological framework would be disastrous for any science. A review of the actual research projects funded by the Anthropology Program over the past few years might relieve his fears on that score.

In my interview with Kolata, I opined several other reasons why the Anthropology Program has never funded social anthropology–ethnography to the same extent as it has archeology. They have to do with the nature of traditional research in these fields, which has usually demanded extraordinary rearrangements in one's personal life, as well as with the fact that much respectable social anthropological research addresses humanistic, rather than scientific, questions. In addition, there have in the past been many sources of funds other than NSF for social anthropologists. As the number of professionals increases, the competition for limited funds increases. Under such conditions, each agency or foundation becomes even more concerned that funds be awarded only to the most excellent efforts. The proposal is the only fair basis upon which to make decisions concerning allocations. It had better be well done. It was to this issue that I directed my remarks.

Concerning the letter from Beidelman *et al.*, it is indeed disheartening that my eminent colleagues have chosen to criticize me on the basis of an article I did not write, and without firsthand knowledge of the situation. None of the signers has ever been on the NSF Anthropology Advisory Panel. Therefore it is unlikely that any of them can know how many proposals of each type are received, or what their quality and condition actually has been. Nor can they be expected to appreciate the basic continuity in both problems and efforts within the Program over time. The panel has recommended and the Program has funded a variety of studies, including some of the sort carried out by the signers themselves, for many years. The 1976 grant list will soon be published in the newsletter of the American Anthropological Association. I invite readers to peruse that and draw their own conclusions.

I fear my critics forget that not all social anthropologists have had the benefit of the kind of training they provide and the collegial support they enjoy at the elite institutions they represent. In contrast to their uninformed remarks, I have received some 50 approving letters and phone calls asking for copies of the previously quoted statement concerning research—drafted by me, but built upon earlier statements made by previous program directors. Many of these requests have come from respected, senior persons in the field. Clearly, many of my critics' peers believe my efforts are worth something.

Since I became Program Director the total proposal load has increased by 25 to 30 percent, and as of 1 March 1977, we have a set of proposals in which the social anthropological outnumber the archeological—for the first time, we believe. On the basis of the increase in volume and apparent improvement in quality of proposals received, the Program in Anthropology has been slated for a 25 percent budget increase in 1978. This has been accomplished through much patience and hard work, and with the advice, understanding, and cooperation of dozens of anthropologists across the country. I have always welcomed dialog concerning the program. This is one of the purposes of my "touring" campuses.

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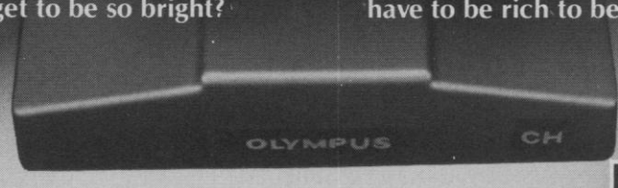

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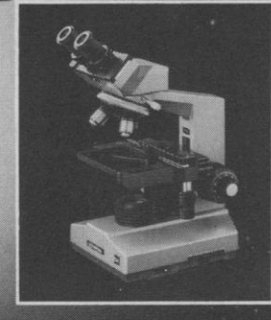

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The position of Program Director is a rotating one, and my successor will soon be named. However, it would be both unwise and unfair to assume that this alone will bring about major improvements for social anthropology. These improvements must come out of the field itself. Hopefully, this heated exchange of words may awaken the profession sufficiently so that more of its members will chose to work with the Program Director in what should be a united effort to enlarge the funding opportunities in our field.

NANCIE L. GONZALEZ

Anthropology Program, National Science Foundation, Washington, D.C. 20550

Krypton-85 and Atmospheric Conductivity

In his article "Meteorological consequences of atmospheric krypton-85" (16 July 1976, p. 195) William L. Boeck arrives at the conclusion that ionization due to the release of ^{85}Kr from the nuclear power industry could decrease the total electrical resistance between the earth and the ionosphere by about 10 percent within the next 50 years. He speculates that this could lead to a form of inadvertent weather modification, the effects of which—be they beneficial or harmful—cannot be determined on the basis of our present understanding of atmospheric processes.

This question is of much significance for differential cost-benefit considerations in connection with the retention of ^{85}Kr by nuclear fuel reprocessing plants, and it could also be a controversial issue in the public debate on the acceptability of nuclear power. It is therefore important to make a realistic estimate of the extent to which ^{85}Kr will be retained and to put the effect of release of ^{85}Kr in proper perspective by comparing it with other factors influencing the electrical conductivity of the atmosphere. As it appears from Boeck's article (equation 4), one such factor is particulate pollution of the atmosphere.

Boeck assumes a ^{85}Kr concentration of 3 nanocuries per cubic meter in the early part of the next century, basing this value on information given in (*1*). This is in fair agreement with the information given in (*2*). In calculating this concentration it is presupposed, however, that no ^{85}Kr is retained by fuel reprocessing plants. According to proposed standards (*3*) it is intended that the release of ^{85}Kr shall be limited to 50,000 curies per giga-

watt-year from 1 January 1983, and this limiting standard, which is based upon the minimum performance reasonably anticipated for commercial operations, may be reconsidered as practical experience with retention plants is gained. This limit corresponds to about one-sixth of the ^{85}Kr produced. Therefore it is a more realistic but still conservative assumption to use a value of 0.5 nanocurie per cubic meter for the ^{85}Kr concentration in the early part of the next century. The use of this value in the calculation method employed by Boeck reduces the increase in the electrical conductivity of the atmosphere from about 10 percent to about 1.5 percent.

Even if this is a substantial reduction in a relative sense, it does not help us judge the absolute consequences of ^{85}Kr releases if we have nothing to compare them with. It is therefore fortunate that the information in Boeck's comprehensive article allows us to calculate the relationship between conductivity and particulate pollution of the atmosphere. Using the same constants and parameter values we find that a 10 percent increase in atmospheric particulate pollution *decreases* the electrical conductivity of the atmosphere by about 1.5 percent, which is the same relative amount as the *increase* caused by the concentration of ^{85}Kr used as a conservative value for the beginning of the next century.

From a conservationist's viewpoint, the release of ^{85}Kr would therefore be beneficial in the sense that it would compensate for the effect of some of the particulate pollution on electrical conductivity.

H. L. GJØRUP

Health Physics Department,
Research Establishment Risø,
DK-4000 Roskilde, Denmark

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1. *Krypton-85 in the Atmosphere—Accumulation, Biological Significance and Control Technology* (NCRP Report 44, National Council on Radiation Protection and Measurements, Washington, D.C., 1975).
2. G. N. Kelly, J. A. Jones, P. M. Bryant, F. Morley, *The Predicted Radiation Exposure of the Population of the European Community Resulting from Discharges of Krypton-85, Tritium, Carbon-14, and Iodine-129 from the Nuclear Power Industry to the Year 2000* (Commission of the European Communities, Luxembourg, 1975).
3. Environmental Protection Agency, *Fed. Regist.* **40**, 23421 (1975).

Gjørup focuses on two important topics. On 13 January 1977, the Environmental Protection Agency promulgated regulations (*1*) that would limit the total quantity of ^{85}Kr released to the general environment to less than 50,000 curies per gigawatt-year of electrical energy generated by nuclear power reactors. These

(Continued on page 460)

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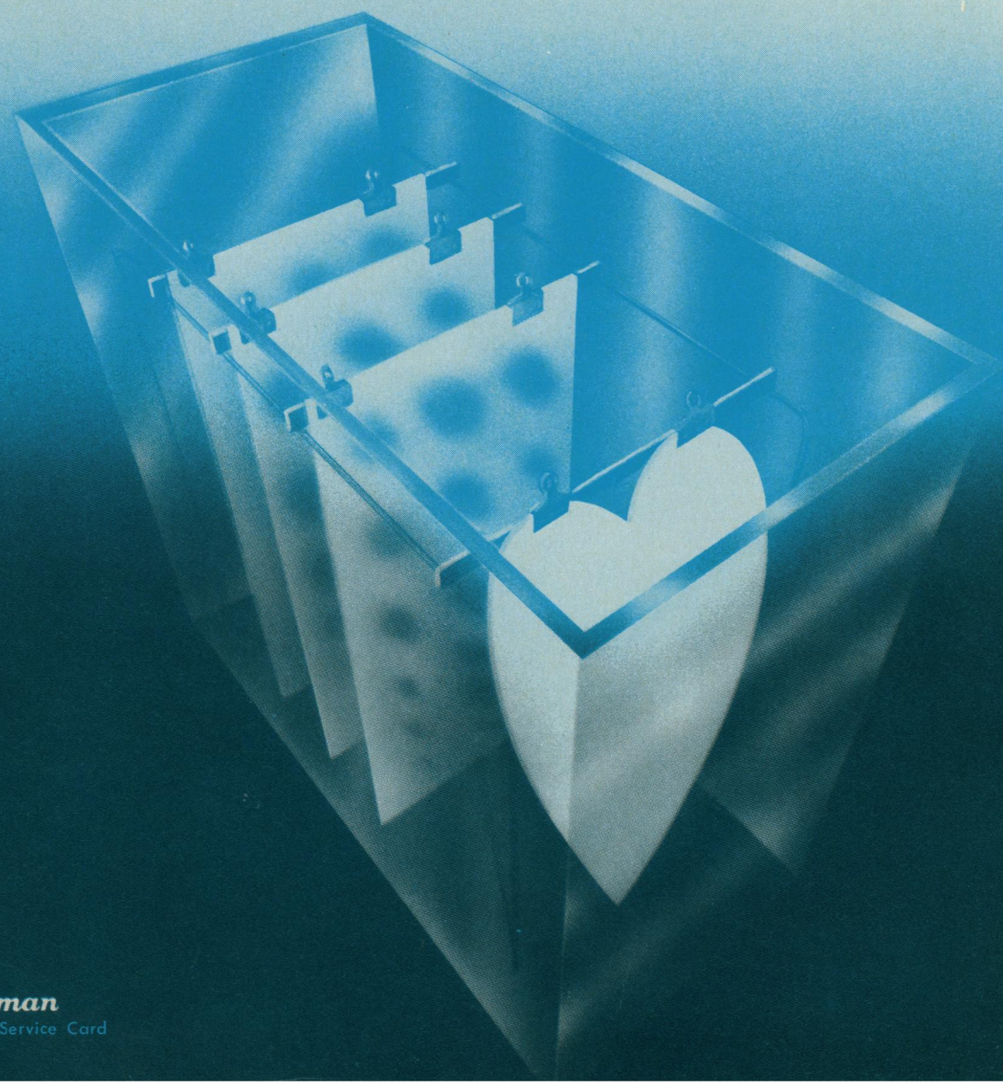

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Policy for Ocean Resource Development

Marine resource development by the United States is proceeding at an unnecessarily slow and inefficient pace. This situation stems from three basic problems: the lack of a clear and stable national policy to encourage investments by private businesses, the lack of a suitable organizational entity to be fully responsible for overall development, and the need to limit government involvement to regulation and certain public services.

This situation can be improved in a relatively short time if the federal government will recognize and act in the problem areas cited above. The first step is to reaffirm the separate but related roles of private industry and government. An important need of any industry involved in commercial offshore development is a stable and consistent government policy. This means that it is necessary to provide reasonable regulations that will remain in effect for a long enough period—say 10 years at the minimum—that investors can expect to recover their costs with a reasonable return in proportion to the investment and risk required. It is also necessary for the government to provide assurance that it will maintain law and order and protect private property offshore.

The second step is to establish an organizational entity to administer the overall development of all offshore resources. Several regional public authorities should be established to manage all ocean development in specific geographic areas. For example an Atlantic outer continental shelf authority with jurisdiction over all offshore resources from the Canadian border to the Florida Straits would be logical. Its landward boundary would be the traditional 3-mile limits of the coastal states. Its offshore boundary would be the recently established 200-mile limit or a depth contour of 2000 meters, whichever is the greater distance offshore.

It would be important for each authority to be a viable economic entity. To achieve this, each would be assigned title to all resources within its boundaries, including those in the water column and on and under the seabed. Authorities would issue bonds, grant leases, contract for services, and negotiate licenses for private business to operate facilities. Actual physical development of the ocean resources would then be carried out by private industry or public utilities under appropriate lease arrangements with the authority. Of considerable importance would be the motivation and ability of each authority to assess the total resources within its boundaries and to establish development plans and policies that would ensure the maximum long-term benefit. Revenues could be distributed by formula to the federal government, to adjacent coastal states, and to the authority for further investment. The governing board of the authority would consist of representatives elected or appointed from adjacent coastal states. This board would employ the necessary staff to carry out day-to-day operations.

The third requirement is for the Administration and Congress to limit the role of the federal government to regulation, certain public services, and the maintenance of law and order. This means that such activities as charting and mapping and synoptic weather and sea state reporting should be carried out by the federal government as part of its global activities. The protection of private property and the policing of the nation's new seaward boundaries should remain the responsibility of the Coast Guard. The federal government in its regulatory role should ensure that all operations are conducted in a safe manner, as concerns life, the environment, and the resources. No federal reorganization would be necessary if this plan of action were adopted. Rather, it would permit the federal government to eliminate, or reduce in size, many of its units now concerned with the ocean.

By taking these three actions the United States would at the same time encourage commercial ocean development and set a world standard for managing its adjacent ocean resources.—W. S. GAITHER, *Dean, College of Marine Studies, University of Delaware, Newark 19711*

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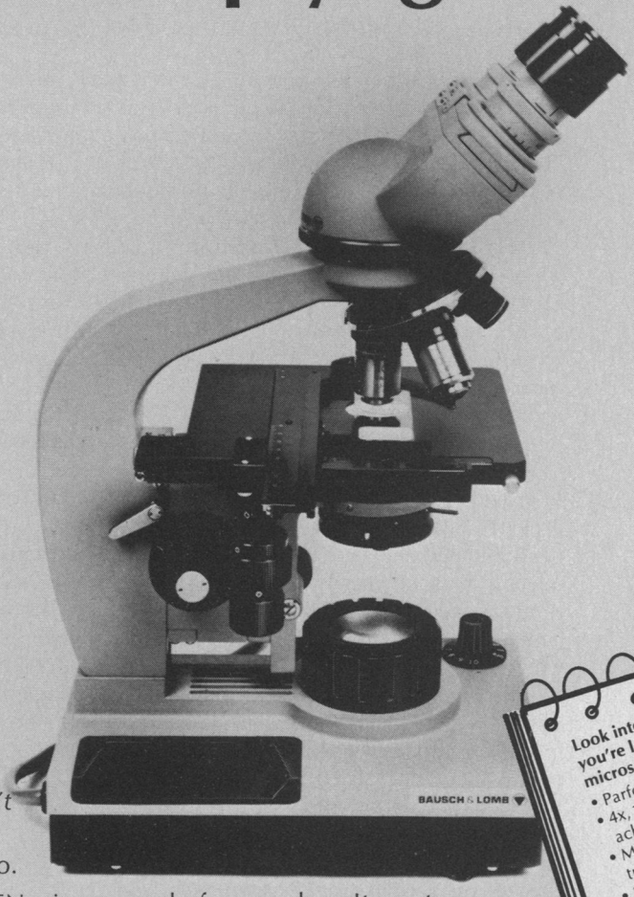

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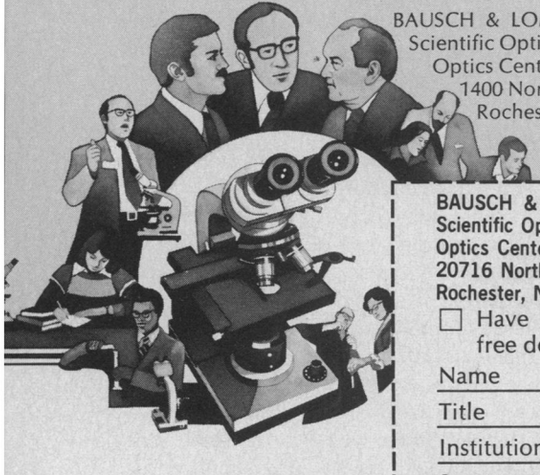

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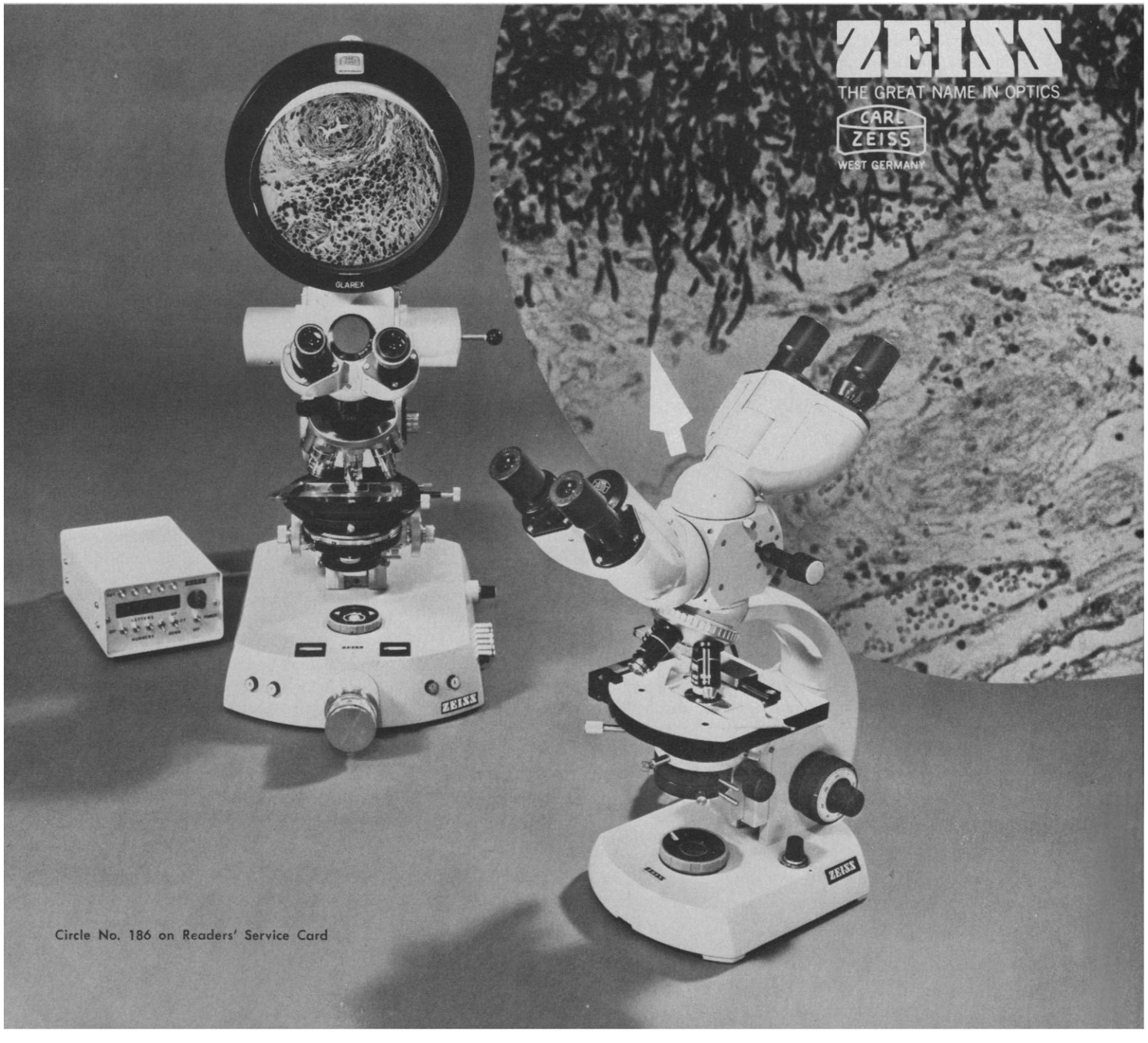

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Literature

Mapping is a newsletter about applications of instruments to surveying, oceanography, meteorology, and other disciplines. Versatec. Circle 724.

Signal Synthesis, Processing, and Analysis is covered in a new condensed catalog. Rockland Systems. Circle 725.

Light Detection and Measurement is featured in a six-page product profile for electro-optical devices. United Detector Technology. Circle 733.

Universal AC Stand offers sturdy rugged support for heavy microscope accessories including color television, cameras, and photometers. Carl Zeiss. Circle 727.

Digital Image Processing Instrumentation describes rotating drum digital scanning and writing systems with specifications, principles of operation, and performance characteristics. Optronics International. Circle 728.

Vortecnology Application Notes lists a variety of current research and industrial techniques that use vortex tubes. Vortec. Circle 729.

Water Turbidity Measurements is devoted to the series 40 nephelometers and their use in the study of water systems. Turner Designs. Circle 731.

Bio-Dri Freeze-Dried Study Specimens is a line of educational anatomical specimens including a number of animal species. Ward's Natural Science Establishment. Circle 732.

Gas Chromatographs for Biochemicals documents the series 4000 and series 2000 instruments and their accessories. Applications are also detailed. Kontes. Circle 741.

Coronary Care Patient Monitoring lists six systems and describes their configurations, capabilities, and features. Hewlett-Packard, Medical Products Group. Circle 742.

Fluorimetric and Histochemical Enzyme Substrates includes reference listings and groups the individual preparations in systems for easy access. Research Products. Circle 743.

Solutions for Diagnostic Needs is a catalog of colorimetric and ultraviolet reagents, kits for cell enzyme assays, amylase reagents, and control serums. Princeton Biomedix. Circle 744.

Biomedical Photography deals with specialized techniques in this field and includes a general chapter on photographic parameters and guides to film selection and use. It costs $10 per copy. Eastman Kodak. Circle 745.

Micro-Doser Repetitive Pipette describes a new liquid dispenser that features disposable assemblies. Oxford Laboratories. Circle 746.

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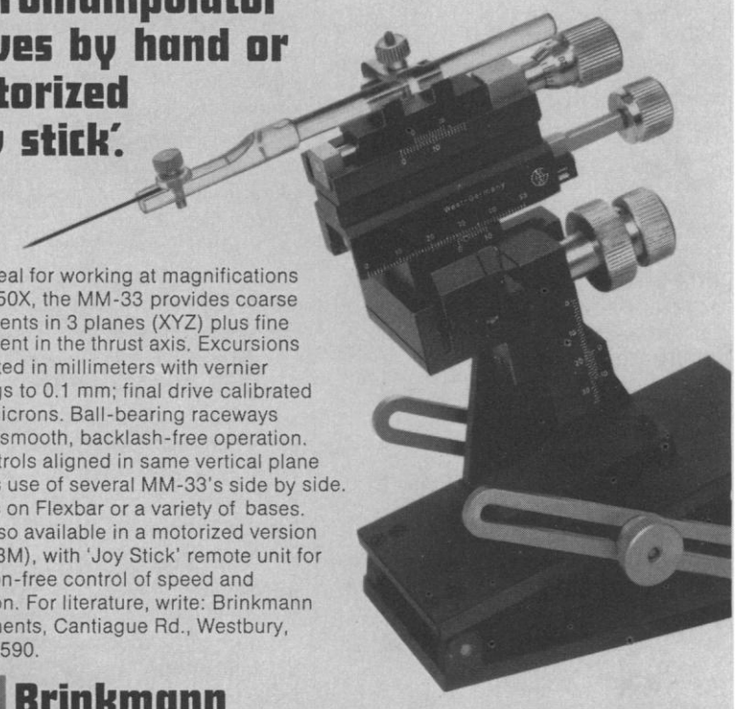

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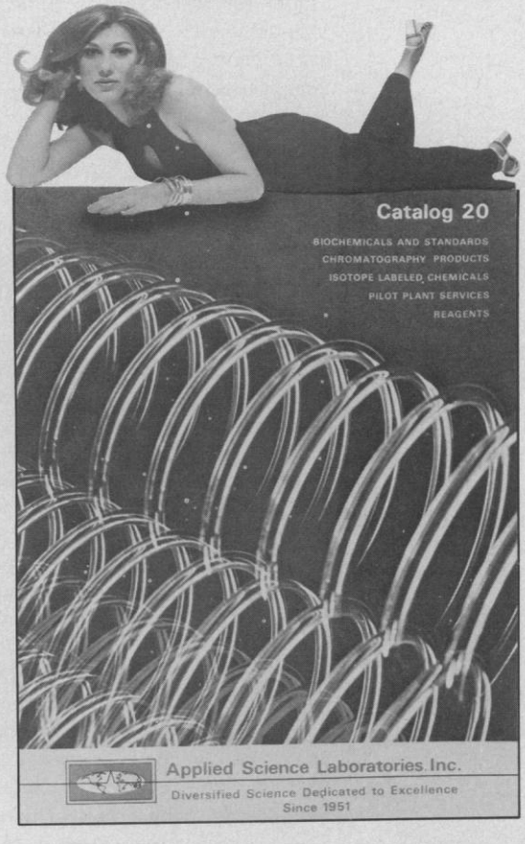

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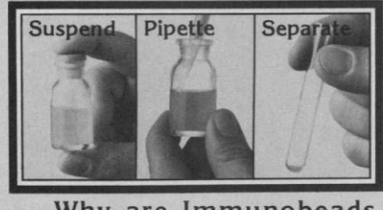

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LETTERS

(Continued from page 381)

limits apply only to ^{85}Kr produced as a by-product of electrical power after 1 January 1983. The regulations do not limit the release of ^{85}Kr resulting from plutonium production reactors, naval nuclear propulsion reactors, or research nuclear reactors, and leaks to the atmosphere from underground nuclear tests. Nor do they apply to nuclear power reactors outside the United States. Gjørup implicitly assumes that all nuclear fuel reprocessing plants in the world will adopt control measures similar to those required by the United States. I am not convinced this assumption is presently realistic and conservative. I prefer to increase the range of uncertainty of atmospheric ^{85}Kr predictions. It is likely that the world usage of nuclear fission will continue to grow in the next century, and a reduction in ^{85}Kr releases per unit output may be offset by a corresponding growth in total nuclear energy output.

I urge caution before drawing any conclusions from a comparison of ^{85}Kr effects to other phenomena. First, when comparing ^{85}Kr ionization to natural background ionization, one should not implicitly assume that the preexisting ionization background level is at an optimal value. For example, although mankind has survived millennia in an unavoidable natural background of ionizing radiation, background radiation is not necessarily beneficial.

Second, particulate pollutants will have an effect on cloud formation not compensated for by ^{85}Kr.

Third, the removal mechanisms for atmospheric aerosols are much more rapid than the radioactive decay of ^{85}Kr. The result is that ^{85}Kr can contaminate even the pristine air in remote regions of the globe. I would expect that the atmospheric electrical conductivity would show a net decrease due to particulate pollution in regions downwind of industrial countries and a net increase due to ^{85}Kr ionization in remote regions of the oceans.

Within a human lifetime, the nations of this world will have a capability to manipulate the ionization background of the lowest layers of our atmosphere. I believe the implications of that capability should be carefully examined.

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NEWS AND COMMENT

(Continued from page 412)

the most technically competent Chief Executive since Herbert Hoover, an engineer—knows a substantial amount about science and technology. Press calls the President "an expert" on energy, says he "knows a surprising lot about technology in the national security areas," and is well-versed in agricultural and space technologies, too. Indeed, some observers suspect Press will have more trouble communicating with top White House aides than with the President himself.

The staff support available to Press may be somewhat less than that enjoyed by his predecessor and somewhat less than that expected by Congress. The OSTP currently has some 16 professionals and is authorized to appoint four associate directors. But Press told the Senate committee he expected to appoint only one associate director and indicated he might have somewhat fewer professionals than at present because President Carter has put out the word to operate "a lean White House." The size of the staff will be determined in large part by a study now under way to reorganize all components of the Executive Office of the President. Any staff cuts would probably be offset by greater reliance on consultants from the research community. Eugene B. Skolnikoff, director of the Center for International Studies at the Massachusetts Institute of Technology, has already been tapped to spend part-time assisting Press in a review of bilateral scientific agreements.

Press has been revving up the three statutory committees associated with his office. He hopes that the Federal Coordinating Council for Science, Engineering, and Technology will develop "real clout" in coordinating federal programs—a wish that his predecessors shared to no avail. He plans to use the new Intergovernmental Science, Engineering, and Technology Advisory Panel as a device by which state and local officials can voice opinions on priorities for federal R & D programs that affect them. (That effort may carry some weight, since the President has voiced a desire to give local officials greater say over federal programs, and both Bert Lance, Carter's budget director, and Jack H. Watson, Jr., the President's assistant for intergovernmental affairs, participated in the panel's first meeting.)

He has also forwarded to the White House a new list of nominees for the President's Committee on Science and Technology, which is conducting a 2-

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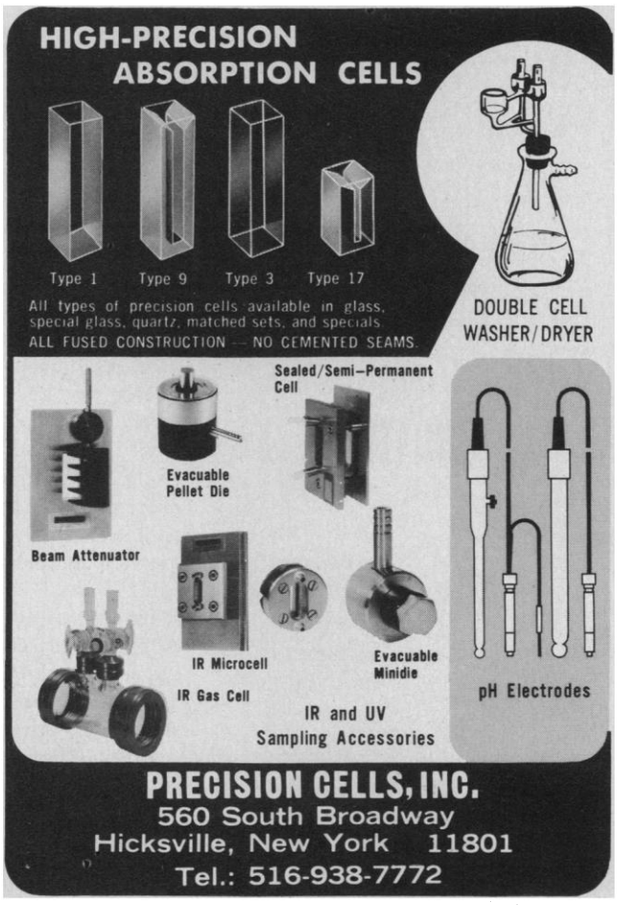

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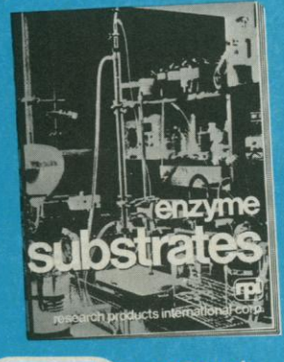

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year study of the national effort in science and technology. The committee had been appointed by the previous administration, as required by law, and its members were rather shocked to find their pro forma resignations accepted en masse by the Carter Administration. Press says that the Carter transition team had already recommended that the resignations be accepted before he arrived and that he "sensed what the White House wanted to do and did not oppose that recommendation." Whatever the reason for the action, it removes a Republican-dominated committee that was a bit out of tune with some elements of the Carter Administration (*Science*, 17 December 1976). The reconstituted committee is apt to retain a few holdovers to provide continuity. The most likely bets are Charles P. Slichter, a University of Illinois physicist, who is heading a study of basic research in the mission-oriented agencies, and Paul O'Neil, a former budget official whose knowledge of government is particularly sought.

Press is already carrying out a number of studies or preliminary inquiries, including reviews of the qualifications of candidates for science-oriented posts in the Executive Branch; an attempt to estimate the nation's uranium resources (existing estimates differ widely); a preliminary inquiry to ascertain whether government regulation seems to be inhibiting R & D; and some tasks in the national security area, where the Carter Administration is trying to determine how the United States and Soviet Union compare in various elements of strength, including technical resources. Press told the Senate committee that, in terms of basic research that is relevant to national security, "we're in pretty good shape" compared to the Soviets. But his written response declined to comment on the net technological comparison pending completion of the National Security Council study. Generally, he said, American technological capabilities are unrivaled in quality and quantity. Press told *Science* that he was surprised how much he had become involved in national security issues and noted that any large volume of such tasks could easily swamp his staff.

Press indicated that his top priorities include support of basic research, stimulation of industrial research, the use of science and technology in foreign policy, including technology transfer to developing nations, natural resources, energy, and space.

The confirmation hearing went relatively smoothly for Press. Occasionally, a senator would try to get Press to criticize a particular policy of the Carter Administration, but Press deftly sidestepped such traps, generally by professing to be a new boy in town who wasn't involved in setting the policy. Press came across as a cautious, reasonable, soft-spoken, unflappable fellow eager to satisfy any doubts that the committee might have about him. The biggest doubt seemed to be that Press has not resigned from his previous job at MIT, but instead has taken a 2-year leave of absence, just in case he doesn't last the full 4-year term of the Carter Administration, as he now intends. That, it was suggested, might pose a conflict of interest if Press's office wanted to hire MIT to do a job, or if Press had to make policy recommendations that might affect MIT. Press offered to resign if the committee insisted, but Senator Edward M. Kennedy (D–Mass.), who attended the hearing as the senior senator from Press's home state, seemed to head that off by asserting that such a forced resignation would be "extraordinary" and "more than anyone should ask."

By the end of the hearing, all three senators present indicated that they planned to submit more written questions to Press. But they also praised his abilities, and there seemed little doubt that he would win easy confirmation.

How well he will perform after that is a matter of speculation. One former science adviser—Donald F. Hornig, who served under Lyndon Johnson—has suggested that the office reached its peak of influence when George B. Kistiakowsky was science adviser for President Eisenhower. In a review of Kistiakowsky's recently published diary (*Bulletin of the Atomic Scientists*, April 1977), Hornig notes that he himself did not enjoy Kistiakowsky's influence, perhaps partly because of personal characteristics, but also because of "more fundamental problems," namely, the growth of competing science groups elsewhere in government, increased demands which spread the office "much too thin," and the distractions of issues (that is, Vietnam) that were not the province of the science adviser. "President Carter's appointee will face all of these problems and more," Hornig states, because new legislation "imposes broader responsibilities without providing any powers" and because the science adviser may be affected by "the presence of a strong energy adviser (James Schlesinger), and a Secretary of Defense (Harold Brown) who is himself an able scientist." All this makes Hornig wonder if the new science adviser will be able to "have as much effect" as Kistiakowsky.

—PHILIP M. BOFFEY

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Gardens through the Ages. Mohinder Singh Randhawa. Macmillan Company of India, New Delhi, 1976. xii, 304 pp. + plates. Rs. 75.

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