SCIENCE

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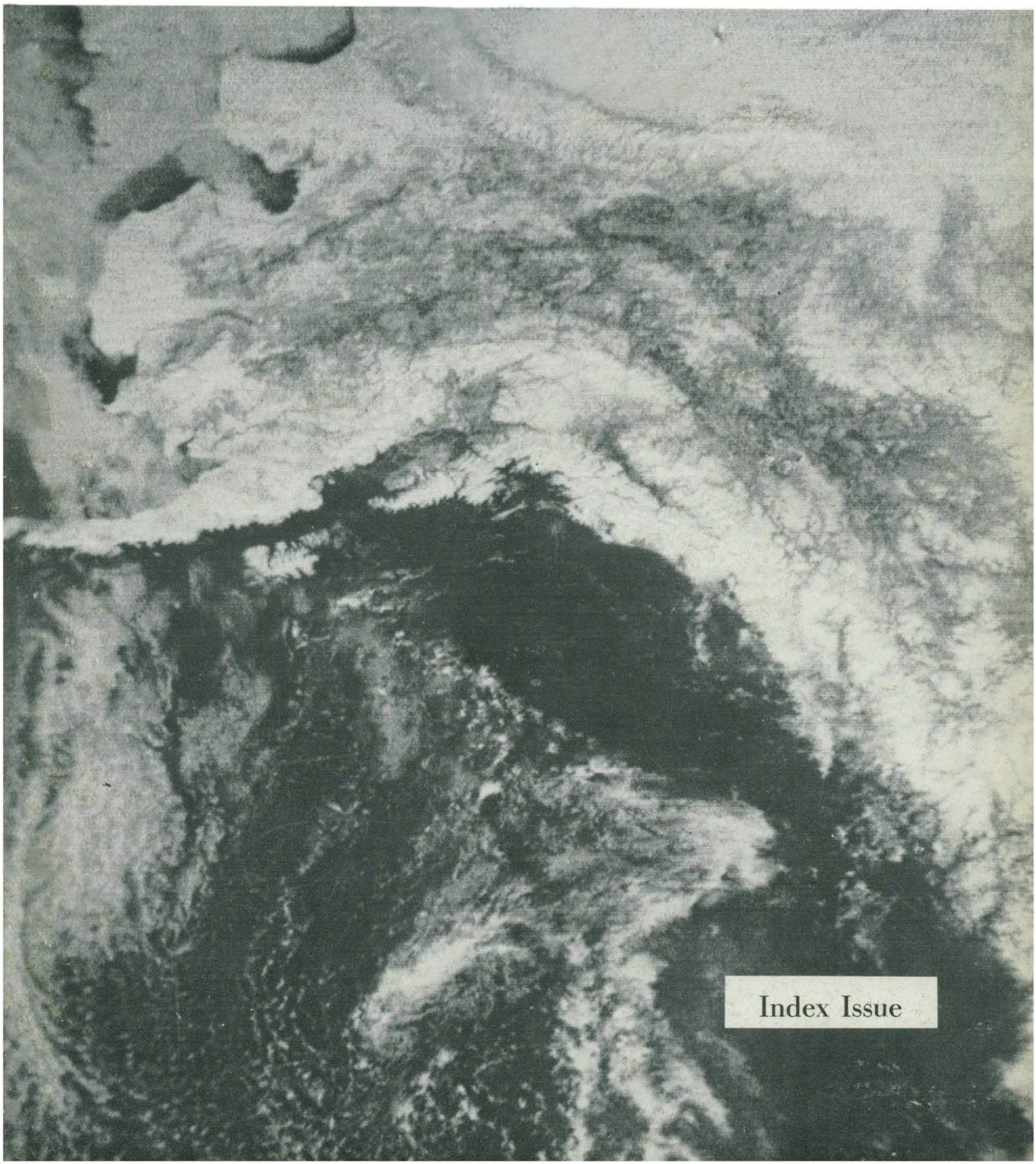
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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By Claude A. Villee, Harvard Medical School; and Vincent Dethier, Princeton University. 1009 pp. 660 figs.
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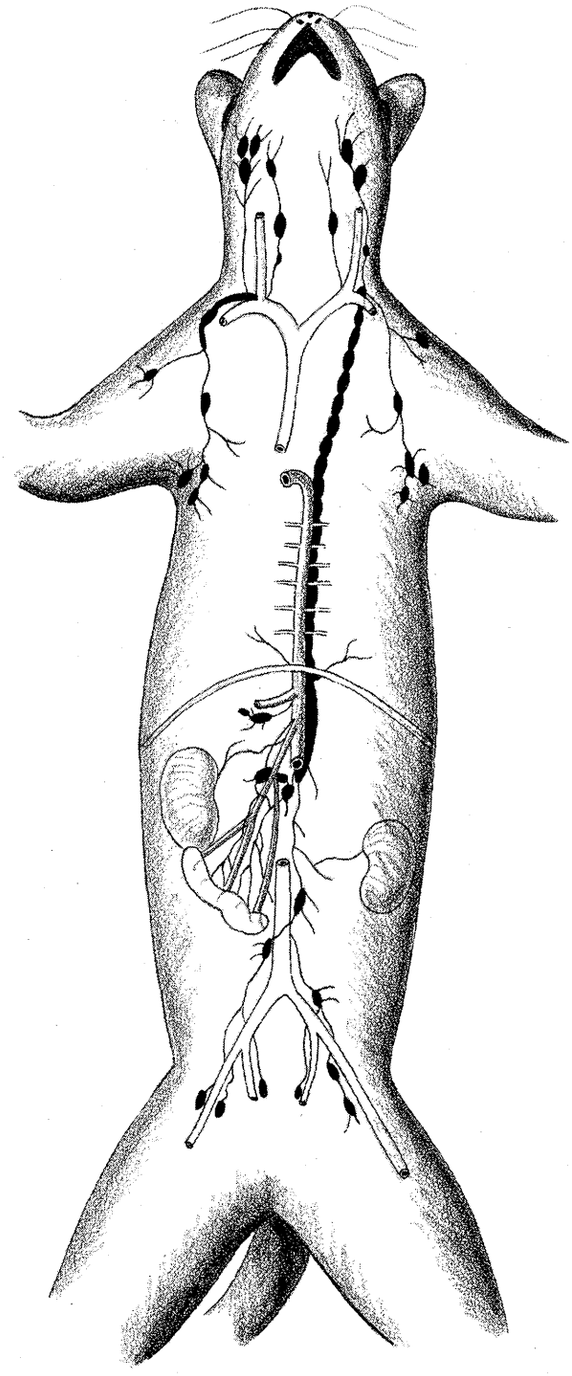

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

View of Alaska from space on a rare, cloud-free day. Snow blankets much of the land area. Trees, obscuring the snow, appear as dark areas. Picture was taken by Nimbus IV Image Dissector Camera System (scale, approximately 1 : 15,000,000). See page 1423. [National Aeronautics and Space Administration, Greenbelt, Maryland]

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Role of Aggression in Human Adaptation: J. A. Arlow, E. Joseph, L. Trilling, et al. **87/71—One Session** ☐

Discussion of the manner in which aggression has affected human development, from an historical viewpoint, and how it influences the individual's personality formation and choices of social roles, along with the characteristics of aggression as it appears in the arts.

Workers and the Environment: G. Wald, R. Nader, et al. **89/71—One Session** ☐

Discussion of pollution inside and outside the "plant" with an emphasis on the disabling of workers by this pollution, and an analysis of the suggestion that a healthier environment means fewer jobs.

Astronomy from a Space Platform: G. W. Morgenthaler, C. Sagan, G. Preston, et al. **90/71—Sessions I** ☐ **II** ☐

Examination of the advantages versus the limitations of using space astronomy platforms.

Indicators of Environmental Quality: W. A. Thomas, G. J. F. MacDonald, P. Hackes, et al. **91/71—Sessions I** ☐ **II** ☐ **III** ☐ **IV** ☐

Discussion of attempts and possibilities of establishing objective assessment of shifts in environmental quality through the use of biological indicator species as monitors thereof.

Experimental Manipulation of Natural Systems: W. E. Cooper, D. Simberloff, et al. **92/71—Sessions I** ☐ **II** ☐

Comparison of an array of research programs which have successfully utilized experimental manipulations of natural ecosystem components.

Value and Knowledge Requirements for Peace:

Science and the International System: B. M. Russett, K. W. Deutsch, et al. **94/71—Session II** ☐

Peace Through Change, The Risk and the Promise for Man's Future: J. R. Coleman, H. H. Humphrey, et al. **Session III** ☐

Biological Basis of Destructive Behavior: L. K. Y. Ng, L. S. B. Leakey, et al. **Session IV** ☐

Environmental Sources of Human Destructiveness: R. C. North, R. A. Falk, et al. **Session V** ☐

Discussion centering around possibility of peace from scientific, political, evolutionary, and psychological viewpoints with emphasis on necessary conditions to ensure peace.

Technology and the Humanization of Work: M. Maccoby, W. A. Steiger, et al. **93/71—Sessions I** ☐ **II** ☐

Discussion of what can be done to prevent the worker from feeling alienated from himself, his work, and his employer. Emphasis on the relationship between technology and humanization, including case studies of specific experiments.

Population Control in Social and Economic Perspectives: W. H. Goodenough, J. J. Spengler, H. A. Gould, et al. **96/71—One Session** ☐

Examination of institutional arrangements for enforcing population control as they are known from societies where such control has been practised, and the implications for our own society.

Confronting the Violence of Normal Man: I. W. Charny, W. Blanchard, et al. **97/71—One Session** ☐

A probing and innovative picture of some dimensions of man's violence and its redirection including discussion of Kent State and "Public Reactions to the Calley Trial."

Physics Looks at Biological Structure: L. D. Peachey, B. Chance, R. Langridge, et al. **98/71—Sessions I** ☐ **II** ☐

Scanning transmission electron microscopy; neutrons diffraction for the determination of biological structure; animal electricity.

Early History of the Earth and Moon: S. F. Singer, H. C. Urey, P. Gast, et al. **99/71—Sessions I** ☐ **II** ☐

Various kinds of evidence—observational and theoretical—bearing on the evolution of earth and moon, featuring utilization of recent lunar research results.

Oceanography: H. B. Stewart, Jr., G. S. Benton, et al. **100/71—Sessions I** ☐ **II** ☐ **III** ☐ **IV** ☐

Today's major issues which have their solutions in the ocean. An evaluation of the role of the federal government in assisting to provide the answers.

Energy Crisis: Some Implications and Alternatives: D. E. Abrahamson, J. Fay, B. Commoner, et al. **101/71—Sessions I** ☐ **II** ☐ **III** ☐ **IV** ☐

Careful examination of components of energy demand, and exposition of alternatives which may include changes in society or life styles which would result in a reduction of energy demand.

Biological and Cultural Bases of Sex Role Differentiation: A. Alland, Jr., L. Tiger, M. Mead, et al. **102/71—Sessions I ☐ II ☐**

Review of material on the formation of behavior associated with sex roles with an attempt to delimit the biological and social factors which result from sex-defined roles.

Smoking and Health: A. M. Lillienfeld, T. D. Sterling, et al. **103/71—One Session ☐**

The exact relationship between smoking and health. Is there an etiological role of smoking for several diseases?

Environmental Noise: J. F. Pizzirusso, R. L. Bannister, et al. **104/71—Sessions I ☐ II ☐**

Analysis of major environmental sources which tend to cause an ecological problem, and the technology which can be used to control them.

How Valuable is Human Health: R. W. McNeur, E. B. Howard, S. Chisholm, et al. **105/71—Sessions I ☐ II ☐**

Panel discussion of public's assumptions about health as an attempt to encourage further public consideration of this matter.

Man-Machine Interactions and Implications for Society: A. Kantrovitz, J. McHale, E. G. Mesthene, et al. **106/71—Sessions I ☐ II ☐**

Complexity of man-machine interactions and implications discussed by speakers from various backgrounds including scientists, engineers, sociologists, lawyers, philosophers, and a theologian.

Interactions Between Natural and Urban Ecological Communities: R. Patrick, G. E. Hutchinson, L. B. Slobodkin, et al. **107/71—Sessions I ☐ II ☐**

Imposition and interaction of and between urban and natural communities, and attempts at a reconciliation.

Role of Mathematics in the Development of Science: R. J. Seeger, C. S. Smith, M. Kac, et al. **108/71—One Session ☐**

Distinguished mathematicians and scientists share their views on the philosophical conceptions of mathematics and science.

Encounter Groups: K. W. Back, M. A. Lieberman, I. Yalom, et al. **109/71—Sessions I ☐ II ☐**

Examination of the encounter group as a lasting therapeutic treatment, a one-time experience, and as a social phenomenon.

Environmental Sciences and International Development: D. Bajracharya, M. T. Farvar, et al. **110/71—Sessions VII ☐ VIII ☐**

Discussion of the failures of science and technology to deal with development in the natural environments of developing countries and a re-evaluation of such priorities.

Heavy Metals as an Environmental Hazard to Fish, Birds, and Man: G. J. Lauer, W. Fulkerson, et al. **111/71—Sessions I ☐ II ☐**

Analysis of current procedures used in aquatic toxicology as applicable specifically to toxic metals, and the effects of these toxins on fishes, birds, and men.

A Search for the Recognizable Goals and Constraints of the Steady State Earth: P. L. Blackshear, Jr., A. Kantrowitz, G. Buglierello, et al. **112/71—Sessions I ☐ II ☐**

Several proposals to constrain human population and activity as a steady state society so that man may survive on this planet.

Technology and Growth in a Resource Limited World: R. U. Ayres, H. Kahn, J. H. Hollomon, et al. **113/71—Sessions I ☐ II ☐**

Discussion of technological innovation and the environmental crisis and the proliferation of the affluent society without a continuously growing population and use of non-renewable resources.

Future of the Cities: D. R. Goddard, R. Patrick, M. Gladfelter, et al. **114/71—One Session ☐**

Interaction between spokesmen representing: Urban care, urban ecology, urban physical development, and so forth. Analysis of our cities as they function and will continue to function.

Women in Academia: A. Y. Lewin, E. Wasserman, et al. **115/71—Sessions I ☐ II ☐**

Focus on problems faced by universities in complying with President Nixon's executive order prohibiting sex discrimination by government contractors, and exploration of ways and means toward achieving full equal opportunity for women in the university.

Can We Develop an Index for the Quality of Life?: S. F. Singer, M. R. Gainsbrugh, M. L. Olson, et al. **117/71—Sessions I ☐ II ☐**

Concerned primarily with the question: How to define and measure the quality of life. This entails an exact examination of the phrase "quality of life."

Scientific Aspects of Contraception: G. B. Koelle, L. M. Hellman, H. J. Tatum, et al. **118/71—One Session ☐**

The history, present status, and future development of contraceptive agents.

Communications Technology and Its Effect on People: W. S. Baer, E. S. Mason, et al. **119/71—One Session ☐**

Presentation of current research and policy studies brought to bear on such questions as: To what uses will the new communication capacity be put? Who will use and control it? How will it affect people, it at all?

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Urban motorists as such make only a minor contribution, if any, to such costs as urban street maintenance and repairs, street cleaning, snow removal, traffic signals, or traffic police; most of these are generally met out of general city revenues. Urban motorists use valuable land for which they pay nothing equivalent to the rent or the property taxes that other occupiers of scarce land pay. The capital invested in the streets and highways they use bears no tax comparable to the property or corporation income taxes that impinge on users of other forms of capital. Indeed, when highways are financed by borrowing, the interest cost is subsidized through its exemption from the federal income tax. Insurance premiums and other payments by motorists fall far short of providing full compensation to victims of accidents. Out of over $10 billion a year of such damages (an amount roughly equal to the total amount spent on highway construction and maintenance) over $1 billion is borne in ways unrelated to automobile use, through Blue Cross premiums, employers' sick pay provisions, income-tax abatements, and inadequate compensation to injured pedestrians and other nonmotorist parties. It is perhaps stretching it a bit to bring in air pollution, but it has been estimated that the cost of pollution in New York City that is attributable to automobiles amounts to $400 per year per car.

The big subsidy, however, is to the rush-hour commuter from the other contributors to highway funds. An extra lane or extra facility added primarily to take care of the rush-hour traffic and needed for only, say 18 hours a week will, for every $1 million per lane mile of cost, at 9 percent for interest, amortization, and maintenance, cost at least 6 cents per car mile, if 1800 cars travel on one lane per hour for 18 hours a week. A 10-mile rush-hour trip over facilities that often cost $3 million per lane mile and up can thus cost $2 or more, compared with the 10 cents or thereabouts that would ordinarily be collected in highway-user charges (if no specific tolls are paid). It is no answer to say that the rush-hour transit rider is similarly subsidized by the off-peak transit rider; each rush-hour transit rider can usually find only one off-peak rider onto whom to shift his costs, while the rush-hour motorist can find four or more off-peak motorists in the same area and can also levy tribute on the rural highway user. To provide the transit rider a subsidy per trip comparable to that enjoyed by the peak-hour motorist, and thus enable him to make a fair and unbiased choice between the two modes, it would be necessary not only to let the transit rider ride free but also to pay him a bonus.

The only sound solution in the long run is to levy adequate specific charges on motorists who use high-cost facilities that are threatened with congestion. Techniques exist for doing this as flexibly and automatically as we are charged for long-listance self-dialed telephone calls; the problem is to persuade the general public of the rationality, equity, and efficiency of such charges. Transit subsidy by itself cannot do the job; indeed if adequate congestion charges are levied for highway use, much, though not all, of the justification for transit subsidy would disappear. But to bring this about it is essential that there be a realization of the magnitude of the subsidy to urban rush-hour automobile commuters.

WILLIAM VICKREY
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An "Abundance of Fish"

Schubel and Pritchard (3 Sept., p. 943) imply that the "abundance of fish" reported in the upper Potomac (Patawamek) estuary by Captain John Smith (*1*) in 1608 was in fact a massive kill resulting from unknown (but clearly nonindustrial) causes. Is this their own judgment, or has it become established in the biological and ecological literature? It is difficut to believe that Smith and his companions could not differentiate between dead and living fish "swimming in the water."

Of course, it could have been a promotional statement, put in Smith's book to attract settlers and investors. John Cabot, in 1497, had reported that he could catch fish on the Grand Banks by letting down weighted baskets over the ship's side (*2*).

What seems more probable is that Smith witnessed a spawning run of alewives (since he speaks of "small fish"), or possibly shad or suckers. It is impossible to tell where he encountered this school of fish, and in fact he reports finding them in "divers places" and says they saw small cod as far up the bay as "Riccard cliffs." On his map, these cliffs were some distance north of the Patuxent. (The cod may have been what they "found dead upon the shore".)

Mid-June may be too late for anadro-

mous fish to be spawning in the latitude of the Chesapeake Bay. But not too many years ago spawning alewives crowded into the small tributaries of the Hudson River, in the vicinity of Albany, so that they did indeed have their "heads above water," and I have seen the same phenomenon with suckers in small streams. If the fish were cod perhaps a flood on the Susquehanna would have reduced the salinity of the upper bay enough to cause a massive nonindustrial kill.

P. SCHUYLER MILLER
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Pittsburgh, Pennsylvania 15213

References

1. J. Smith, *The Generall Historie of Virginia, New England, and the Summer Isles: with the names of the Adventures, Planters, and Governors from their first Beginning An. 1584 to this present 1624* (Sparkes, London, 1624), book III, chap. 5, p. 58.
2. J. A. Williamson, Ed., *The Cabot Voyages and Bristol Discovery under Henry VII* (Cambridge Univ. Press, London, 1962), pp. 209–211.

Multinational Journals

The recent merging of five European astronomy or astrophysical journals into a single journal (see J. L. Steinberg, 30 Apr. 1971, p. 451) is an important indication that, unless "national" conditions are favorable, new scientific journals should be established at the multinational level.

Multinational journals are especially important in the developing regions of the world, for instance, in Latin America, where the lack of high-quality periodicals in the majority of specific scientific areas is felt.

The better papers of Latin American scientists are usually widely scattered in foreign journals, and thus the size and quality of Latin American production is not conveyed. Latin American journals in the English language would create a realistic image of the excellent work being carried out in these areas of the world. They would also foster understanding and cooperation among the scientists from these areas. Such journals would automatically force many investigators to raise the quality of their work, and would influence younger generations, which would in turn stimulate the growth of science.

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Collective Bargaining on Campus

Elections for the selection of a bargaining representative have occurred on a number of campuses, and about 10 percent of faculty members, nationally, now seem to be represented by a bargaining group. Additional elections are certain to be held in the near future. Many of these elections are likely to be contested closely, if three concluded recently are reliable indicators: the University of Rhode Island (293 faculty members voted for the American Association of University Professors to represent them; 289 voted against a representative); Fordham University (no representative, 236; AAUP, 222); and Manhattan College (no representative, 130; AAUP, 121).

It is difficult to anticipate the impact of collective bargaining on a university campus. Clearer definitions of procedures are likely to emerge with our growing experience during the next few years, but evaluation of the long-term effect is much less clear. Certainly the industrial union, which has been so markedly successful in bettering the conditions of its members, does not constitute a useful model. Reduced to simplest terms, management and labor, in the industrial model, negotiate for a favorable share of the profits in their joint production, as well as for an equitable grievance procedure. But it is not clear on a university campus what is "profit" and how it is to be shared. In fact, it is not even clear what the academic analogs to "management" and "labor" would be. For example, in campus contracts negotiated so far, department chairmen are sometimes categorized as management, sometimes as labor.

In a state university the question becomes even more clouded. Does the bargaining team for the faculty negotiate with the university administration, with the state board of higher education, with the state comptroller, with the state legislature, or with all of them?

If an industrial model is not appropriate, the model of the public employees' union is only slightly more so. Of course the lack of a clear preexisting pattern that could be emulated does not mean that there is no place for collective bargaining on the campus. It does imply that a different scenario must be envisaged and a new role must be created for the collective bargaining team that is to represent the faculty.

Should negotiations be limited to salaries and fringe benefits which usually seem to be the first goals of collective bargaining on campus? Salaries and benefits infringe upon questions of tenure, promotion, reappointment, teaching loads, class schedules, parking, and a host of other issues. If these matters are to be subject to negotiation, in whole or in part, what then will be the role of traditional faculty governance? Are the current responsibilities of the department personnel committees, college promotions and appointment committees, and university senates to be shared with, or relinquished to, the faculty bargaining agent?

To put the question differently, will we replace the traditional collegial decision-making on campus, flawed though it is, with a series of negotiations between adversary groups? Or will campuses develop two parallel and competing systems of governance, and, if so, how are powers and responsibilities to be distributed between them?

The legitimate faculty grievances that arise on campuses from time to time must be adjudicated, and few people would suggest that our present machinery for resolving such grievances has been perfected. The more inclusive, and more important, question we must debate is whether we will make our universities better institutions of higher education by bringing onto our campuses from the larger community the machinery of collective bargaining, with all of its accouterments. Will we be exploiting conflicts to increase divisiveness on campus, or will we be negotiating cooperatively to improve the academic community? Bluntly put, on balance, will collective bargaining on campus be constructive and creative or destructive and demoralizing?—ARNOLD B. GROBMAN, *Office of the Dean, Rutgers College, New Brunswick, New Jersey 08903*

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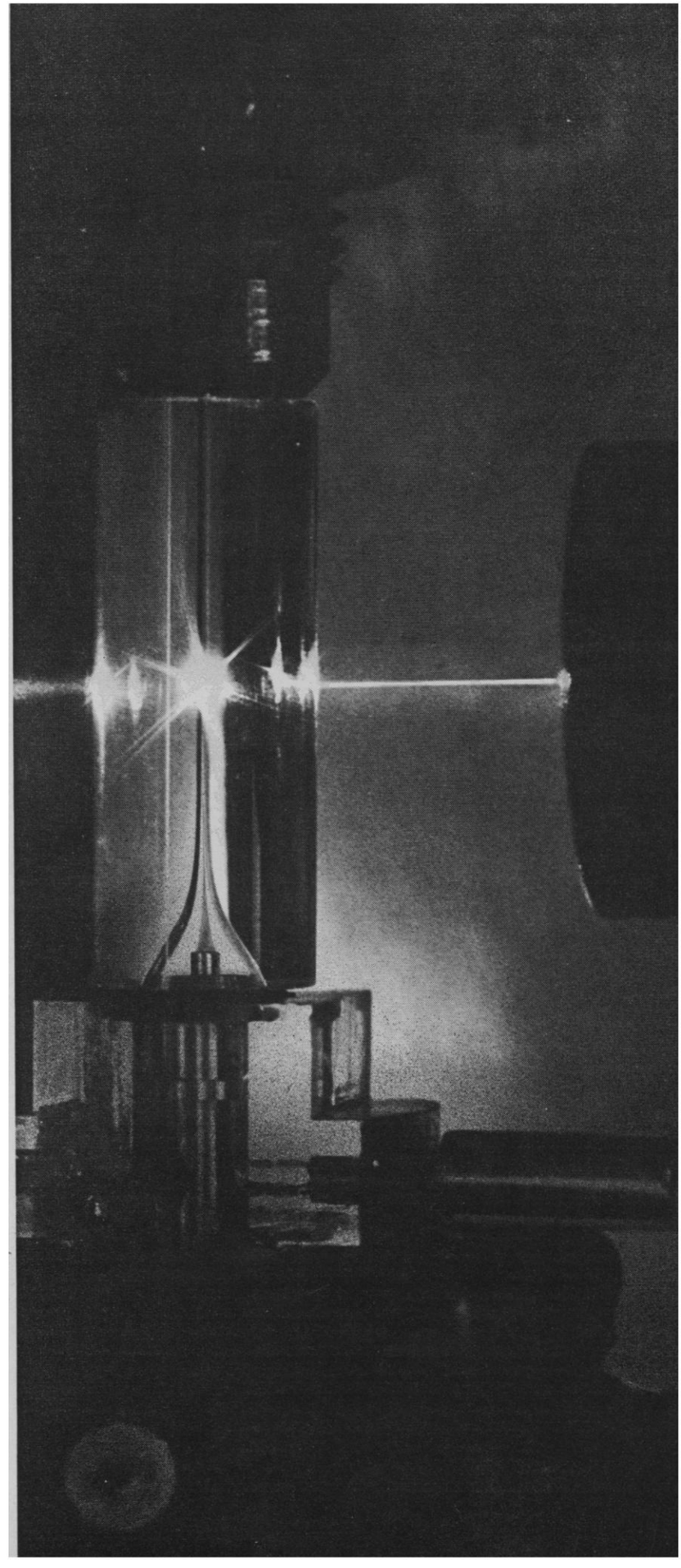

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