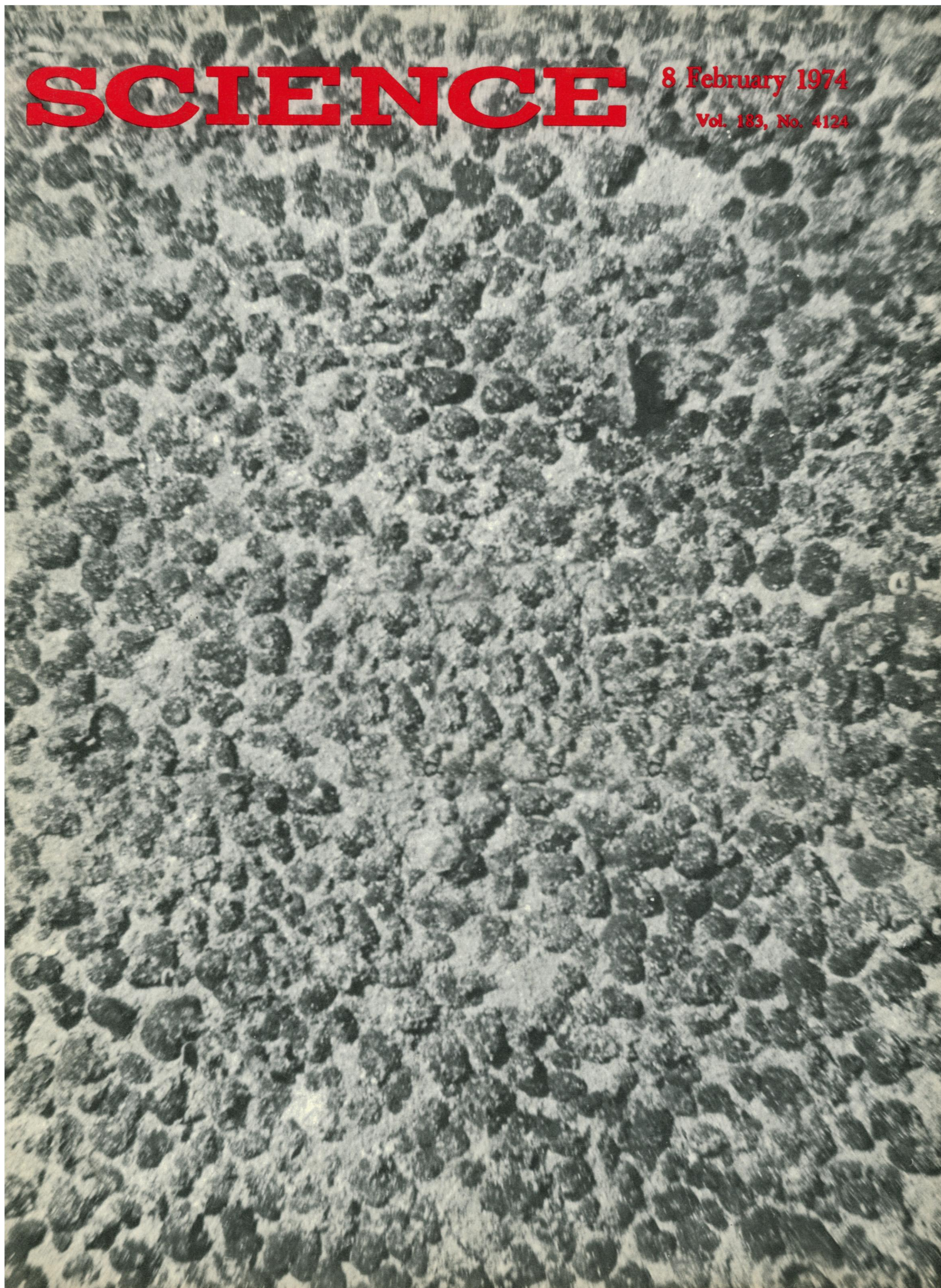


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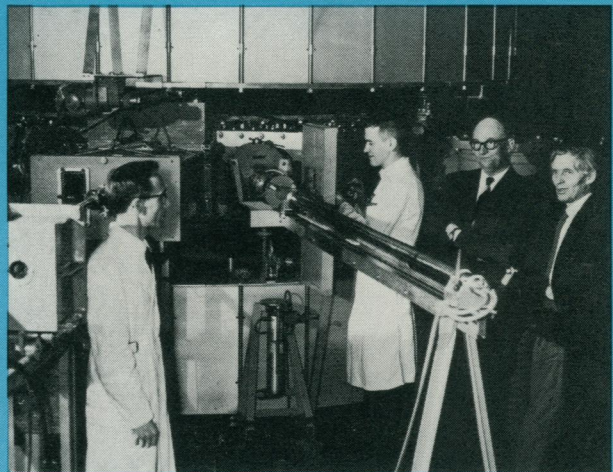
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\*(1) Chey, W. Y., Recent advances in Gastrointestinal Hormone Research, Rochester, New York. August 25, 1973.

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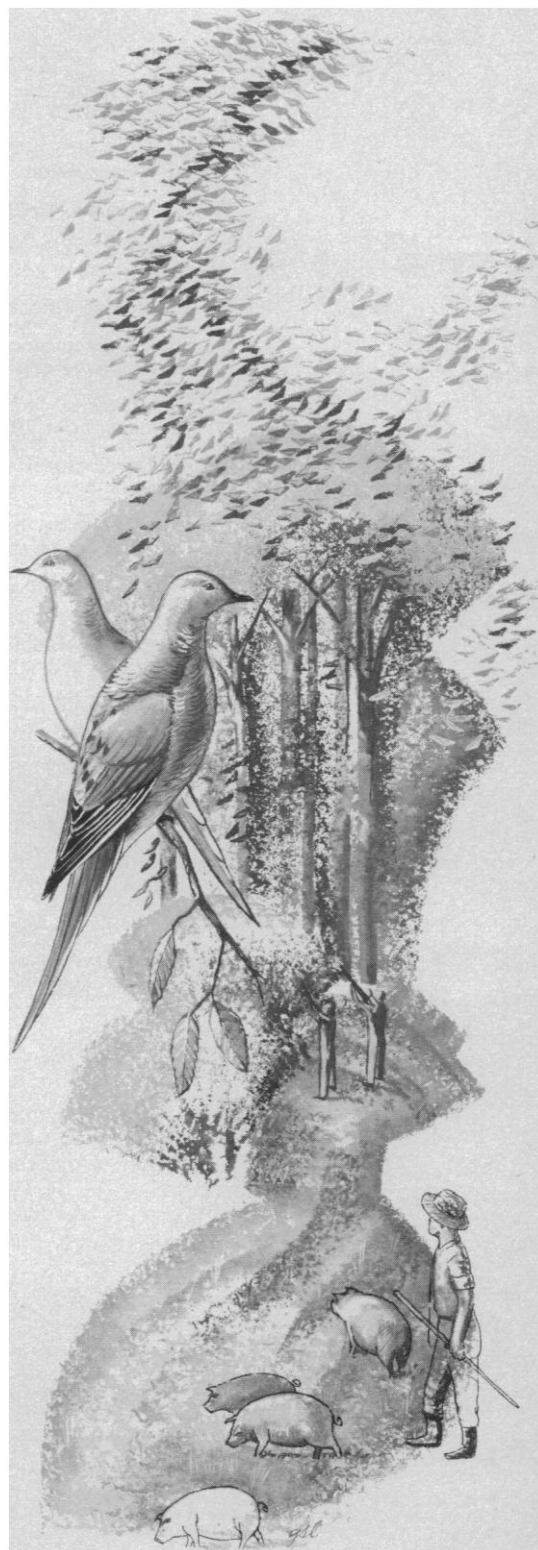
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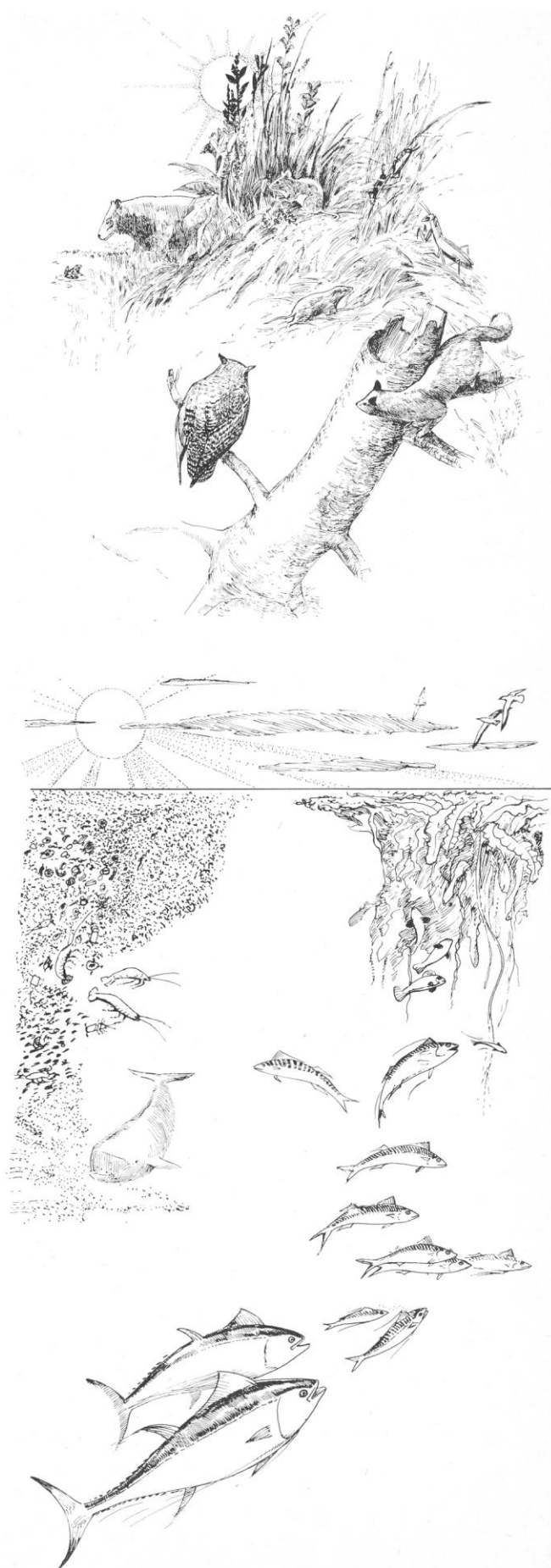
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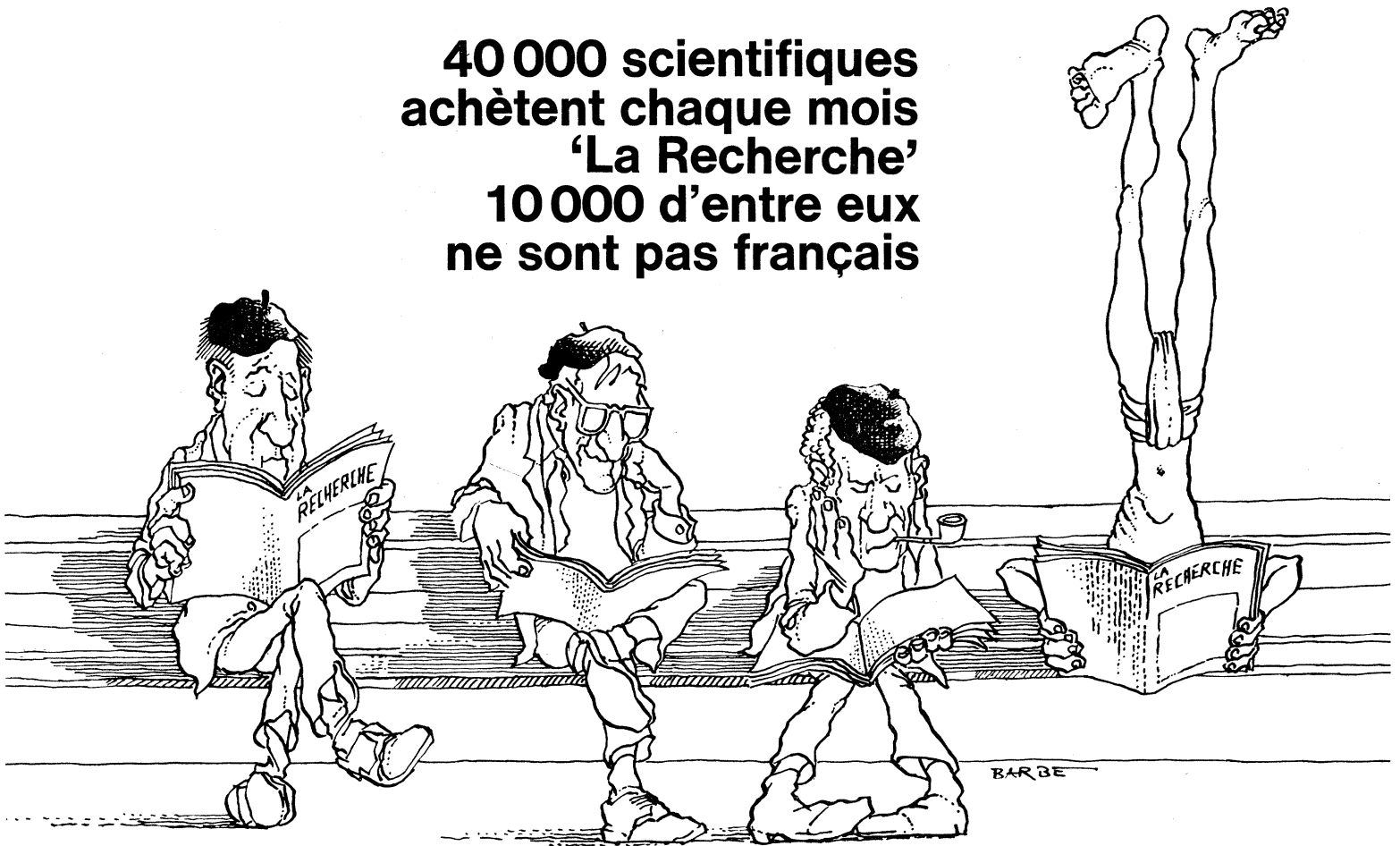
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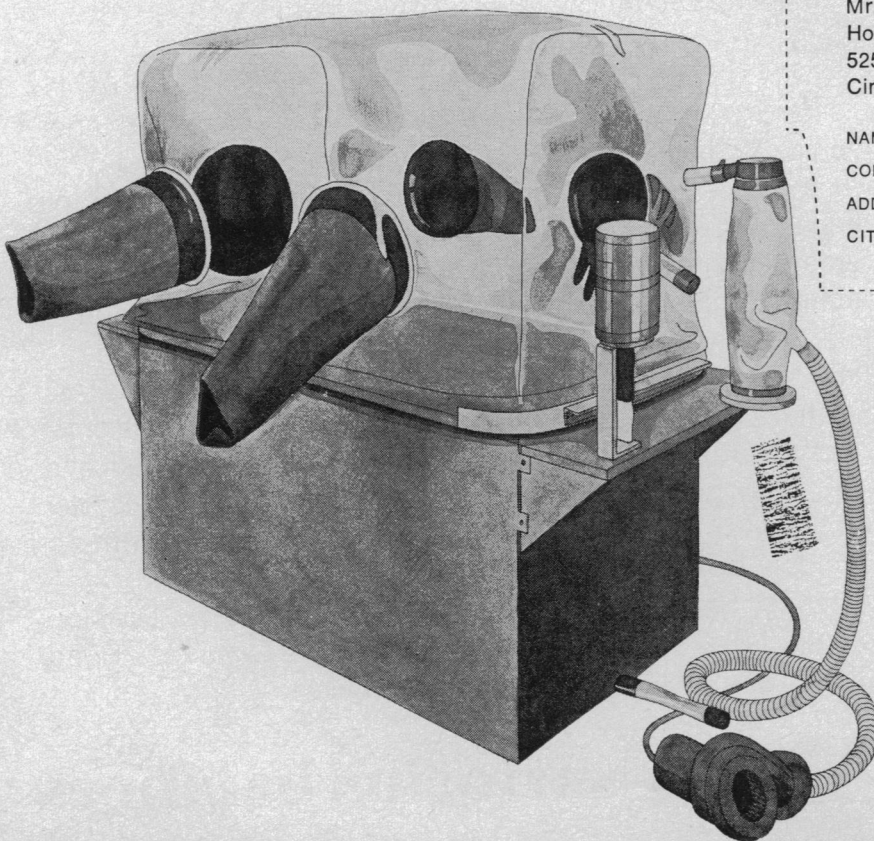
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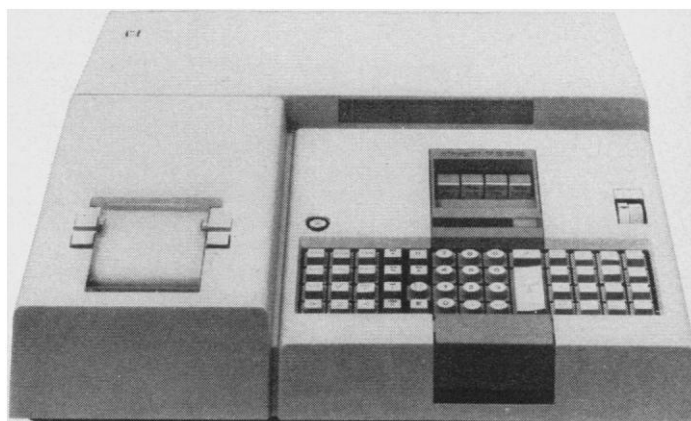
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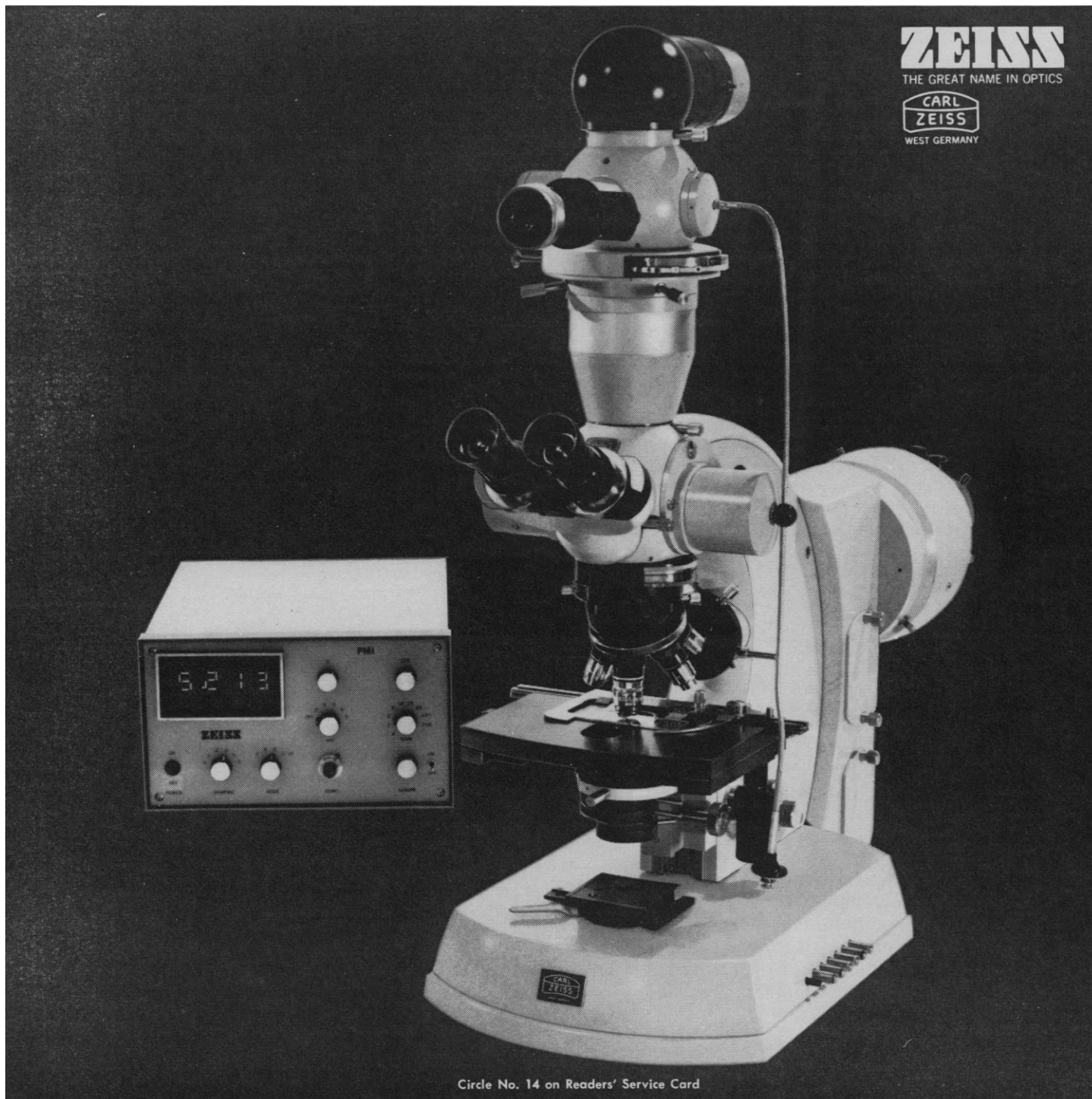
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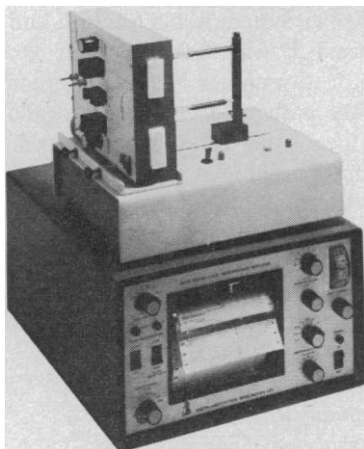
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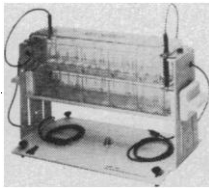
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ducted much research and development in the LDC's [less developed countries]" makes all sorts of sense. Furthermore, as recent political events in the United States have shown, economic dominance and political dominance go together, and there are ample indications that some multinational corporations have been meddling in the internal affairs of less developed countries. This was brought up during the 22nd Pugwash Conference on Science and World Affairs in Oxford, England, in 1972. The Pugwash Continuing Committee stated then that "there are continuing threats to the security of other Latin American countries arising from activities of industrial monopolies owned and controlled by external interests" (2).

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1. See J. Rotblat, *Scientists in the Quest for Peace: A History of the Pugwash Conferences* (MIT Press, Cambridge, Mass., 1972), pp. 246-252.
2. *Scientists and World Affairs, Proceedings of the Twenty-second Pugwash Conference on Science and World Affairs* (Pugwash Continuing Committee, Oxford, England, 1972), pp. 29-35.

Abelson states in his editorial of 30 November 1973, that the less developed countries (LDC's) need the skills and know-how which the multinational corporations often are unwilling to provide.

My experience is confined to the petroleum industry, but I am convinced that many, if not all, multinational oil companies have been wholeheartedly giving know-how and training on a large scale to nationals of the LDC's. At the University of Tulsa alone, we have 300 students from Venezuela and the Middle East studying petroleum technology. Most multinational companies are staffed almost entirely by nationals. Newly formed government oil companies in the LDC's have no difficulty obtaining information about highly sophisticated exploration and production techniques by contracting American service companies and hiring experienced Americans. I am a member of a group that offers advanced continuing education courses around the world, and many of our students have been nationals of LDC's who have been sent by their companies.

The big lack in the LDC's is capital, but with their current nationalist and socialist politics they are unlikely to

acquire any. Foreign capital is either rejected outright by the LDC's, or foreign companies are admitted and then harassed if they show a profit. Local capital accumulates very slowly because of high taxes and social legislation. Savings that should be invested are siphoned off into government bureaucracies. Inept and money-losing government enterprises, politically managed and loaded with surplus employees, turn what should be contributions to the economy into a drain on the public treasury.

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While the observations in Abelson's editorial are accurate, the conclusions he draws from them are rather beside the point.

The notion that "LDC's wish to achieve full independence from technological dominance" implies that creation of competitive national economies in the 19th and early 20th century sense is possible; that the governments of LDC's think in such terms; and that the multinational corporations can be considered "U.S. international firms," as in the title of Abelson's cited source (1). None of these implications will stand up under analysis.

The multinational corporation is not merely an American, British, French, or Dutch concern with operations in a number of foreign countries. The multinational corporation seeks assiduously to extricate itself from the political control and direction of the country of its origin, to pursue its own goals (growth and profit) without reference to the policies of either its country of origin or of the country within which it carries out its operations. Such neo-mercantile concepts as "balance of trade" have no meaning for it. It seeks to cosmopolitanize the directorate of its headquarters and its major field operations as well. It seeks to create, both within its country of origin and within the countries—LDC's or other—in which operations are carried out, a corporate citizenry whose first loyalty is to the firm and not to the political entity of the nation. Political leaders, whether in the country of origin or in the other countries in which it operates, are, insofar as possible, to be controlled by enrollment in or identification with the corporate citizenry. Where they cannot be controlled there are options

ranging from pullout (after all, IBM typewriters can be assembled as easily in Ecuador as in Colombia) to the initiation or support of their overthrow.

To whom is the technological know-how to be transferred in the LDC's? Surely not to the governments of the countries; certainly not to any eager group of local entrepreneurs anxious to develop a competing, national electric typewriter firm. The experience of past decades indicates that the Latin American managers who work for multinational corporations see their futures in terms of rising in the managerial hierarchies of these firms and not as participating in some turn-key operation resulting in the creation of a nationally controlled, modern industrial segment of their country's economy.

The multinational corporation increasingly is viewed as a novel entity, not only possessing economic and political power, but possibly capable of assuming actual political identity. If there is truth to this view, the real question, then, is, what is the relationship that will finally emerge between nation states, developed or not, and the multinational corporations?

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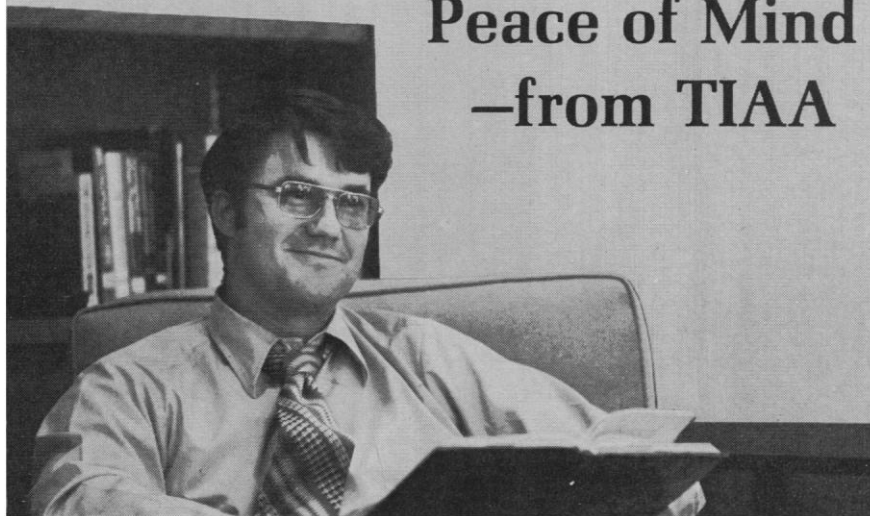
#### Cancer and Adventists

The reference to "cancer incidence" among Seventh-day Adventists in Philip Abelson's editorial "Prevention of cancer" (7 Dec. 1973, p. 973) requires some clarification. Lifetime Adventists age 35 and over who live in California experience a cancer mortality rate (not incidence) that is 41 percent of that of all Californians. However, for all Adventists age 35 and over, the cancer mortality rate is 59 percent of the rate of all Californians. At present, there are no data available on "devout" Adventists, but an investigation of how components of the Adventist life-style relate to cancer incidence is now under way.

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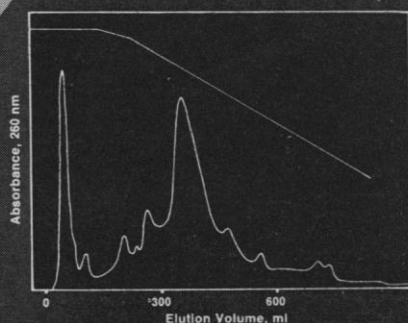
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## Homogenized Milk and Atherosclerosis

In the article "Atherosclerosis and the arterial smooth muscle cell" (29 June 1973, p. 1332) Russell Ross and John A. Glomset give an excellent presentation of the role the arterial smooth muscle cell plays in the genesis of lesions of atherosclerosis. In addition, they discuss such factors as lipids and cholesterol being important in the development of atherosclerosis in experiments with various laboratory animals.

Although they make it clear that "relatively little is known about the genesis of the disease," they do not mention other, less popular, hypotheses about the genesis of atherosclerosis. For instance, the hypothesis presented by K. Oster (1) offers a fresh approach to the cause and prevention of this disease. Oster proposed that the enzyme xanthine oxidase (XO) in homogenized milk may be involved in atherosclerosis and other cardiovascular diseases in humans.

Briefly, XO is an oxidizing enzyme in milk and is synthesized in liver and mammary gland. Besides being present in relatively large amounts in bovine milk, XO is also present in the milk of other ruminants, such as sheep and goats, but is not present in human, sow, and mare milk (2). This enzyme controls the last stages of purine catabolism by removing hypoxanthine and xanthine in the form of uric acid from the general pool of purines. Because of its low substrate specificity, XO also oxidizes several other purines (3) and many aldehydes (4) to their respective acids. Pasteurization of milk as is done in the United States (a holding time of 62°C for 30 minutes or 71°C for 15 seconds) leaves approximately 42 percent of the enzyme in its active state (5). This is understandable, as heat sensitivity studies of milk indicate that XO is completely inactivated at about 82° to 84°C (6). This enzyme in milk is closely associated with the fat globule (7). The fat globules in nonhomogenized cow's milk vary in size from about 0.1 to 15 micrometers. They average about 3.5  $\mu$ m, with 80 percent in the range of 2.0 to 5.0  $\mu$ m. During homogenization, the fat globules are reduced in size from an average diameter of about 3.5  $\mu$ m to about 1  $\mu$ m (8). As a result of this unnatural micronization, the following alterations occur in homogenized milk: (i) a large increase in the number of fat globules; (ii) a large

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expansion of the fat globule surface area; (iii) as a consequence of (i) and (ii), an increase in the biological availability of XO by a factor of at least 3.5; and (iv) an increase in the potential of XO to pass undigested through the intestinal mucosa. Once it passes through the intestinal mucosa, it eventually reaches the bloodstream (via the lymph system) and is deposited ectopically, first in the heart muscle and then in the arterial wall.

Oster proposed that, inside the body, XO (on the fat globule) finds large quantities of the substrate, plasmas [the aldehydic moiety of plasmalogens which is essential in maintaining the elasticity in the arterial wall (9)] in situ in the outline of the arterial wall and in the myocardium. The enzyme would then, by oxidizing these aldehydes, create a histochemical change in the site, which could be overcome either by the formation of more substrate or by scar formation. This healing process in the vessel wall would be the initiation of atherosclerosis. It is at the site of such tissue destruction that cholesterol deposition begins.

This hypothesis is in sharp contrast to the prevailing ideas about avoidance of saturated fat and cholesterol in the diet to reduce atherosclerotic lesions and the incidence of myocardial infarction. The Masai, an East African tribe with an extremely large intake of non-homogenized milk (about 7 liters per day) and saturated fatty acids (about 60 percent of their diet), rarely develop atherosclerosis (10). Also, epidemiological data on the consumption of fluid milk, cream, butter, and cheese in selected countries indicate a high correlation between the death rate from heart disease and the consumption of homogenized milk (10, 11).

Oster's hypothesis and the accumulated evidence supporting it should be carefully examined before being rejected.

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### The "Relevance" of Basic Science

Herbert Simon's editorial "Relevance—there and here" (17 Aug. 1973, p. 163) comes at a very interesting time—not so much because of the current political détente, but because we are at the end of the relevance dogma which was prevalent in certain academic circles, say 5 years ago.


There has never been purely basic science, science predicated solely on "a thirst for knowledge," just as there is no completely relevant endeavor (whatever that would mean). Science, per se, is a question-answering process; and questions, whether aimed at descriptive or prescriptive issues, arise from a combination of interests, abstract and pragmatic. The advances in computer science are responses not solely to developments in automata theory, but to some very real questions about information storage and processing. Similarly, the investigation of human learning is not simply an inquiry into the properties of memory, but a desire to understand how knowledge can be acquired and used. Of course, knowledge can be integrated into theories, but this is not what makes "us" scientists; it is the desire to deal with questions in a structured way.

Questions, then, are relevant because that is what questions are—issues of interest. Societal funds may be allocated so as to promote certain interests; but not so much to exclude "non-relevant" concerns as to focus on immediate problems. And even here, there is always at least a little left over for long-range problems.

The issue of cross-cultural neglect of basic sciences thus appears to me to be a straw man. The danger is that such an argument will lead to a form of elitism and intellectual isolationism in science.

STEPHEN GALE

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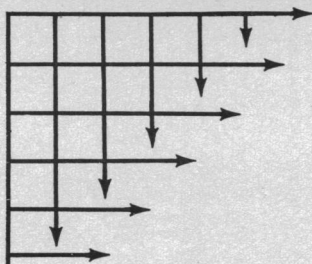
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## No Easy Way Out of Energy Crisis

All over the world, peoples and governments have been unable to respond realistically to the sudden changes in the availability and price of energy. In the United States, a search for scapegoats is being conducted on the assumption that if the culprits can be identified and chastised, the problem will go away. On the international scene, the consuming nations have been adopting an every-man-for-himself approach that guarantees additional hardship for all.

Many stories in the mass media have the common thread that the crisis was created and is continuing because oil companies are withholding oil in order to get higher profits. Thus, the solution to our problems is simple: Force the companies to disgorge! Escape from the current travail will not be so easy, nor will it be rapid. There is solid evidence that the major sins of the oil companies are not underproduction and overstorage today, but an earlier, opposite shortcoming. For decades, oil was generally produced at the maximum allowable rate. At the same time, the industry did not create substantial storage facilities or inventories when we were becoming dependent on foreign oil.

The American Petroleum Institute has long compiled weekly data on the production, refining, and distribution of oil. The patterns of reporting were established at a time when there was no incentive to be other than honest. Moreover, the figures were corroborated by surveys of the U.S. Bureau of Mines. These figures showed that U.S. production of crude petroleum reached its peak in 1970, at 10.0 million barrels per day, and has been slowly diminishing since. Prior to the present crisis, it had dropped to 9.3 million barrels per day; recently production has been 9.1 million barrels per day.

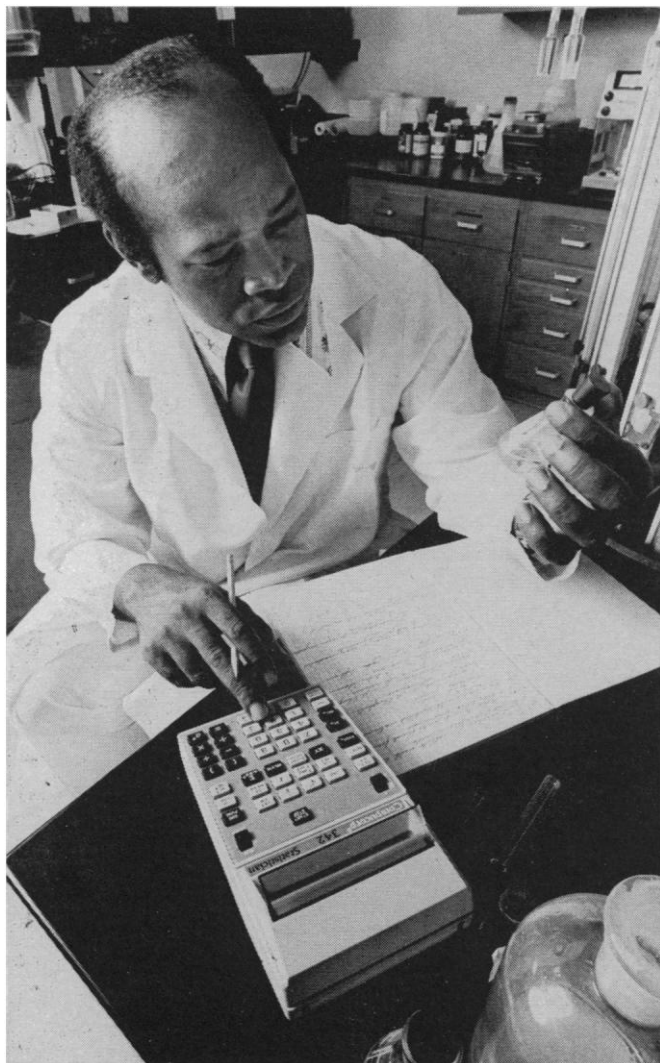
In their policies with respect to storage facilities and inventories, the oil companies have been largely guided by an attempt to hold down costs. It is expensive to maintain large inventories. So assiduous have the companies been in this respect that they have endangered the national security. Inventories of some of the products, such as gasoline, would, if fully available, last about 30 days. However, only a part is available. Some is in pipelines, some is in tankers, and some is being processed. The companies do not have the huge excess storage capacity to hide significant amounts of oil. Recently, there have been tales of speculators' storing gasoline in vacant filling stations. A typical older filling station has a capacity of 12,000 to 15,000 gallons. Weekly U.S. consumption is 1,750 million gallons. The reported hoardings are little more than drops in the bucket in comparison.

Others who have searched for an easy way out of the energy crisis have pointed to the possibility of a quick end to the Arab oil embargo. This may or may not come soon, and when it does, it may or may not lead to substantially greater supplies of oil. If production is to be increased rapidly, the increase must come largely from the Arabian Peninsula. There, in Saudi Arabia, Kuwait, and some smaller states, is about half the free world's oil. These states, with a total population of less than 10 million, are enjoying unprecedented power. With return per barrel having quadrupled over that of a year ago, they have far more income than they can use. Kuwait, with a population of 900,000, will receive about \$7 billion this year. An increase in production would not appear to serve any useful purpose for them.

More than a month has passed since the big price increases were announced. The lack of concerted, constructive response by the billions of people who must pay can only encourage the producing countries to tighten the screws again and again.—PHILIP H. ABELSON



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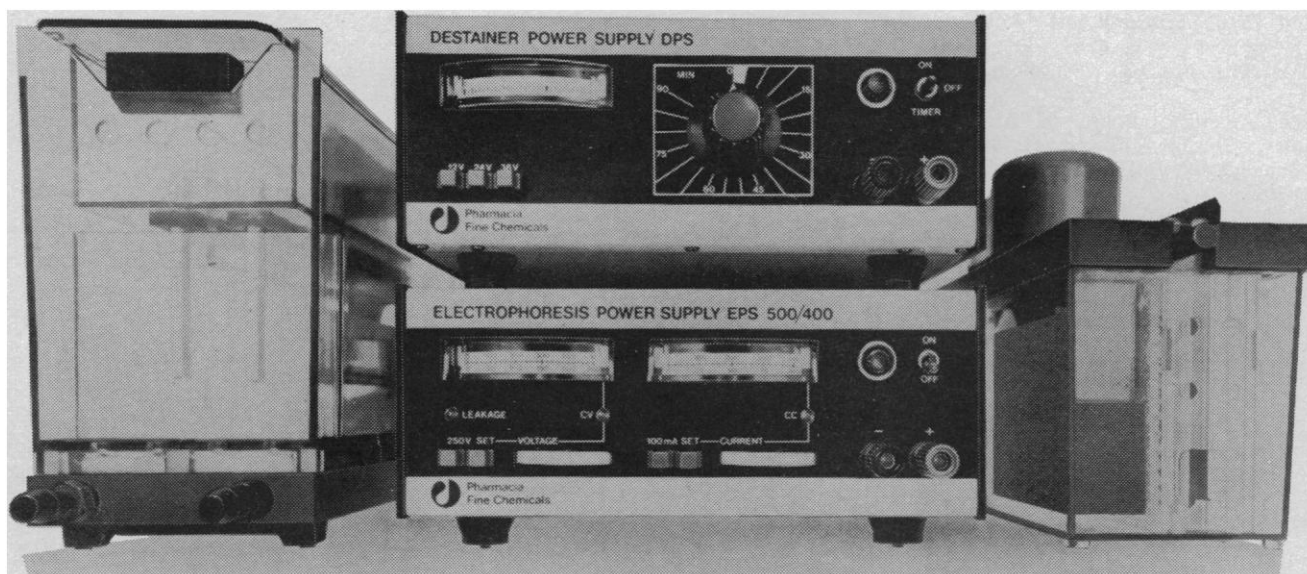
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27. American Soc. of **Clinical Oncology**, Houston, Tex. (A. Evans, Children's Hospital of Philadelphia, 1740 Bainbridge St., Philadelphia, Pa. 19146)

27-29. **Nuclear Structure and High Energy Physics** Conf., Inst. of Physics, Glasgow, Scotland. (IP, 47 Belgrave Sq., London, SW1X 8QX, England)

27-29. **Textile Research** Inst., 44th annual, New York, N.Y. (TRI, 601 Prospect Ave., P.O. Box 625, Princeton, N.J. 08540)

28-29. American Board of **Medical Specialties**, Chicago, Ill. (J. C. Nunemaker, Suite 1160, 1603 Orrington, Evanston 60201)

28-30. American Assoc. for **Cancer Research**, 65th annual, Houston, Tex. (H. J. Creech, AACR, Inst. for Cancer Research, Fox Chase, Philadelphia, Pa. 19111)

28-30. South Carolina **Acad. of Science**, Hartsville. (J. M. Barry, College of General Studies, Univ. of South Carolina, Columbia 29208)

29-30. New England **Bioengineering** Conf., 2nd annual, American Soc. of Engineering Education and the Inst. of Electrical and Electronics Engineers, Worcester, Mass. (R. A. Peura, Worcester Polytechnic Inst., Worcester 01609)

29-31. American **Psychosomatic** Soc., 31st, Philadelphia, Pa. (D. Oken, 265 Nassau Rd., Roosevelt, N.Y. 11575)

29-31. **Seismological** Soc. of America, Las Vegas, Nev. (W. K. Cloud, SSA, P.O. Box 826, Berkeley, Calif. 94701)

29-31. National **Wildlife Federation**, Denver, Colo. (T. L. Kimball, NWF, 1412 16th St., NW, Washington, D.C. 20036)

29-3. American Soc. of **Abdominal Surgeons**, Las Vegas, Nev. (B. F. Alfano, 675 Main St., Melrose, Mass. 02176)

30-1. National **Drug Abuse** Conf., Chicago, Ill. (E. C. Senay, Museum of Science and Industry, 57th St. and Lake Shore Dr., Chicago 60637)

30-4. **Gas Turbine** Conf., American Soc. of Mechanical Engineers, Zurich, Switzerland. (M. Churchill, ASME, 345 E. 47 St., New York 10017)

31-3. International Soc. for **Experimental Hematology**, 3rd, Houston, Tex. (J. J. Trentin, Div. of Experimental Biology, College of Medicine, Texas Medical Center, Houston 77025)

31-5. American College of **Physicians**, New York, N.Y. (E. C. Rosenow, Jr., 4200 Pine St., Philadelphia, Pa. 19104)

#### April

1-2. **Synchrotron Radiation and Its Applications to the Analysis of Problems in Scientific Investigation** Conf., Inst. of Physics, Reading, England. (Meetings Officer, IP, 47 Belgrave Sq. London, SW1X 8QX, England)

1-3. American Assoc. of **Petroleum Geologists**, San Antonio, Tex. (T. L. Bear, Bear & Kistler, 1052 W. 6 St., Los Angeles, Calif. 90017)

1-3. Society of **Economic Paleontologists and Mineralogists**, San Antonio, Tex. (R. Tener, Box 979, Tulsa, Okla. 74101)

1-4. American Assoc. of **Anatomists**, Cleveland, Ohio. (J. E. Pauly, Univ. of Arkansas, School of Medicine, Little Rock 72201)

1-4. **Industrial Water and Pollution** Conf., Water and Wastewater Equipment Manufacturers Assoc., Detroit, Mich. (R. C. Hughes, WWEMA, 744 Broad St., Newark, N.J. 07102)

1-4. **Geochemical Exploration**, 5th intern. symp., Vancouver, B.C., Canada. (J. J. Barakso, Mineral Environment Labs. Ltd., 705 W. 15 St., North Vancouver)

1-5. International Symp. on **Advances in Polymer Friction and Wear**, American Chemical Soc., Los Angeles, Calif. (L.-H. Lee, Wilson Center of Technology, Xerox Corp., Webster, N.Y. 14580)

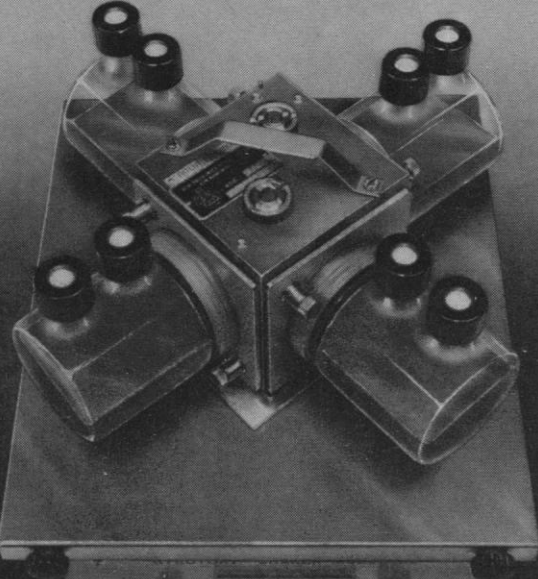
1-5. **Farm and Agricultural Industries**, 11th intern. conf., Intern. Commission of Agriculture and Food Industries and the Greek Chemists' Assoc., Athens. (L. de Saint Rat, ICAFI, 24, rue de Teheran, 75008 Paris, France)

1-5. American College of **Radiology**, New Orleans, La. (W. C. Stronach, ACR, 20 N. Wacker Dr., Chicago, Ill. 60606)

2-4. **Fast Reactor Safety** Conf., American Nuclear Soc., Beverly Hills, Calif. (J. B. Moore, Southern California Edison, P.O. Box 800, Rosemead, Calif. 91770)

2-4. **Mechanical Properties of Materials at High Rates of Strain**, Inst. of Physics, Oxford, England. (J. Harding, Dept. of Engineering Science, Parks Rd., Oxford, OX1 3PJ)

2-5. American **Astronomical** Soc., Palo  
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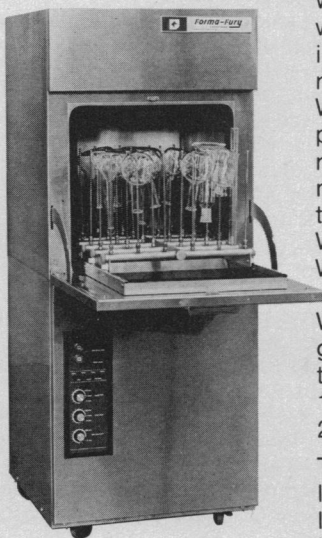
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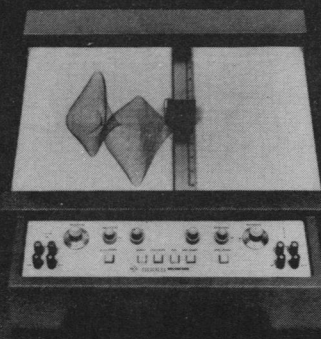
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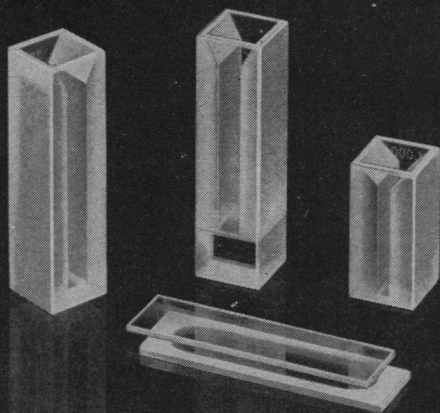


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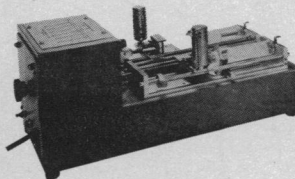
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2-5. American College Health Assoc., Dallas, Tex. (J. W. Dilley, 2807 Central St., Evanston, Ill. 60201)

3-4. National Conf. on New Systems in Health and Welfare Management, Chicago, Ill. (R. E. Gitelman, Dept. W-37, Div. of Business and Management, New York Univ., 600 Third Ave., New York 10016)

3-4. Railroad Conf., American Soc. of Mechanical Engineers and Inst. of Electrical & Electronics Engineers, Pittsburgh, Pa. (E. K. Farrelly, Port Authority of New York and New Jersey, World Trade Center, New York 10047)

3-4. Metal Semiconductor Contacts Conf., Inst. of Physics, Manchester, England. (Meetings Officer, IP, 47 Belgrave Sq., London, SW1X 8QX, England)

3-5. American Soc. for Artificial Internal Organs, Chicago, Ill. (K. K. Burke, ASA10, Box 777, Boca Raton, Fla. 33432)

3-7. International Union of Angiology Congr., 9th, Florence, Italy. (F. Pratesi, Via della Robbia 5, Florence 50132)

4-5. Biomedical Applications of the Scanning Electron Microscope Conf., Rockville, Md. (J. M. Wehrung, EMventions Microanalysis Lab., 2351 Shady Grove Rd., Rockville 20850)

4-7. American Fertility Soc., Miami, Fla. (H. H. Thomas, 1801 Ninth Ave., S. Birmingham, Ala. 35205)

4-7. Missouri State Medical Assoc., Kansas City. (R. McIntyre, P.O. Box 1028, Jefferson City, Mo. 65101)

5-6. Alabama Acad. of Science, Birmingham. (D. Costes, Science Dept., Troy State Univ., Troy, Ala. 36081)

5-6. American Burn Assoc., Cincinnati, Ohio. (A. R. Dimick, Dept. of Surgery, Univ. of Alabama, University Station, Birmingham 35294)

7-10. Conference on Environmental Acoustics, American Soc. for Testing and Materials, Columbus, Ohio. (J. McFadden, ASTM, 1916 Race St., Philadelphia, Pa. 19103)

7-12. American Assoc. of Immunologists, Atlantic City, N.J. (H. Metzger, AAI, 9650 Rockville Pike, Bethesda, Md. 20014)

7-12. American Physiological Soc., At-

lantic City, N.J. (R. G. Daggs, APS, 9650 Rockville Pike, Bethesda, Md. 20014)

8-10. Engineering Aspects of Magneto-hydrodynamics Symp., Tullahoma, Tenn. (Y. C. L. Wu, Energy Conversion Research Div., Univ. of Tennessee Space Inst., Tullahoma 37388)

8-10. Symposium on Identification and Transformation of Aquatic Pollutants, Environmental Protection Agency, Univ. of Georgia, American Soc. for Microbiology, and American Chemical Soc., Athens, Ga. (G. Baughman, EPA, Southeast Environmental Research Lab., College Station Rd., Athens 30601)

8-11. European Sleep Research Soc., 2nd congr., Rome, Italy. (W. P. Koella, Ciba-Geigy AG, K 125/1109, 4002 Basel, Switzerland)

8-12. American Soc. for Experimental Pathology, Atlantic City, N.J. (G. B. Mider, ASEP, 9650 Rockville Pike, Bethesda, Md. 20014)

8-12. International Symp. on Wound Healing, Rotterdam, Netherlands. (Secretary, Holland Organizing Centre, 16 Lange Voorhout, The Hague, Netherlands)

8-12. American Orthopsychiatric Assoc.,

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14. Conference on **Structure and Cognition: The Mutual Relevance of Structural Anthropology and Cognitive Anthropology**, Geneseo, N.Y. (G. Erchak, Dept. of Anthropology, State University of New York College at Geneseo, Geneseo 14454)

15-17. Rocky Mountain **Bioengineering and the Intern. Biomedical Sciences Instrumentation**, 11th annual jointly, Instrument Soc. of America, Colorado Springs, Colo. (C. D. Ferris, Office of the Dean, Univ. of Wyoming, College of Engineering, Box 3295, Laramie 82070)

15-17. **Biomedical Symp.**, 2nd, Natl. Inst. of Health Minority Biomedical Support Program, New Orleans, La. (J. H. Corrington, Dept. of Chemistry, Xavier Univ., New Orleans 70125)

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