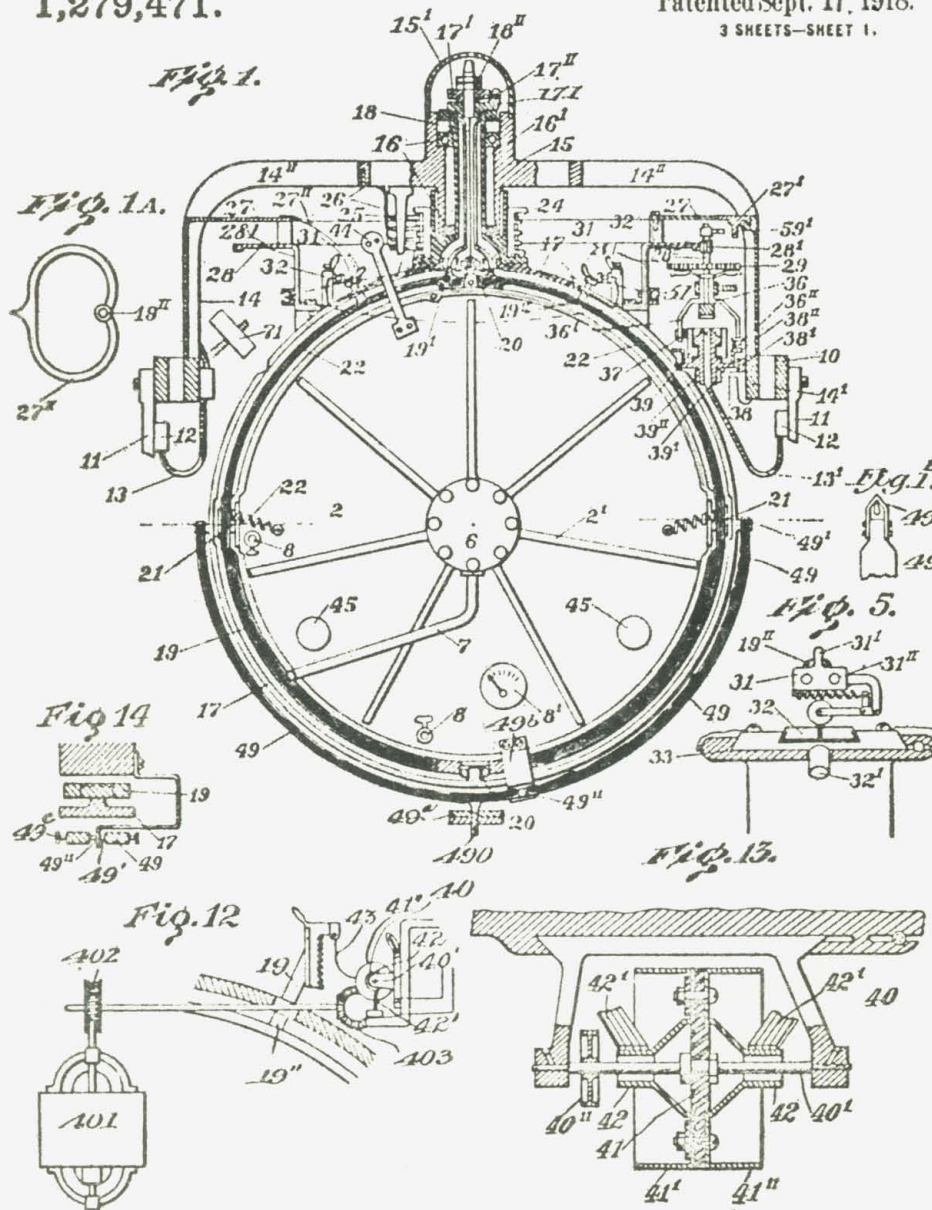


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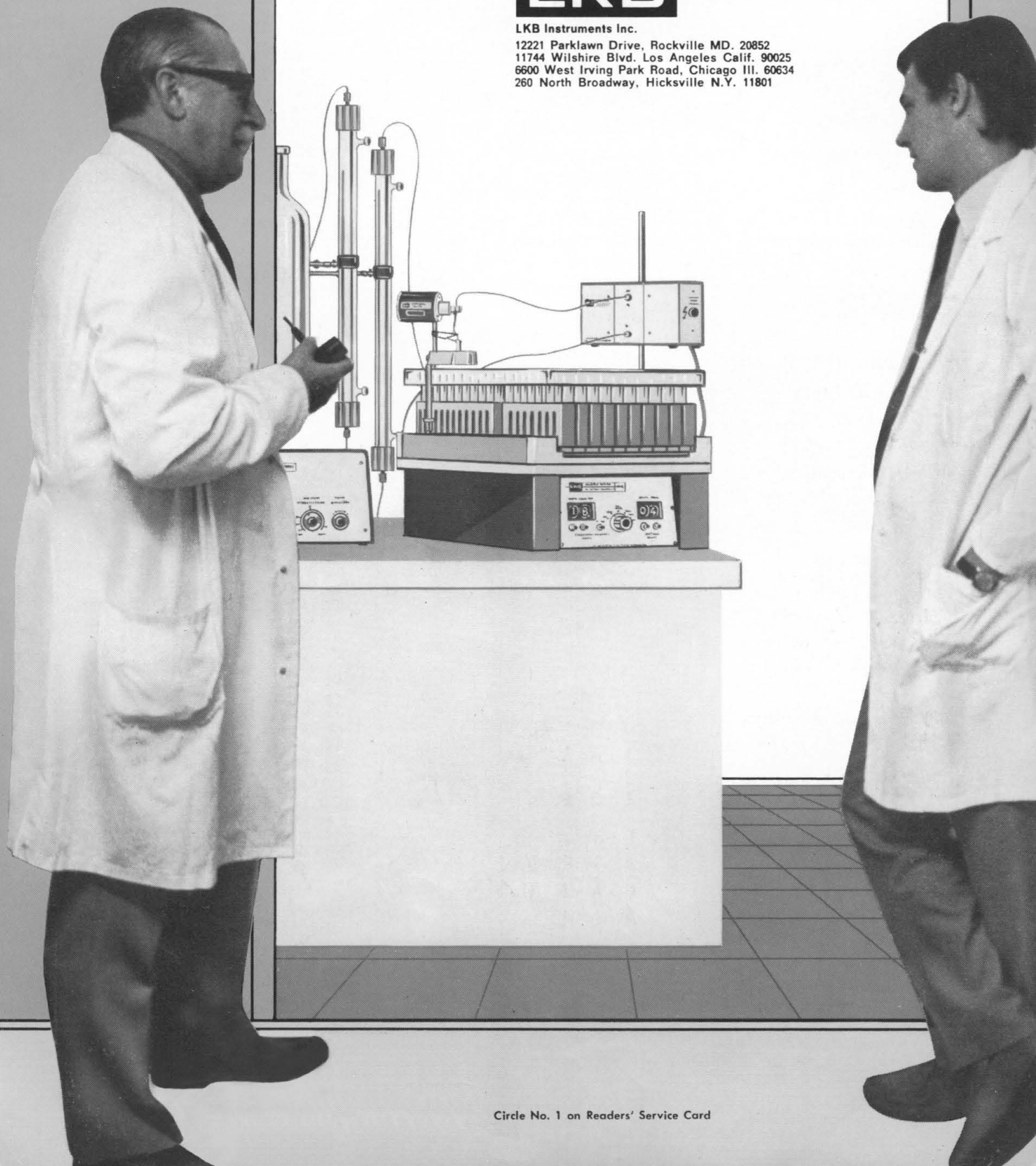
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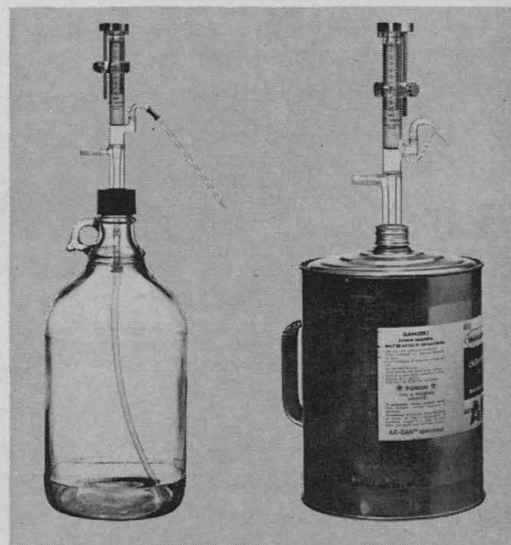
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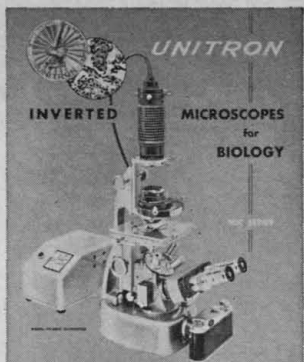
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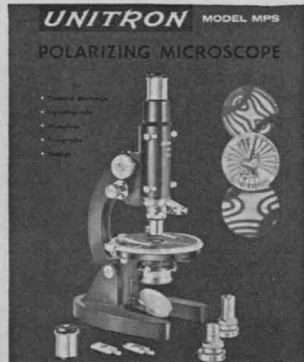


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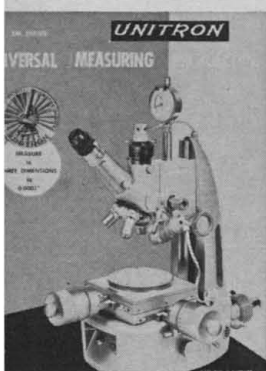
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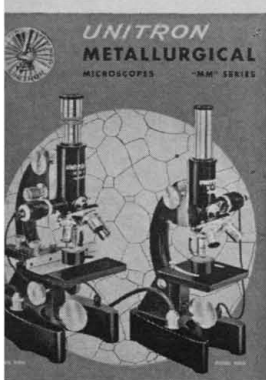


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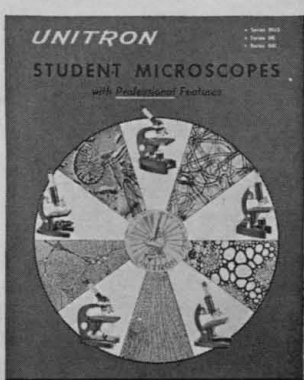
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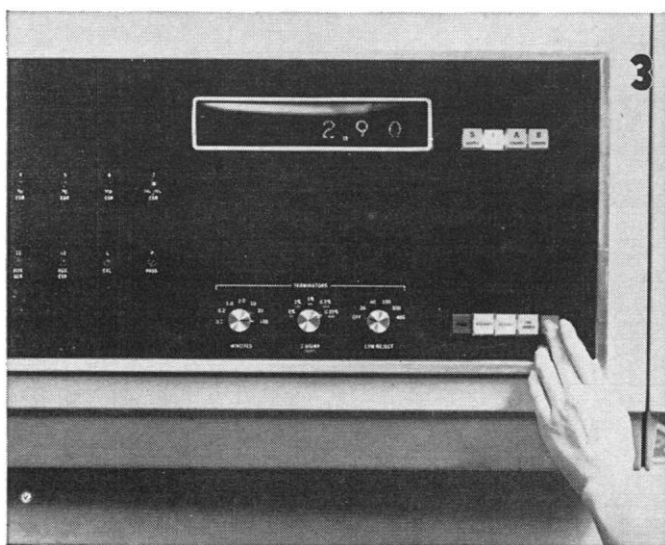
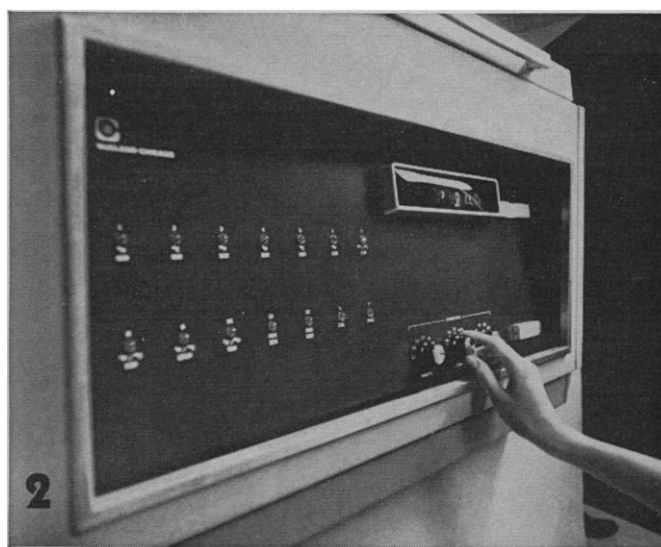


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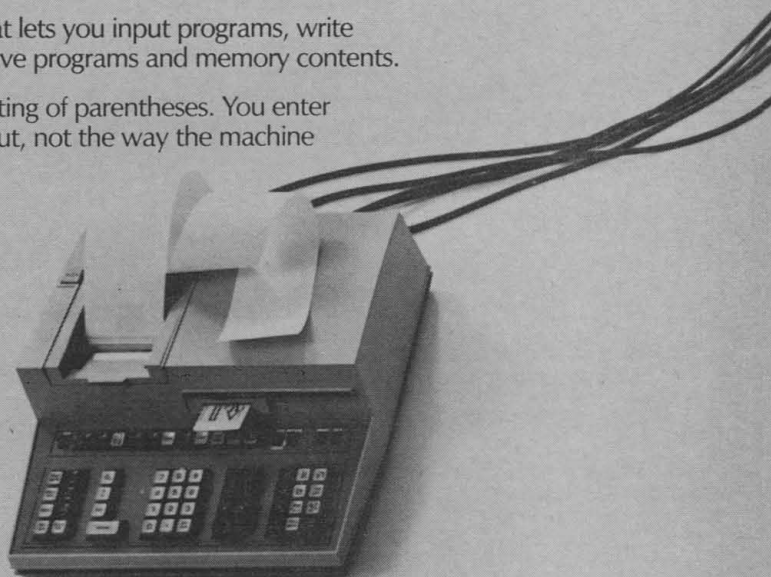
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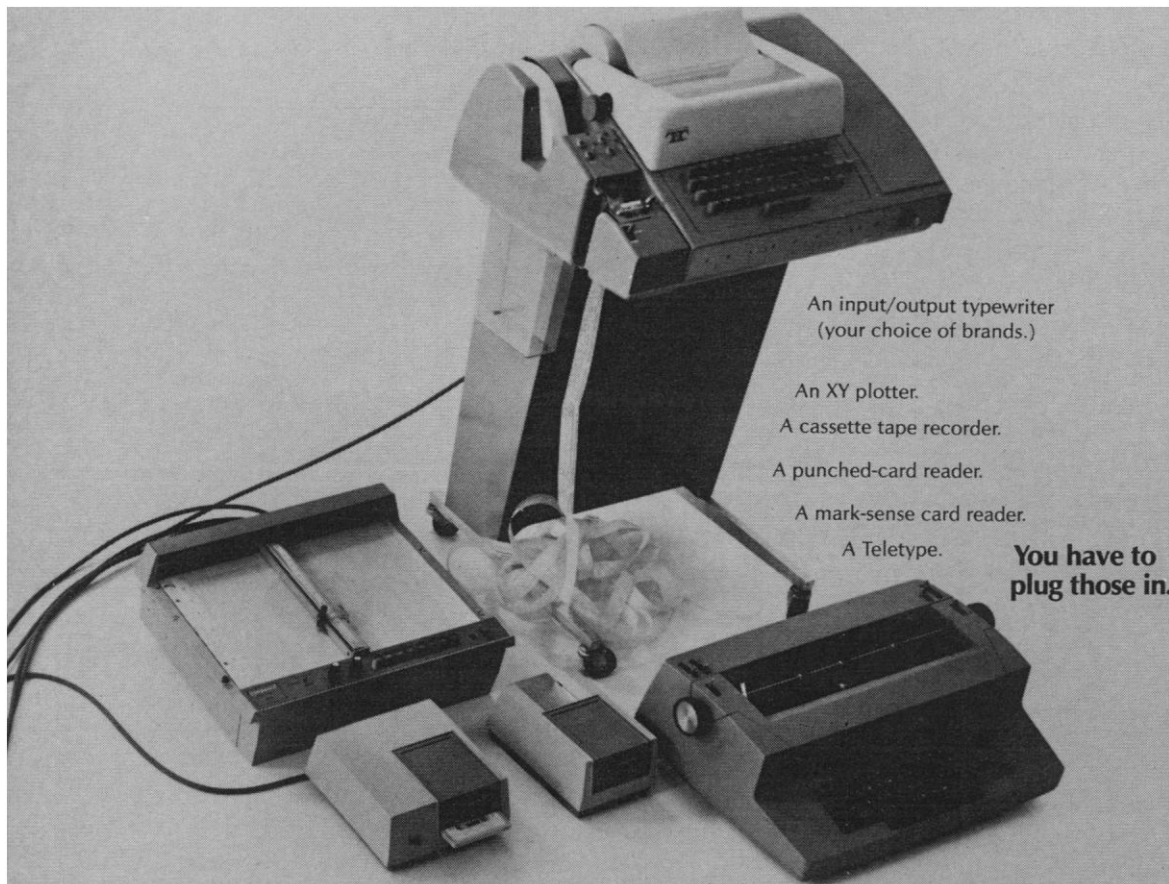
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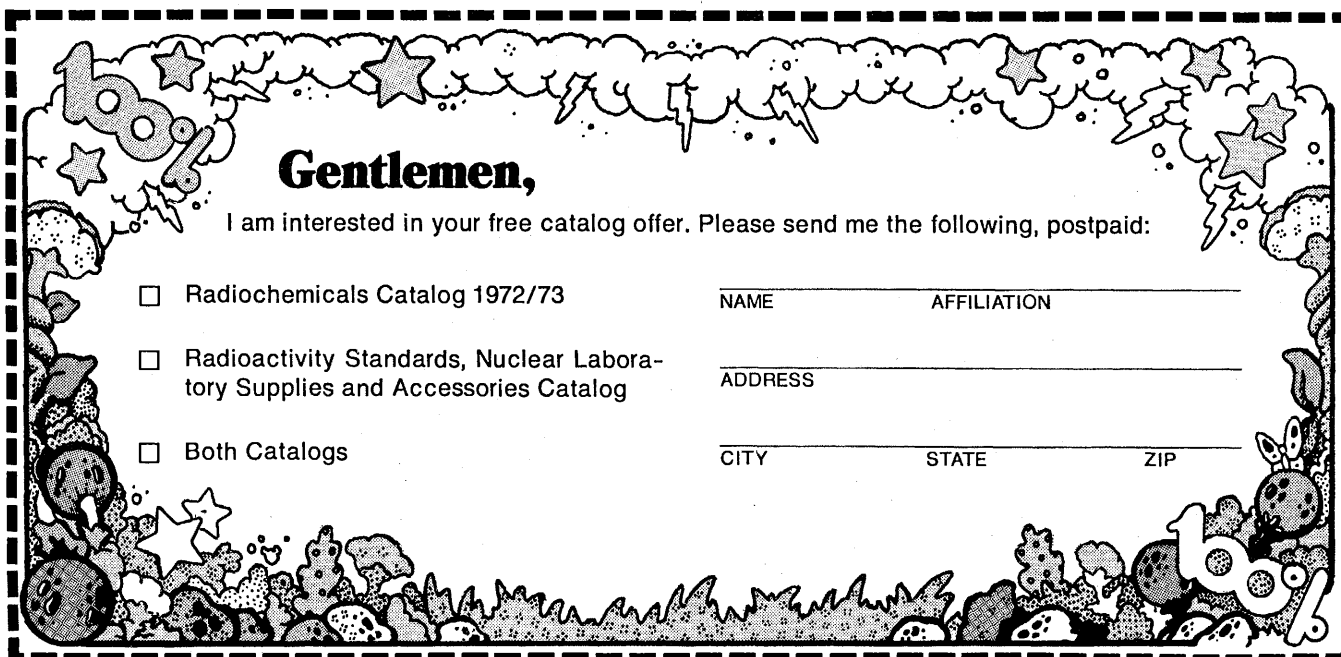
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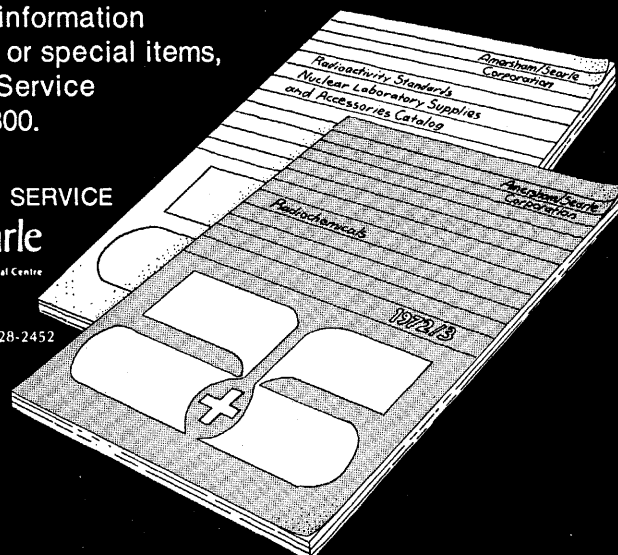
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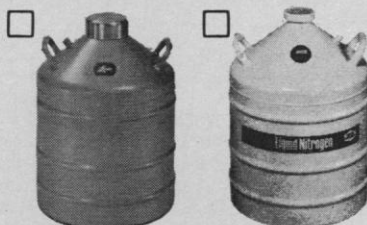
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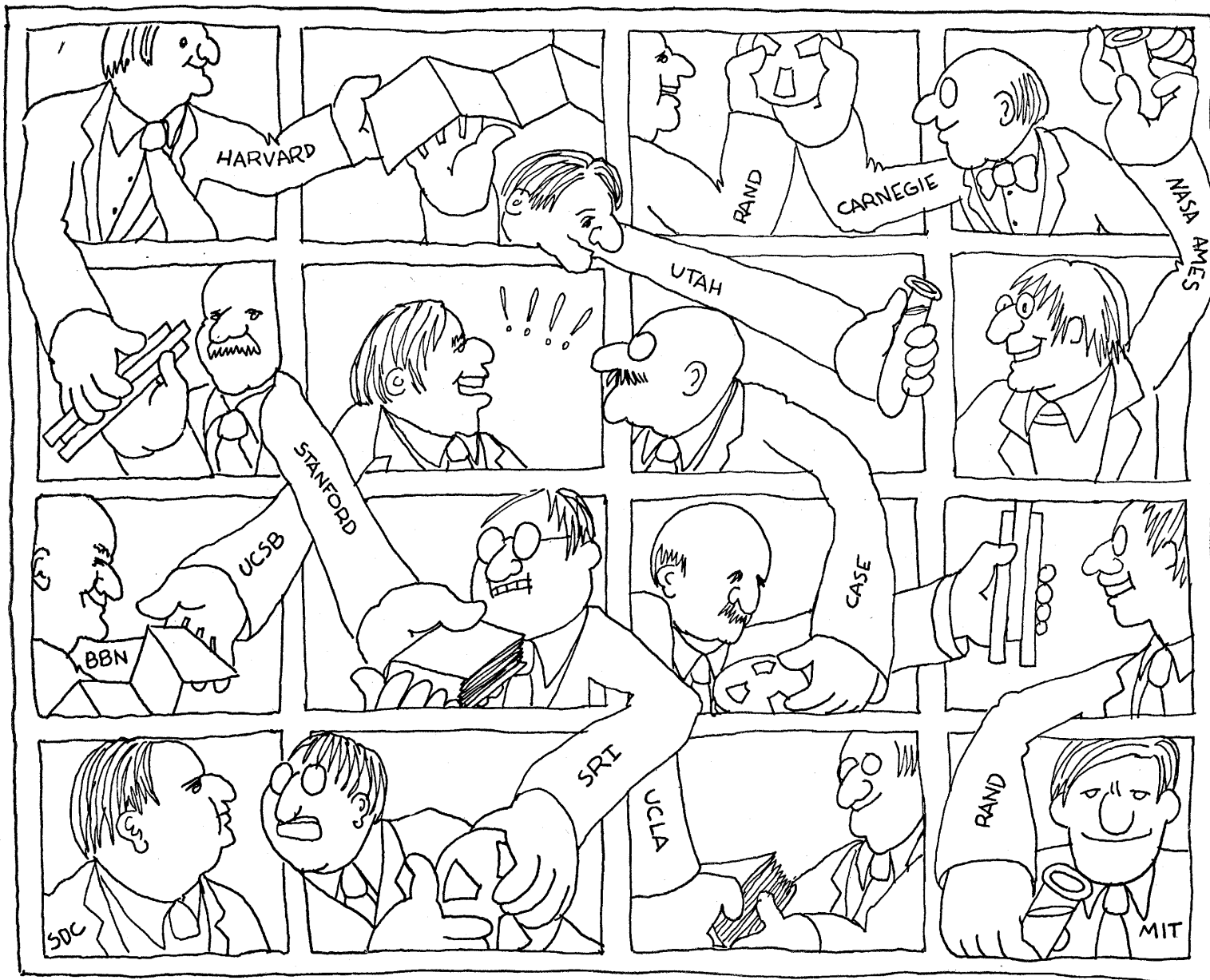
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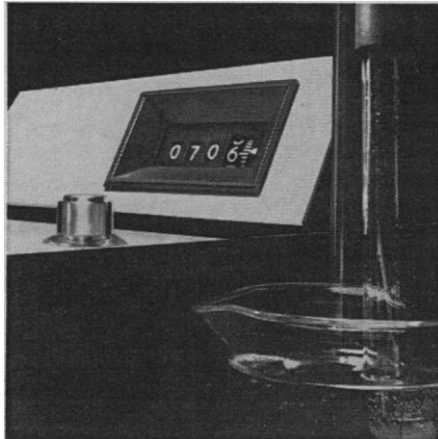
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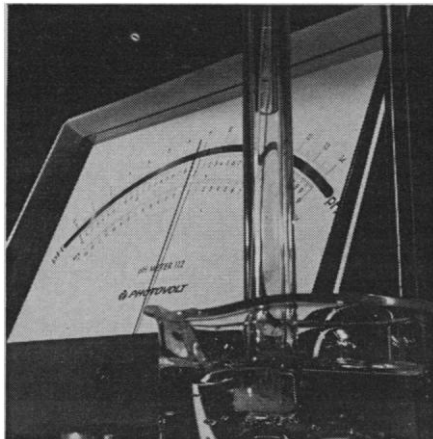
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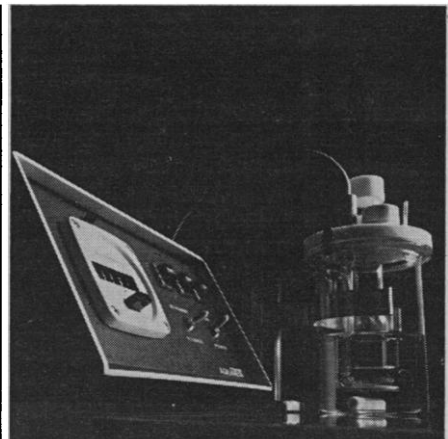
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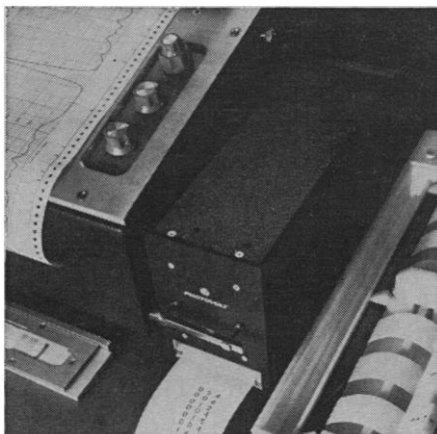
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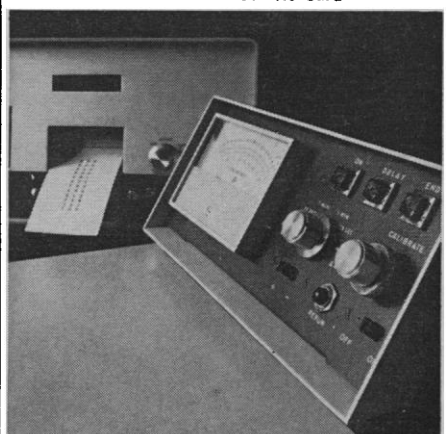
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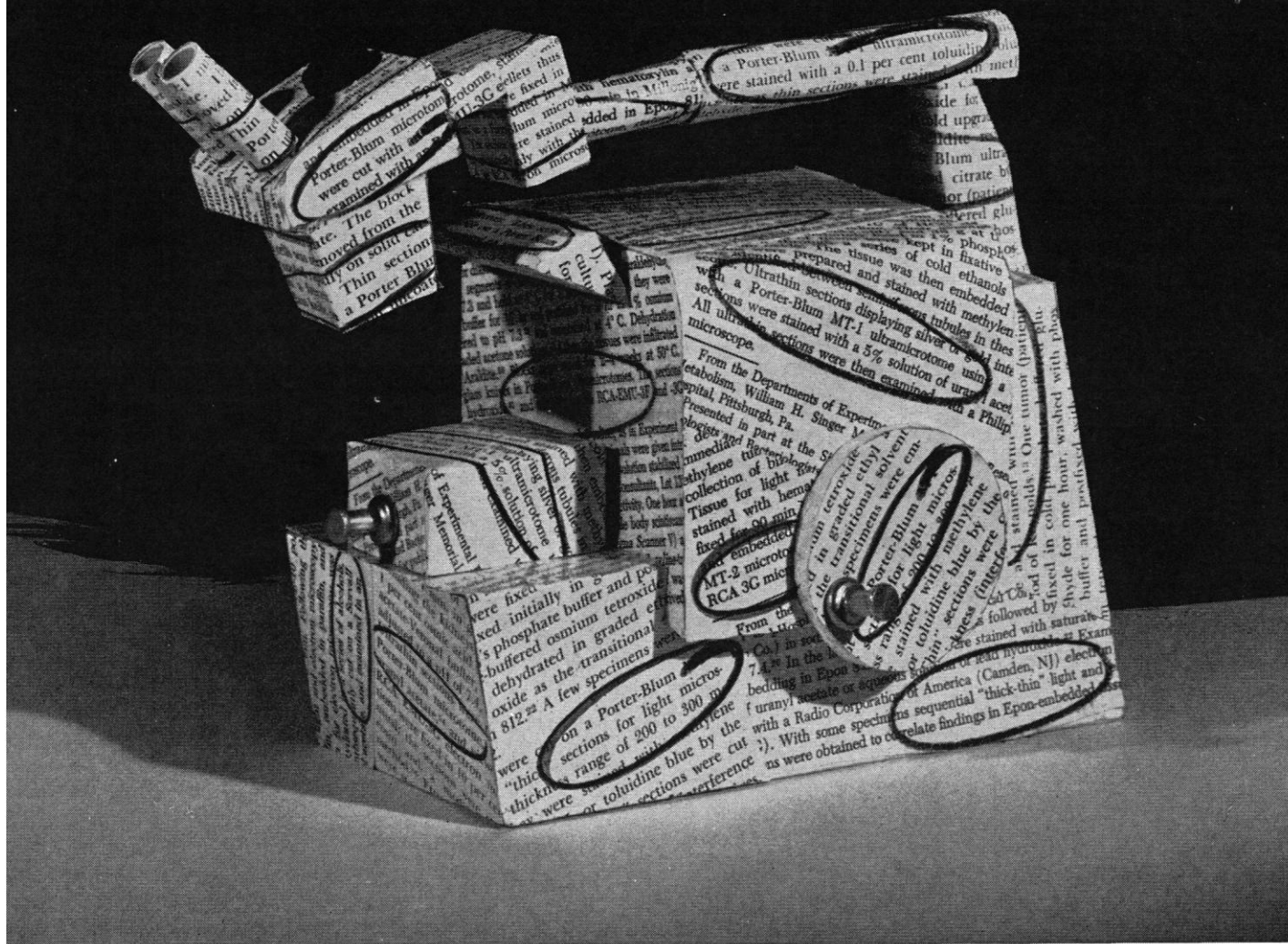
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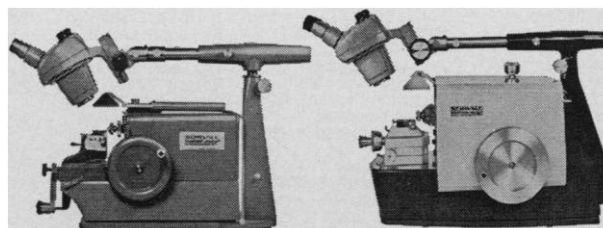


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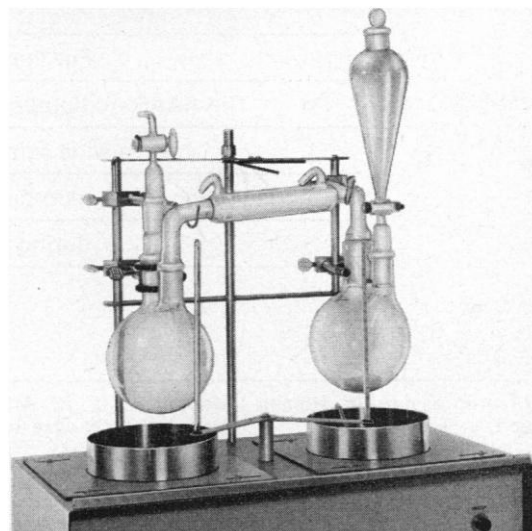
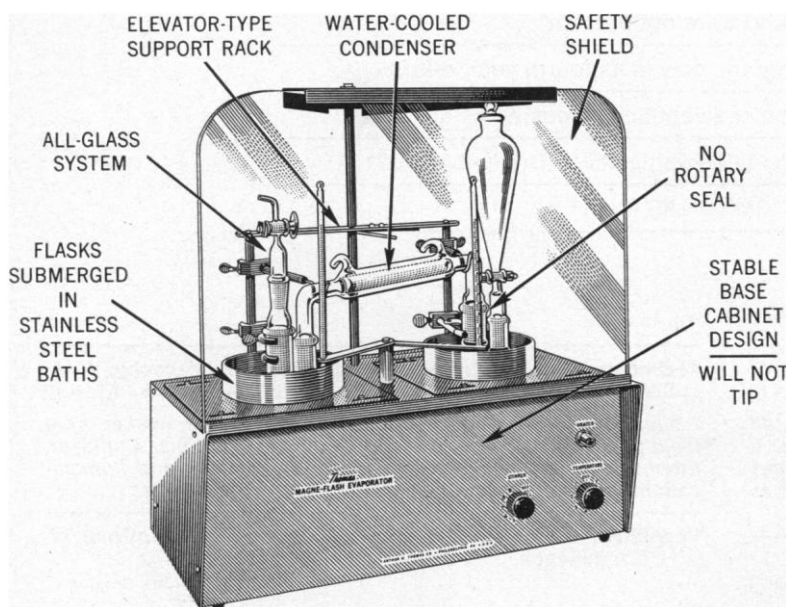
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Role of Aggression in Human Adaptation: J. A. Arlow, E. Joseph, L. Trilling, et al. 87/71—One Session ☐

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. Morgenthauer, 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. Bugliarello, 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, if at all?

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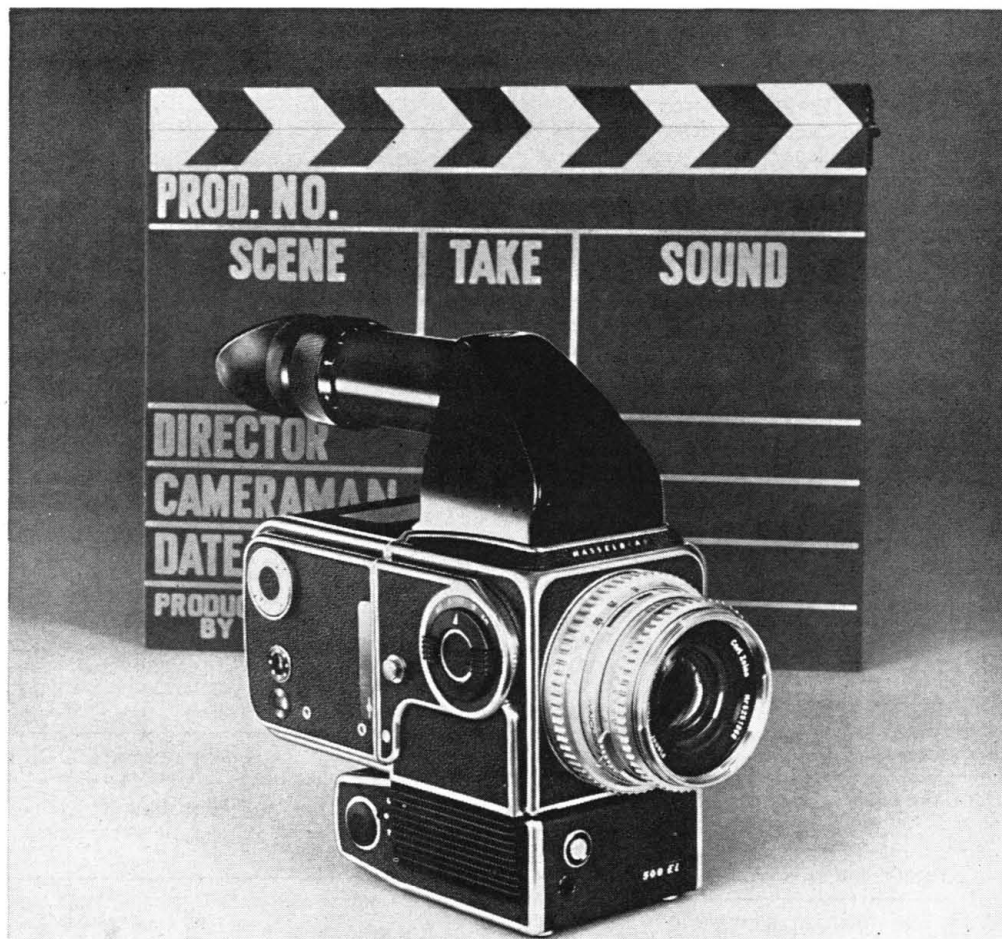
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The Hasselblad 500 EL/M is the only electrically-driven 2¼ camera. After you take a picture, the 500 EL/M advances the film and cocks the shutter, readying itself for the next shot automatically. This allows the photographer to concentrate less on the mechanics of the camera and more on composition. And because it can be triggered remotely in a variety of ways, the 500 EL/M opens some interesting possibilities. It lets you get out from behind the camera and work with your subject. In a sense, it permits you to become more a director than a cameraman. Picture this.

SCENE ONE

You're an advertising photographer and you have to shoot a

group of kids. You take your Hasselblad 500 EL/M, snap on a 70-exposure film magazine and a Zeiss Planar 80mm f2.8 lens. You slide off the waist-level viewing hood and slip on an eye-level prism finder with

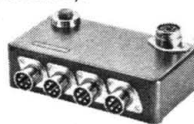


through the lens metering system. Now you set up the camera on its tripod and attach a 100-foot release cord, wound on a cord reel. You focus, set your speed and aperture, then walk away from the camera to work with your subject. You shoot as you work, no distracting the kids by the presence of the camera.

SCENE TWO

You're a medical photographer filming an operation. You set up

two Hasselblad 500 EL/Ms on tripod mounts, each covering a different angle. Again you use a 70-exposure magazine on each camera with different film, but this time you change to Zeiss Sonnar 150mm f4 lenses, with appropriate filters. You preset the controls, then plug the two cameras into a single command unit (this unit can handle four Hasselblads at once).



You attach a release cord to the command unit, and you're ready to trigger both cameras simultaneously throughout the operation.

SCENE THREE

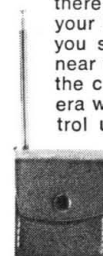
You're an industrial photographer and your assignment is to photograph instrument readings at pre-determined intervals over a period of time. You change to a Zeiss Distagon 500mm f4 lens. Then you connect the Hasselblad to its timer and set the timer to trigger the camera at the desired intervals. You pre-set the camera, start the timer, and leave.



When the time comes, the intervalometer will trigger the camera. It operates off the same rechargeable batteries that will automatically ready the camera for the next shot. There's no need for the two of you to hang around waiting. Only the camera.

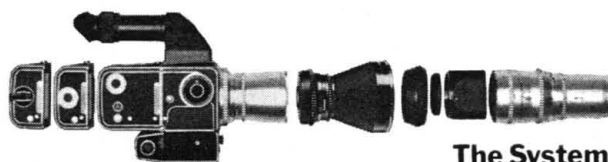
SCENE FOUR

You're a wildlife photographer and you're out to get pictures of an animal that would just as soon eat you as pose for you. So instead of going after the animal with your Hasselblad, you arrange to have the animal come to you. And not find you there when he arrives. Only your Hasselblad. To do that you set up your 500 EL/M near the water hole, pre-set the controls, equip the camera with a remote radio control unit, and put distance between yourself and your Hasselblad. You watch through binoculars, and when the animal appears, you trigger the camera by radio signal, shooting up to 70 exposures, without a scratch.



Of course, a good many photographers simply don't have the occasion to use the 500 EL/M remotely. They use it hand-held or tripod-mounted. Or, like the American Astronauts, attached to their chest packs. The 500 EL/M, as remarkable as it is, is only one camera of the Hasselblad System. For information on the other Hasselblads and their extensive accessories, write for our free catalog. Paillard Incorporated, 1900 Lower Road, Linden, N.J. 07036. Other products: Bolex movie equipment, Hermes typewriters and figuring machines.

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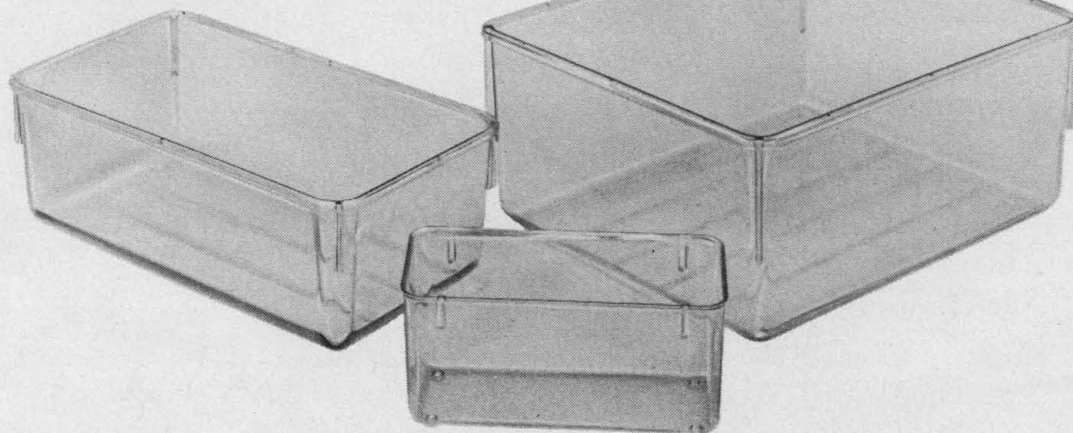


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•	•				•	Series 50	14¾x12¾x6¾	20
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•	•	•				Series 70	20x16x8½	15
•					•	Series 80	19x8¾x5½	36
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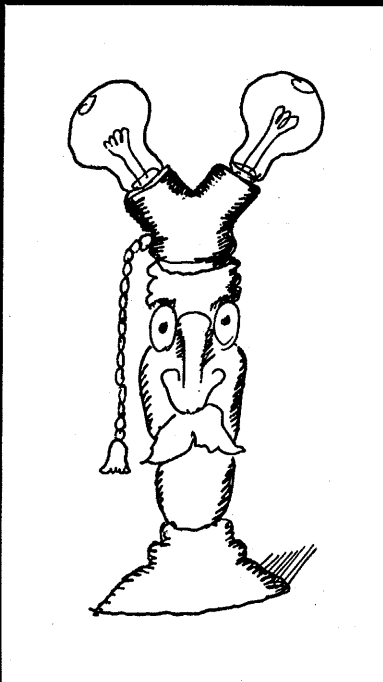
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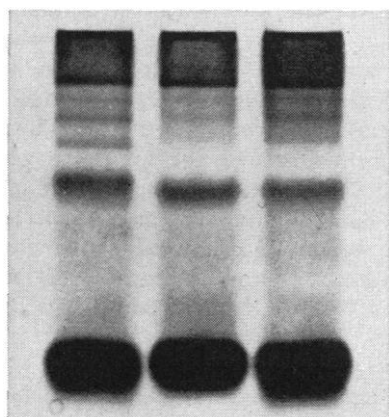
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nual transits, about the same number that would be permitted by a sea-level canal; (iii) no new treaties would be required since all the construction would take place in the canal zone, which is already owned and controlled by the United States; and (iv) the cost would be about \$850 million compared to \$2.88 billion for a sea-level structure.

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Reference

1. J. C. Briggs, *BioScience* 10, 44 (1969).

Major contributions to the present-day fauna of the tropical eastern Pacific shores can be traced to relatively recent Caribbean origins. However, the faunas brought into contact by the Suez canal and by the Erie and Welland canals have disparate origins and evolutionary ages. One would intuitively think that the longer the duration of uninterrupted (isolated) evolution of faunas (and the subsequent appearance of organisms having increased levels of adaptation and modes of life), the more serious would be interfaunal changes and adjustments.

The extreme differences in physical conditions along both shores of Panama suggest that the exchange of inshore faunas through the proposed sea-level canal would be low. Tacit assumptions by other authors (and indirectly by Aron and Smith) without prior study, that certain faunas are "in equilibrium" or are supporting "optimal" numbers of species, are untenable. If such situations ever exist, they are ephemeral phenomena in the evolutionary and geological context.

The relative success of field and laboratory studies made prior to the construction of a sea-level canal will only appear in retrospect. Since the cases reported by Aron and Smith were not adequately studied, and the authors admit we can't predict what will in fact happen, how do biologists convince governments that the necessary data can be obtained and judiciously interpreted? Do we know what basic predictive principles to apply when major faunas meet? Do we know why there

appears to be a time lag in faunal changes after first contact? Biology is still in its infancy as far as predicting effects of faunal interactions is concerned. This, not implied threats of faunal disasters, is the major reason why such studies should be made both before and after construction of a sea-level canal connecting recently isolated faunas.

THOMAS H. FRASER

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Moderation, as expressed by Aron and Smith, seems to be an endangered species. Many North Americans have loudly protested the proposed sea-level canal in Panama, the Bayano Dam, the Inter-American Highway, copper development, and the felling of Panama's forests. Many of the laments could have been written by Grant Swinger himself.

Panama, nearly as large as South Carolina, has the highest per capita income in tropical Latin America, yet a relatively low population. Progress is a magic word in Panama. It is difficult to sound the pollution alarm to a developing nation that is enraptured with engineering, yet scarcely familiar with the design-with-nature concept. Few Panamanians have learned the environmental headaches associated with progress. It is not politic to hinder progress; politicians usually decry pollution only when their constituents are crying pollution. Such is true in few, if any, developing countries. Progress, *si*; pollution control, *mañana!*

Does generosity or avarice dictate that the developed nations hinder the development of underdeveloped nations with environmental considerations? Should the land of the Welland Canal, the Tennessee Valley Authority, Copper Hill, Tennessee, and the Dust Bowl hamstring the republic that has none of these? Perhaps Panama, anticipating the economic returns of a sea-level canal, feels that sea snakes and starfish are Uncle Sam's problems.

JAMES A. DUKE

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The process of deterioration of the Great Lakes is traced back to its beginnings in the late 1800's by Aron and Smith. Among the programs currently aimed at protecting the Great Lakes from further degradation, perhaps the most ambitious is the Pure Waters Pro-

gram of Monroe County, New York, with \$0.4 billion committed to upgrading regional sewage collection and treatment and to phosphate removal. The conservation council of that county and a local science information group, the Rochester Committee for Scientific Information (RCSI), were instrumental in creating the public demand for a cleanup that made this program possible. Now the RCSI wishes to encourage the next step in the reclamation of the lake, as suggested by J. H. Hubschman (12 Feb. 1971, p. 536). The Rochester Prize for Environmental Management will be awarded in 1972 for a proposal to aid the recovery of Lake Ontario.

The prize of \$1000 will be awarded to the authors of a manuscript proposing a way to improve water quality at swimming beaches on the south shores of Lake Ontario. In judging merit, the jury of scientists will favor methods that would increase species diversity in the lake, increase the consumption of algae, and lower the standing crop of *Cladophora*. A copy of an article published in a scientific journal or a manuscript of an article suitable for such publication will qualify for the competition. Entries should be mailed to the secretary of the Rochester Committee for Scientific Information at the address below and must be postmarked before 1 October 1972.

ROBERT E. LEE

Rochester Committee for Scientific Information, Post Office Box 5236, River Campus Station, Rochester, New York 14627

President's Science Message

I was distressed to see Deborah Shapley (News and Comment, 24 Mar., p. 1343) take the President and his science adviser, Edward E. David, Jr., to task, and characterize the first message to Congress on science and technology as "vapid." I was impressed by the President's message. It lays the foundation for an effective teaming of the academic and industrial communities.

David, his team at the Office of Science and Technology, and James Wakelin at the Department of Commerce should be complimented for originating a practical plan that is not a multibillion-dollar handout to those who prefer to sit on their tails and bemoan the fate of science at the hands

of the Philistines. Instead the message sets a note of high challenge and proposes mechanisms by which those who prefer positive thinking can take action. It deserves the support of all of us in science.

Let's stop attacking our friends in office. Soon we will wonder where they also went.

ADEN B. MEINEL

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Cans

The comment by Savas (Editorial, 22 Oct., p. 365) that the island of Jamaica is coming to be represented throughout the United States by a "layer of aluminum beer cans" is a fair statement of the case. His qualitative remarks can be easily quantified, for according to the U.S. Department of Commerce the number of "throwaway" aluminum beverage containers produced in 1969 was 3.2 billion; in 1970, 4 billion; in 1971, 6 billion; and in 1972, 8 billion will be produced. Since more than 90 percent of the bauxite used is imported into the United States, and since we have an increasingly unfavorable balance of trade, one might think that this importation could be curbed; that is a problem for the economists.

What is more important than economics is the fact that it takes 17,000 kilowatt-hours of electricity to convert 5 tons of bauxite to 1 ton of aluminum, which may then be fabricated into 40,000 cans. There is considerable lip service given today to the concept of recycling, especially of cans. According to the *Wall Street Journal* (1) about 3 percent of the aluminum cans fabricated last year were recycled. Industry (2) disputes this figure and estimates that 12.5 percent of the cans produced in 1971 were collected for recycling. Even if the collection of aluminum cans continues at that rate in 1972, there will still be 175,000 tons of aluminum reduced from bauxite and dissipated over the landscape. Put in more general terms, the electricity required would be sufficient to supply the city of Washington, D.C., for about 20 months.

ELLIS L. YOCHELSON

12303 Stafford Lane,
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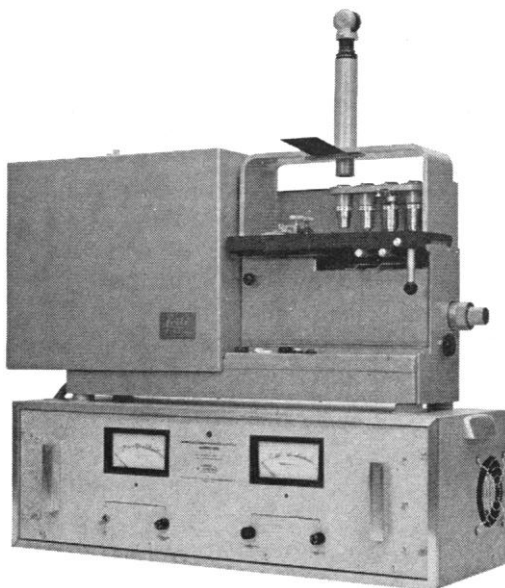
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Career Education—A New Priority

Most of us who read *Science* have found our careers to be a central and important source of satisfaction and meaning in our lives. But our educational system has not made available to many of our young people the sense of dignity and achievement of a meaningful career.

Too often, young men and women find their work by chance, rather than after an assessment of their own abilities and interests and of the opportunities that are available to them. In a simpler age, young people saw their parents and other adults at work and often worked beside them, developing skills and an understanding of the world of work. But today, our homes and schools are separated from our places of work. Young people have little knowledge of the world of work. Formal education must therefore do a better job of preparing and informing students for the choices they face.

We need, too, greater flexibility about the timing of various phases of our education. Educational opportunity should not be artificially confined to the first third of one's life. It should, instead, be accessible to men and women as they want and need it to allow growth and change throughout their lives.

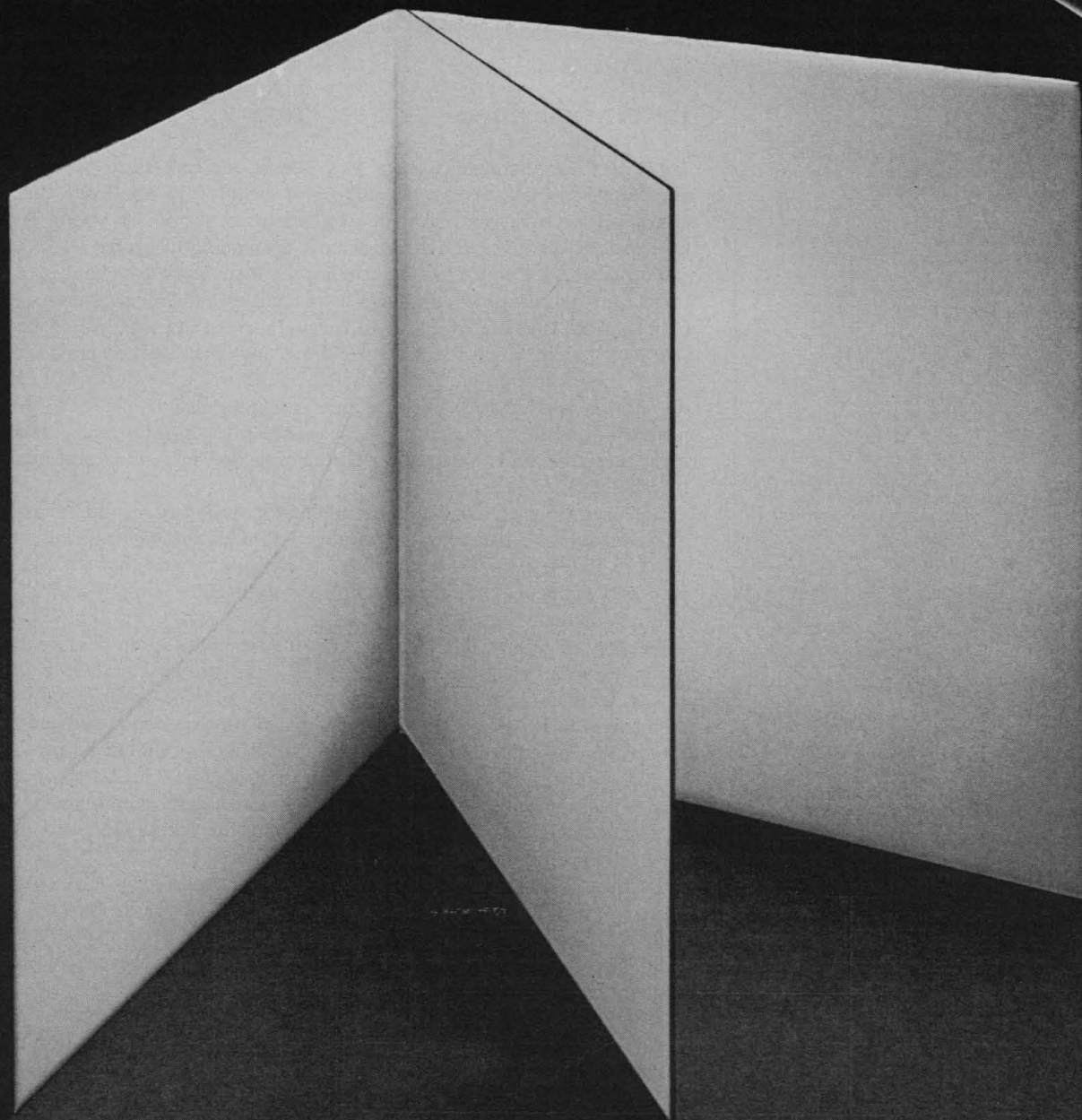
The key to reform in contemporary American education lies, I believe, in the concept of "career education." In the primary grades, children should learn more about the world of work and the various roles they might play in it. In the middle grades hands-on experience and practical observation of career areas that are of most interest should be provided. In high school and postsecondary education, children need the opportunity to learn specific skills to lead them to meaningful employment. Further, career education means the opportunity for an individual to return for further formal learning as it is needed and wanted.

Perhaps most immediately we see career education as a new source of motivation in the lives of all young people as they move up the education ladder. The development of career education has been made a Presidential priority, and, in the U.S. Office of Education, I have made it our first priority.

To move career education from the realm of ideas into the world, we are working in several ways simultaneously. The concept itself needs further refinement and debate, and for this we are using both the talents on our own staff in the Department of Health, Education, and Welfare and also enlisting the critical abilities of scholars and practitioners in a number of relevant fields.

At the same time, we are developing a series of models to explore what career education could be like in practice. Six school districts across the country are cooperating in the development and testing of curriculum innovations for career education. These efforts will continue through the next school year. An "employer-based" model is also being designed to test the possibility of basing the education of some young people outside of traditional schools. We are also working on models to bring career education to those who are cut off from the usual institutional sources of education, in homes and in special arrangements for isolated or migrant families. Most of the states are also developing their own programs and centers to begin providing career education for many young people.

The path of change is never smooth or clear. But we believe that the basic concept of career education holds promise for major and needed reform.—SIDNEY P. MARLAND, JR., *U.S. Commissioner of Education*



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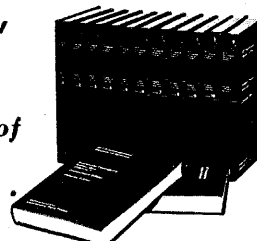
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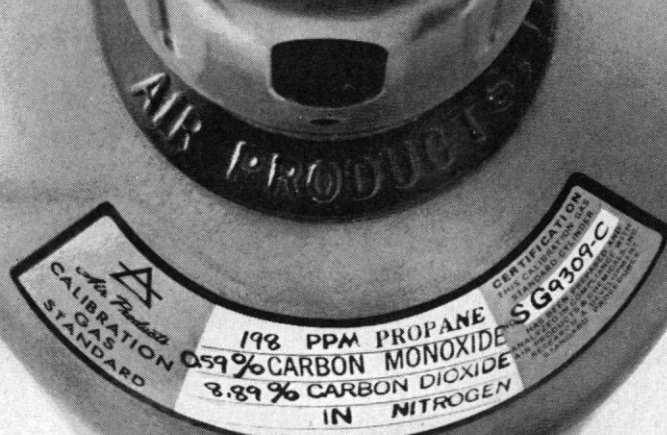
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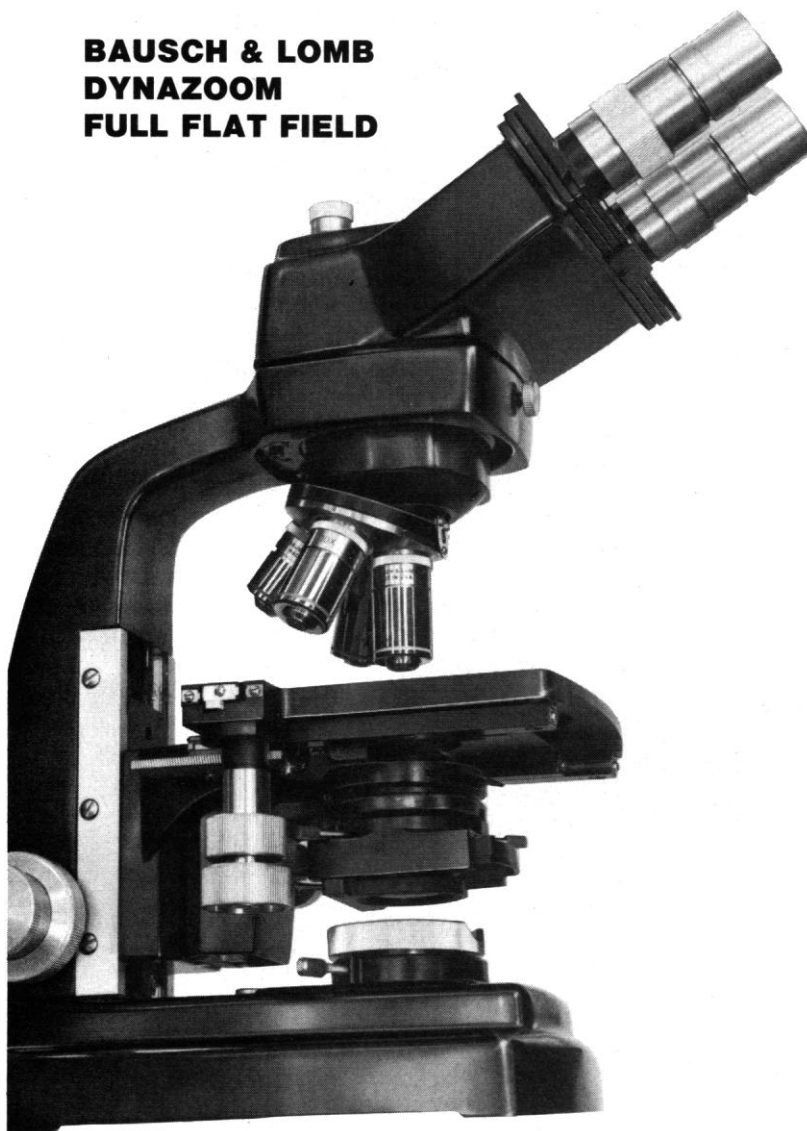
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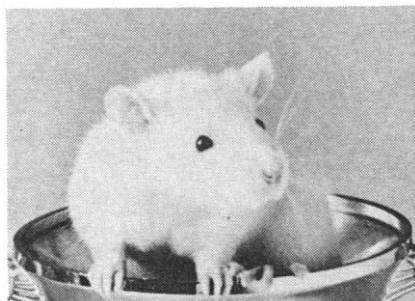
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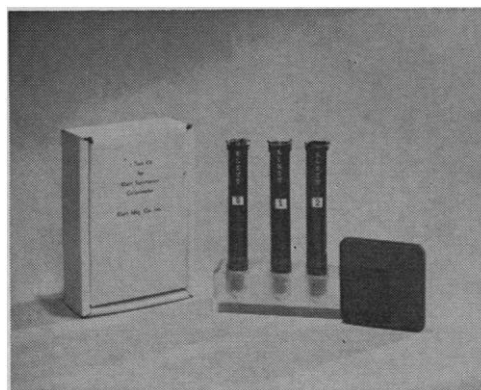
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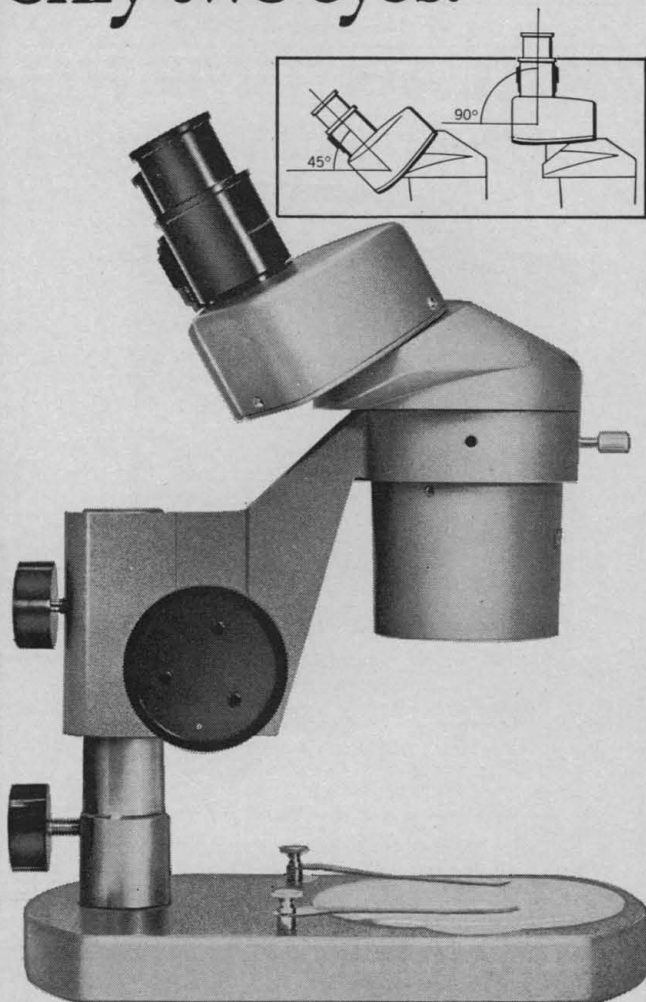
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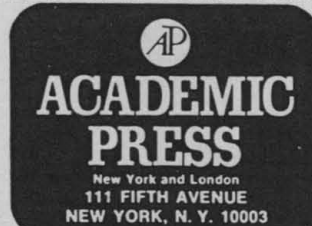
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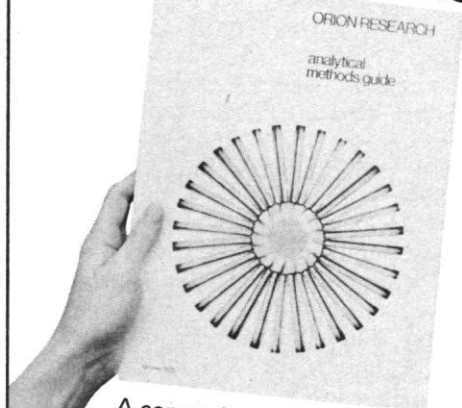
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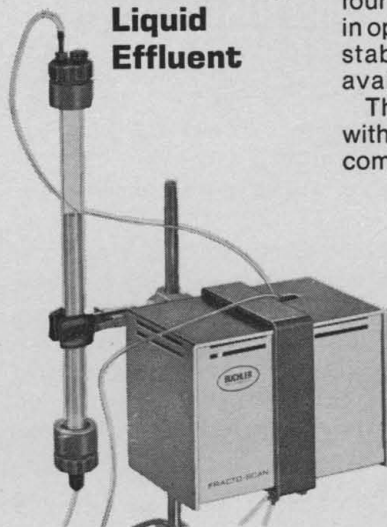
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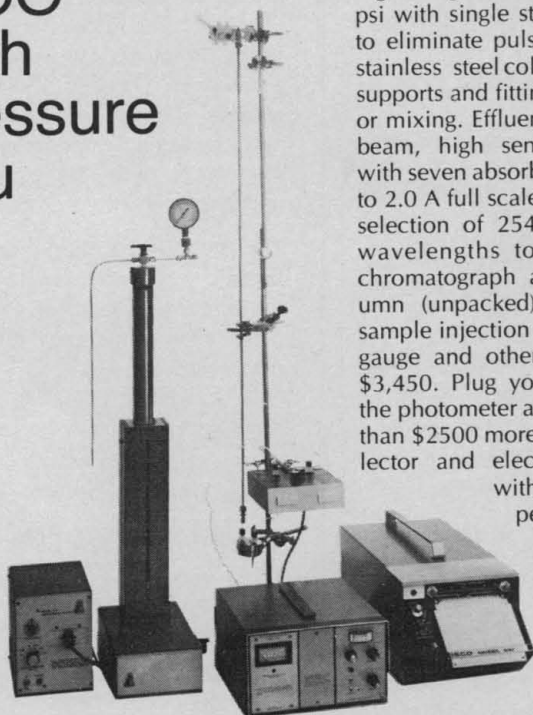
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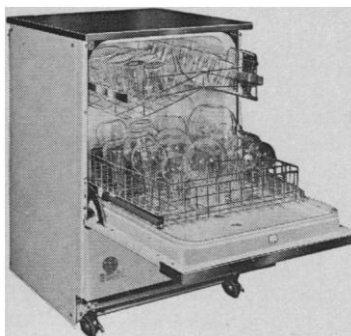
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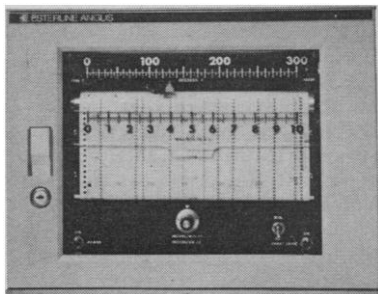
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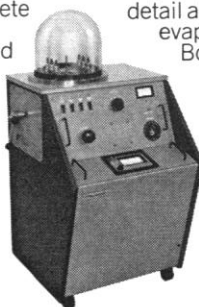
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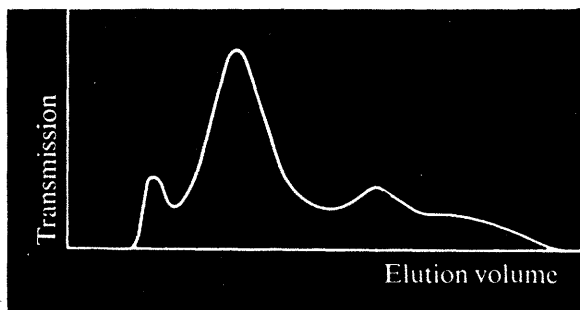
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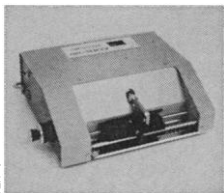


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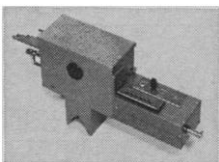
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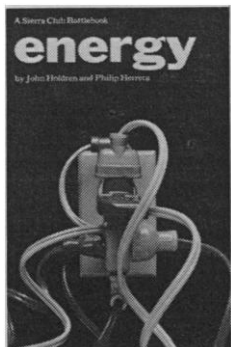
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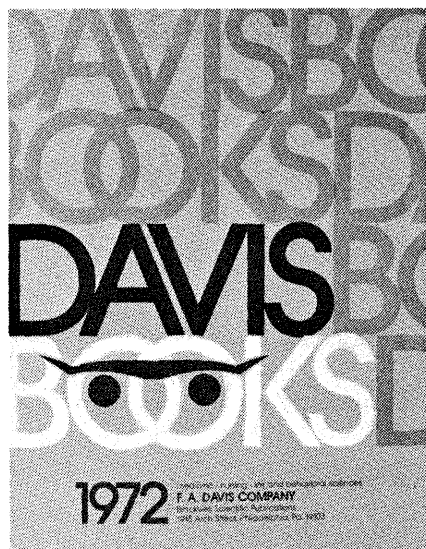
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