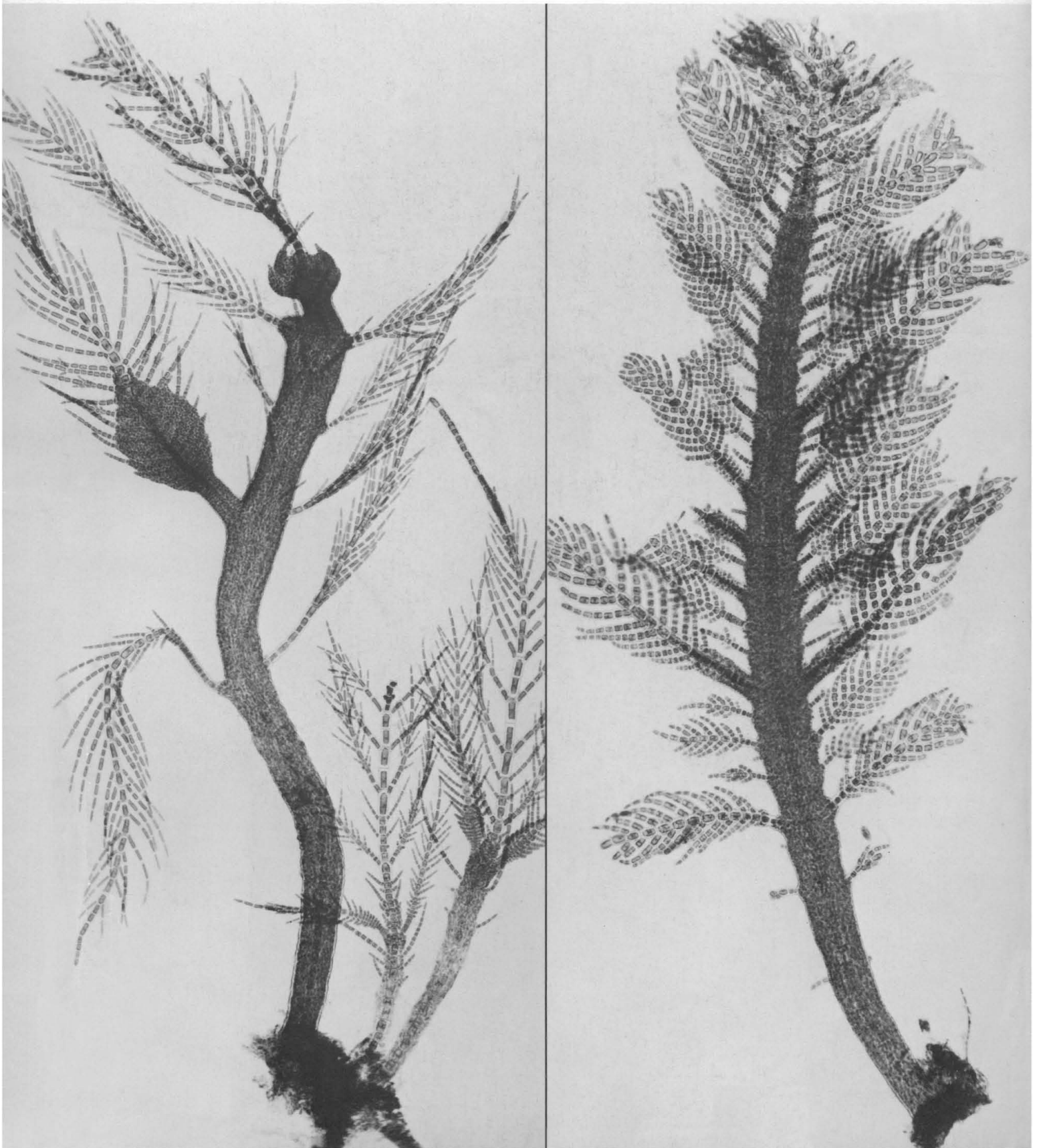


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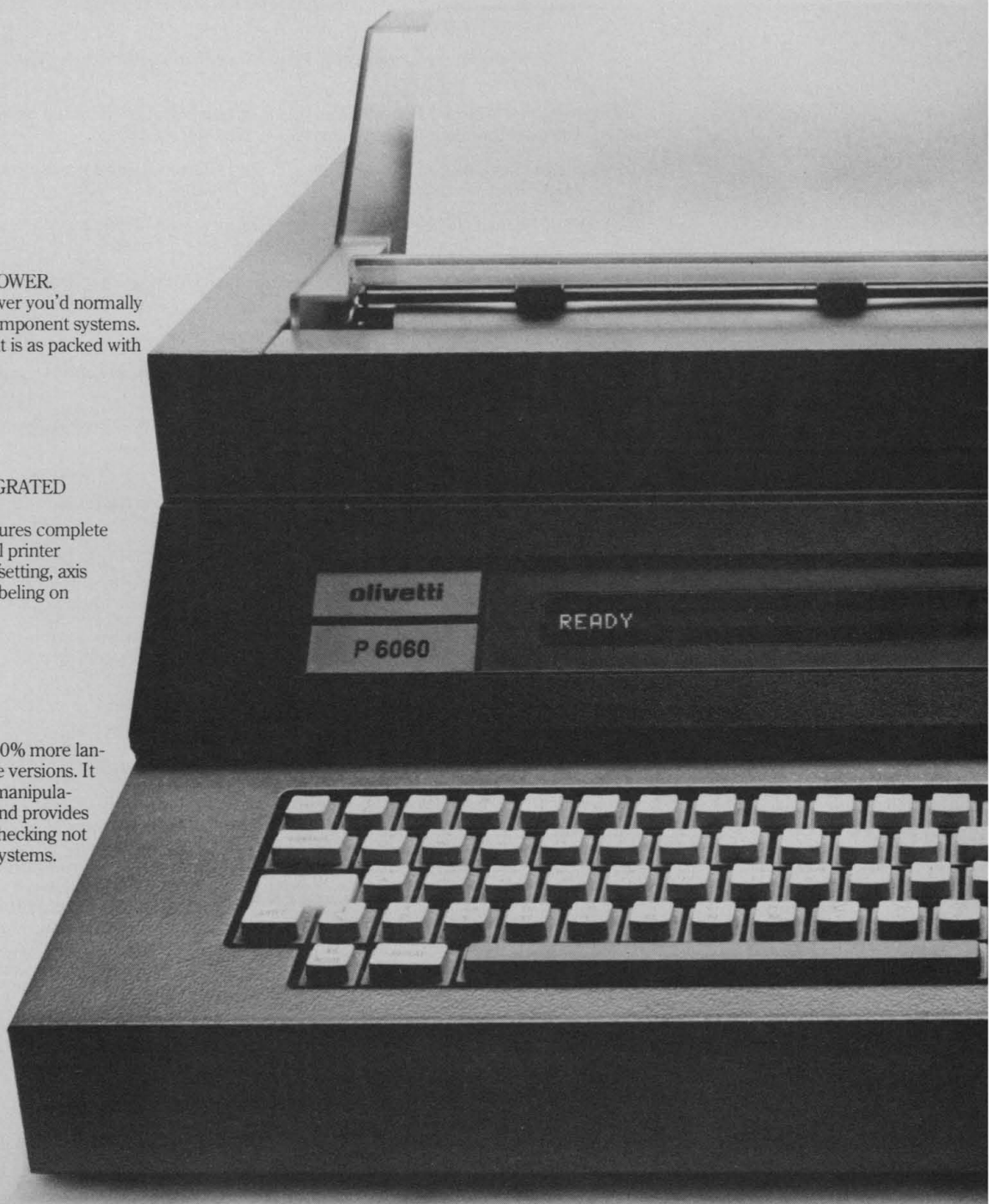
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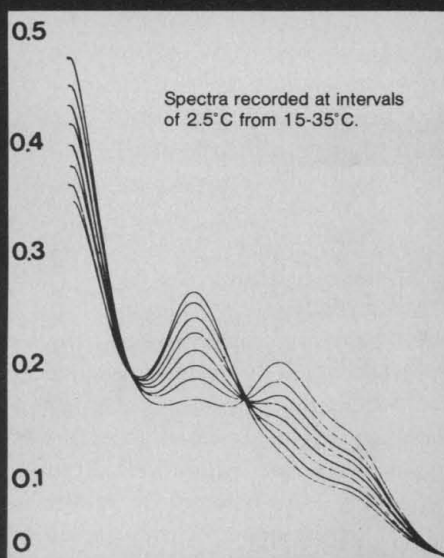
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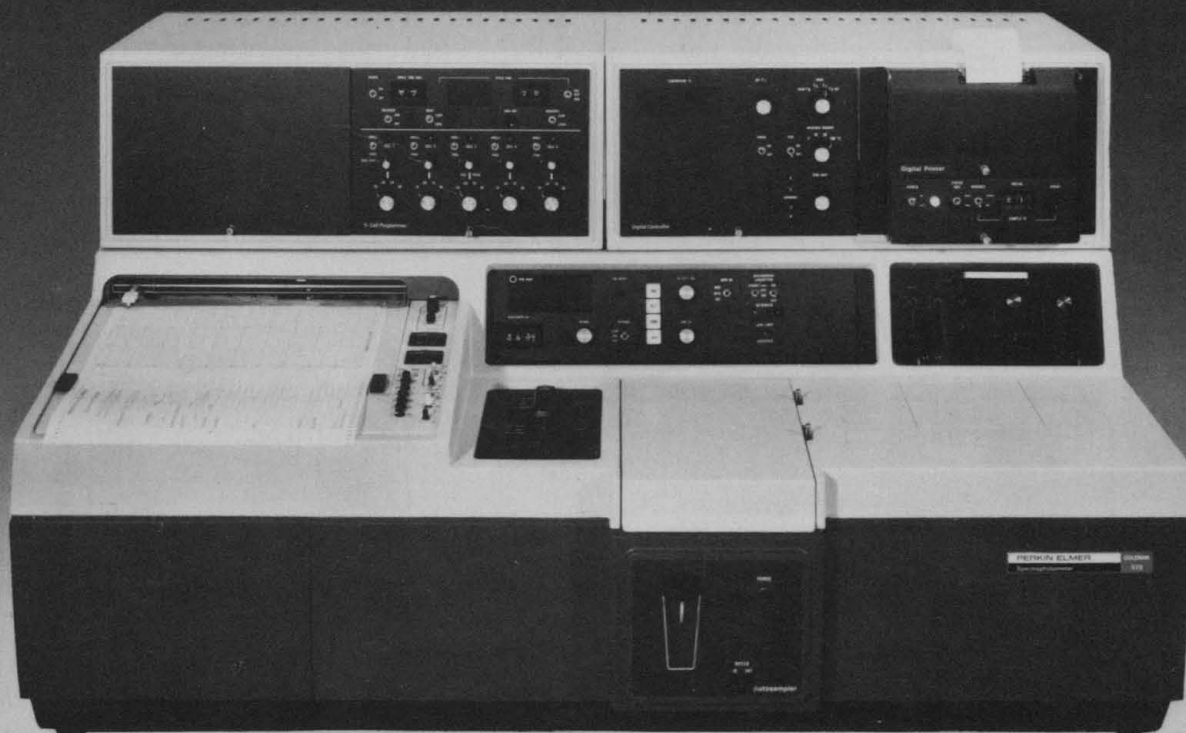
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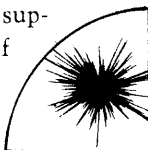
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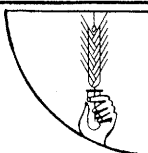
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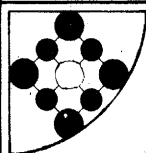
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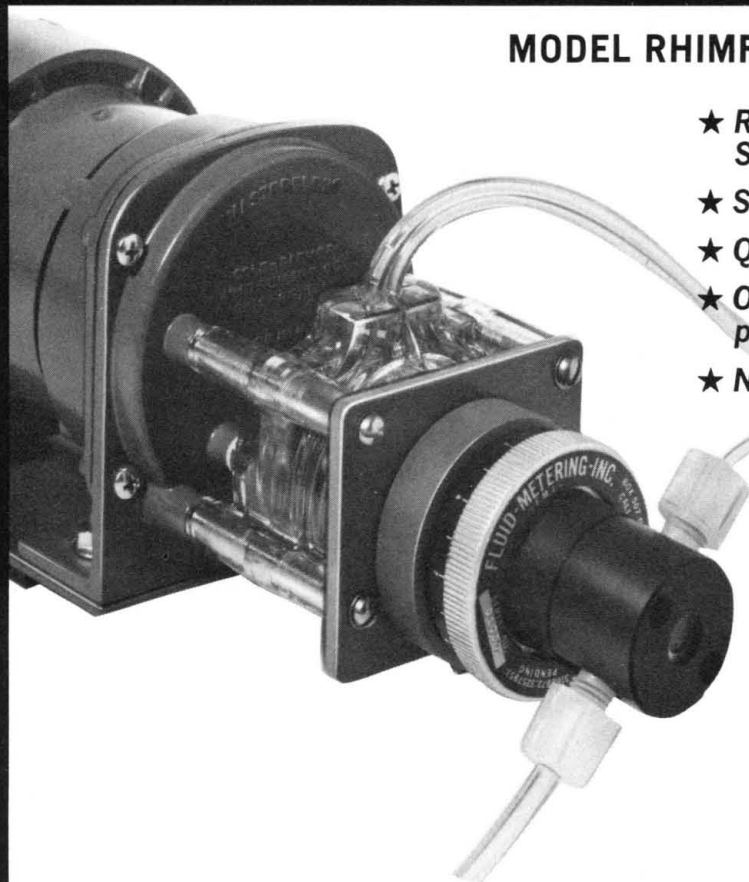
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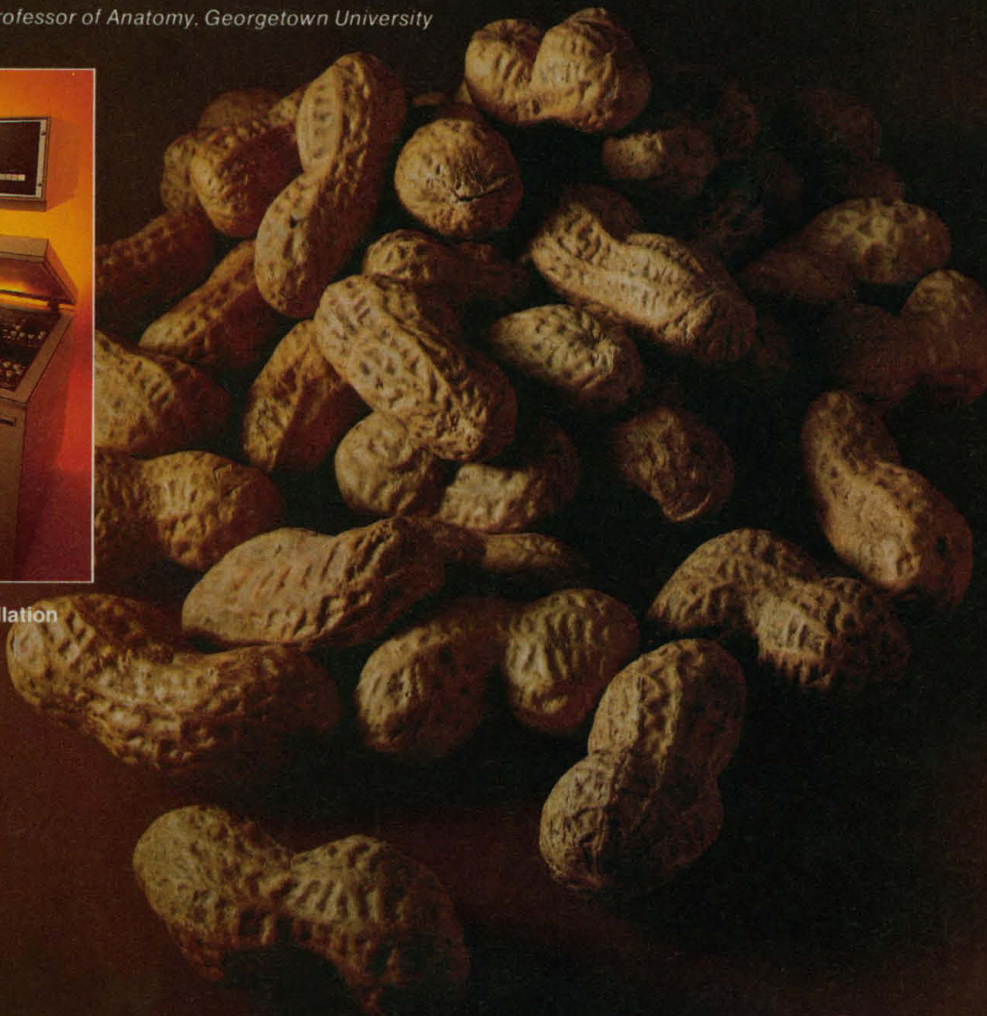
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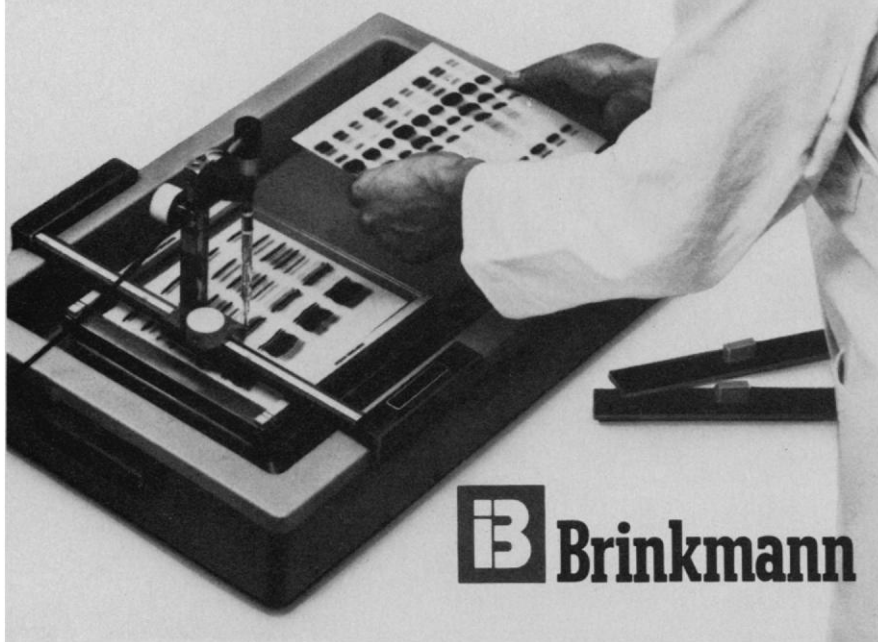
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LETTERS

The Smithsonian: Fact and Hearsay

The highly subjective and personal characterizations that appear in an article by Constance Holden about the Smithsonian Institution (*News and Comment*, 20 May, p. 857) raise philosophical questions that merit discussion.

If the purpose of *Science* is to report on the substantive aspects of science and science policy in the United States, what is the relevance of the transfer of information that is essentially hearsay? Of what importance, in terms of examining the competence of the Smithsonian's programs in the arts, science, and history, are reportorial observations concerning the ages, height, or ethnic origins of S. Dillon Ripley's associates? Or, in terms of Ripley's competence and abilities as an ornithologist-ecologist and as Secretary of the Institution, does it matter whether he prefers champagne or Coke?

I should also like to point out several factual errors in the article. Reference is made to the "purchase" by the Smithsonian of the Cooper Union museum's collection. The fact is that the Smithsonian acquired these collections by transfer without payment, just as it acquired the mansion to house them, as a gift. The article states that the Smithsonian's first Secretary, Joseph Henry, "had been seeking the creation of a federal research university." Historians say that Henry was interested in establishing a research institute funded by James Smithson's bequest.

Finally, the article refers to some observers' suggestions that the Smithsonian Research Foundation was a case of the "Smithsonian willfully arranging matters so it could do just what the 1966 law was designed to prevent it from doing." On the contrary, the Research Foundation was established as a mechanism for funding research previously supported by the National Science Foundation, which was precluded from giving grants to individual Smithsonian scientists and to those of other federal agencies by the Independent Appropriations Act of 1966. Since then, the Smithsonian has requested and received such research funds from Congress.

The Smithsonian appreciates the continuing support of the scientific community in its efforts to increase and diffuse knowledge since its establishment in 1846.

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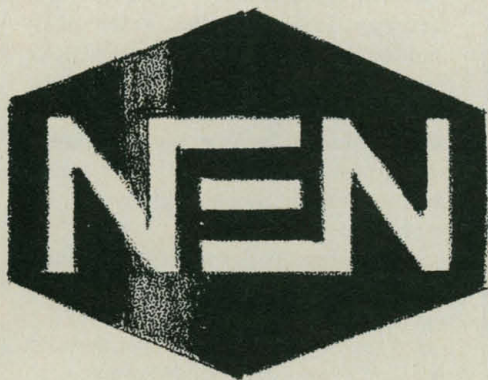
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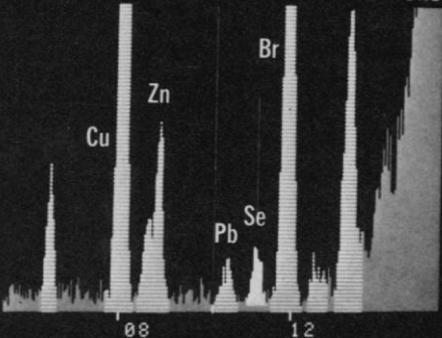
In this instance, the Kevex X-ray energy spectrometer measured the zinc-to-copper ratio and selenium concentration in two microliters of human breast fluid. A recent study shows a positive correlation between coronary mortality in 47 U.S. cities and the ratio of zinc-to-copper in cow milk of those areas. The connection between low cancer rate and high selenium diet was also reported for both cancer of the colon and breast cancer. (C & E News May 3, 1976.)

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ASM on Recombinant DNA

Although recombinant DNA research has been extensively reported in the scientific and lay press, there has been surprisingly little input from individuals or organizations accustomed to dealing with hazardous microorganisms. Consequently, at the request of the National Institutes of Health, a special American Society for Microbiology (ASM) ad hoc committee under the chairmanship of Harold Ginsberg carried out an independent review of the NIH guidelines. Their report that the guidelines provided proper and adequate procedures for handling hazardous bacteria was accepted by the ASM Council Policy Committee last November. There is at present no demonstrated evidence that microorganisms containing recombinant DNA molecules are hazardous. However, because federal legislation concerning the production and use of recombinant DNA molecules is under active consideration, and in the event that such legislation is passed, the ASM Council unanimously approved the following at its annual meeting in New Orleans on 8 May 1977.

1) All responsibility for regulating actions relative to the production or use of recombinant DNA molecules should be vested in HEW.

2) To advise and assist the Secretary of HEW, an advisory committee should be established whose membership, in addition to lay people, should include representatives with appropriate technical expertise in this field.

3) Institutions and not individuals should be licensed.

4) At each institution engaged in recombinant DNA activities, to the maximum extent possible, direct regulatory responsibility should be delegated to the local biohazard committee. These committees should include both members with expertise appropriate to the activities conducted at that institution and representatives of the public.

5) Experiments requiring PI containment should be exempt from these regulations.

6) License removal is an effective and sufficient deterrent to obtain compliance. Further ASM is opposed to the bonding of scientists or the establishing of individual strict liability clauses in the conduct of recombinant DNA activities.

7) ASM goes on record as favoring uniform national standards governing recombinant DNA activities.

8) The Secretary of HEW should have the flexibility to modify the regulations as further information becomes available. Further, we support the inclusion of a sunset clause in the legislation—that

is, that legislation will be reevaluated after a fixed period of time.

9) Such important legislation governing research should proceed only after due and careful deliberation.

HARLYN O. HALVORSON*

*Rosenstiel Basic Medical Sciences
Research Center, Brandeis University,
Waltham, Massachusetts 02154*

*President, American Society for Microbiology, 1977.

Long-Sentence Obscurantism?

Science's news writers are becoming long-sentence obscurantists. I sampled the first 32 sentences of each staff writer in the 1 April 1977 issue, skipping footnotes and wholly quotation sentences. Results follow.

Writer	Page	Words per sentence	
		Mean	Range
Abelson	13	21.6	6-41
Boffey	35	28.0	5-62
Culliton	37	22.2	7-58
Metz	43	34.8	15-64
Wade	39	33.5	10-121
Walsh	40	28.5	13-61

Interpretation of these results is difficult and their cause remains veiled. The sentence-lengthening trend is not particular to *Science* but seems ubiquitous (unpublished observations). The editor of *Science* himself once had a lower mean (not shown). It is not clear why his good example has not been followed. As indicated by the data, some staffers are more prone than others to the insidious phenomenon. This trend may reflect our overall cultural drift to irrelevancy and complexity, discussed elsewhere (1).

I admit that this is a small, arbitrary sample based on a simplistic method. More revealing and perhaps more related to hedonic tone and comprehension in readers is a long-windedness profile (LP), that is, a frequency diagram of sentence length. One simply plots the number of sentences in each length class (the classes having increments of, say, five words).

It is recommended that periodic LP determinations be instituted on each writer to help control the phenomenon. The LP is an efficient corrective measure when self-administered.

R. GRANTHAM

*Laboratoire de Biométrie, Université
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Malaria Vaccines

Thomas H. Maugh's article on malaria (Research News, 22 Apr., p. 413) is an excellent and timely summary. However, there is a significant omission concerning the development of potential human malaria vaccines.

Under the sponsorship of the Agency for International Development, we have been working to establish the feasibility of malaria vaccination and antigen production. The work was begun at the University of Illinois in 1966 and transferred to the University of New Mexico in 1972.

We have shown that a lyophilized preparation from the erythrocytic stages of the malarial organism can effectively immunize rhesus monkeys against the highly virulent simian malaria, *Plasmodium knowlesi* (1). The vaccine has been partially purified by column chromatography and characterized both biochemically (2) and ultrastructurally (3). It can be stored for long periods of time and, in a recent comparative test, a 6-month-old freeze-dried preparation was more effective than a freshly prepared merozoite vaccine (4). We have also shown that our vaccine can stimulate a protective effect for up to 4 years after immunization, even when the vaccinated monkey is challenged with heterologous strains (5).

In addition, we have demonstrated that Freund's complete adjuvant can be replaced with a combination of a vegetable oil (adjuvant 65) mixed with bacillus Calmette-Guérin (6). These components are acceptable for human use.

Clarence Speer, formerly of our group and now at the University of Montana, has also demonstrated the possibility of culturing the erythrocytic stages of the malarial organism in cultured nucleated cells in vitro (7). This method introduces the possibility of developing a continuous culture system free of hemoglobin and of any viral contaminants associated with the continuous addition of fresh human red cells, as would be the case in the Trager-Jensen system.

PAUL H. SILVERMAN

Department of Biology, University of New Mexico, Albuquerque 87131

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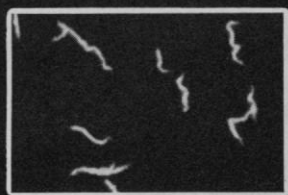
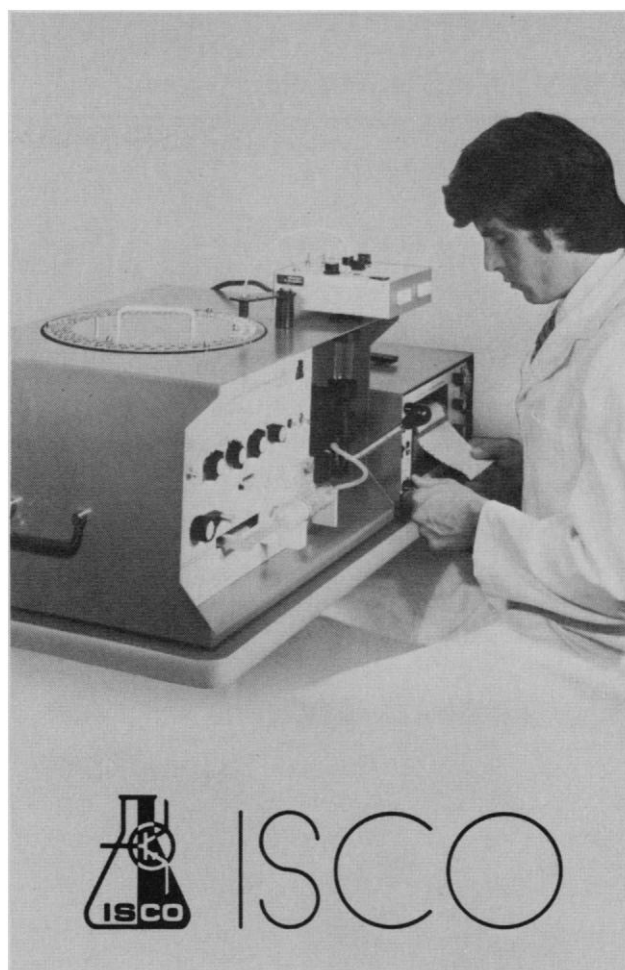
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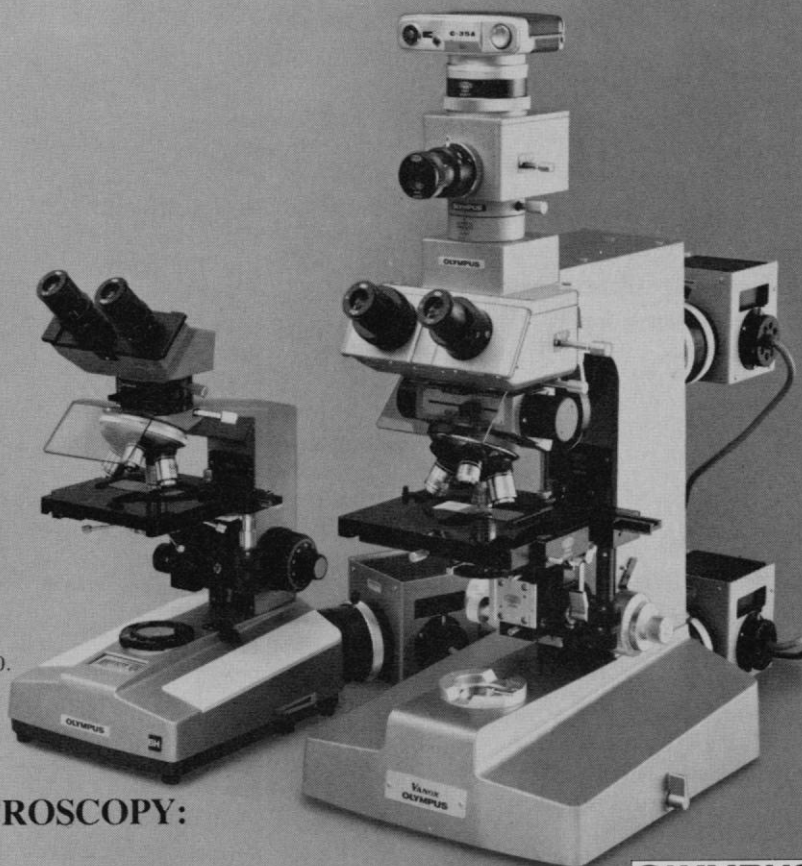
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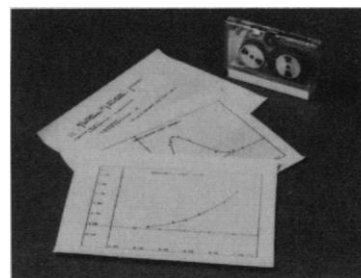
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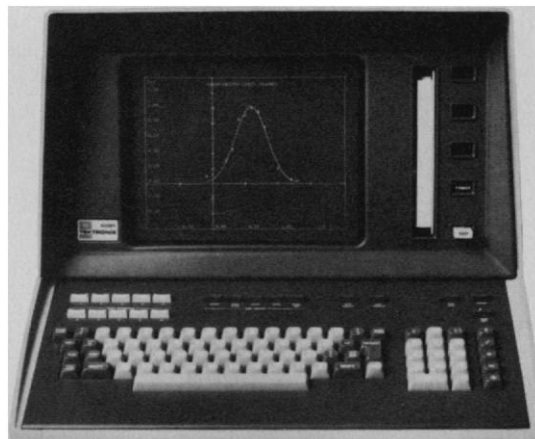
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Energy Conservation Is Not Enough

President Carter's National Energy Plan* is fated to be modified. Mr. Carter made an important contribution by emphasizing the need for action, by giving top priority to conservation, by calling for substitution of coal for oil and gas, and by pushing for a strategic oil reserve. However, the legislation requested is complex and controversial. The public might have accepted a gas guzzler tax and a gasoline tax if proceeds were used to expand energy sources. But the coupling of energy and income redistribution has elicited a strong negative response. Some congressmen report that mail has been running as much as 9 to 1 against the gasoline tax.

Controversial proposals affecting automobiles have captured public attention while other features of the National Energy Plan have been neglected. A questionable feature of the Plan is its treatment of the problems of producing sufficient energy to meet national needs during the next decade. Mr. Carter projects an increase in the gross national product of 46 percent by 1985. At the same time the Plan calls for an increase in use of energy of 33 percent. Up to the present there has been a one-to-one correlation between energy use and GNP. Ultimately, through conservation, the two variables will be partially decoupled, but that can come only slowly. Also questionable are assumptions with respect to the supplies of energy that will be available. One prediction of the Plan is that generation of electricity by use of nuclear reactors will increase by a factor of 3.8 by 1985. Other sources believe that generation will at best triple.

The crucial energy sources will be oil and natural gas. We derive 75 percent of our energy from these sources, and the economy is tightly dependent on them. Reserves of both have been dropping at the rate of 6 percent per year. Last year oil reserves fell to 30.9 billion barrels; 2.8 billion barrels of domestic oil were consumed. This was offset by 1.1 billion barrels of additions, most of them discoveries in existing fields or mere bookkeeping adjustments. Only 0.068 billion barrels were found in new fields. At the same time, gas reserves fell to 216 trillion cubic feet while 19.5 trillion cubic feet were produced. An offsetting 7.6 trillion cubic feet were added, but of these only 1.4 trillion cubic feet were in new fields.†

Last year's attrition of oil and gas reserves is a continuation of long-term trends. In the face of this, the National Energy Plan predicts that in 1985 the total amount of energy available from domestic oil and gas will equal that available this year. Such optimism might be justified if the Plan provided substantially increased incentives for creation of new supplies.

However, on balance, the proposals of the National Energy Plan are mildly discouraging to the production of more coal, gas, or oil. For examples, major users of low-sulfur coal are to be required to employ costly and troublesome sulfur dioxide scrubbers. The price of intrastate natural gas is to be reduced. Environmental considerations are likely to delay further exploration of the outer continental shelves.

One of the especially meritorious proposals of the Plan is substitution of coal for oil and gas. However, there is little in the Plan except tax provisions that would be helpful in bringing about the substitution. The enormous practical problems of obtaining more supplies, adapting equipment to coal, and meeting environmental standards are not addressed. There is no provision for expediting major projects to obtain clean fuels from coal.

An important element that is missing from the Plan was pointed out by President Carter. The missing element is inspiration. There is no basis in the Plan for the public to hope that America's technological capabilities will be effectively marshaled to help solve a deepening energy deficit. Moreover, those abroad who have looked to the United States for technological leadership in this great crisis must turn elsewhere.—PHILIP H. ABELSON

*Executive Office of the President, Energy Policy and Planning, *The National Energy Plan* (Government Printing Office, Washington, D.C., 1977). †*Oil & Gas Journal*, 18 April 1977, p. 19.

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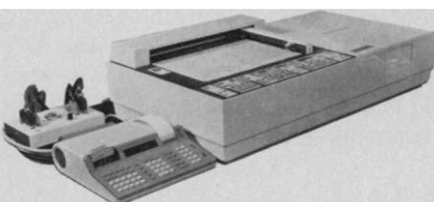
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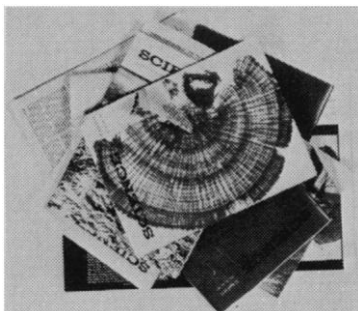
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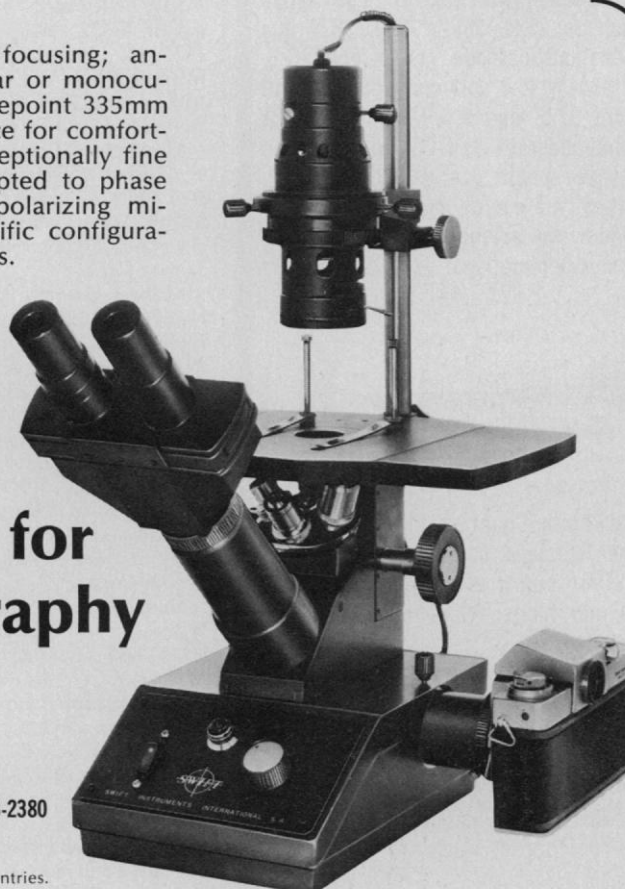
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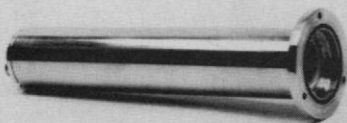
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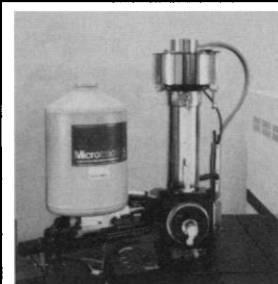
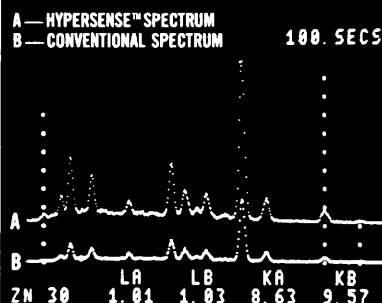
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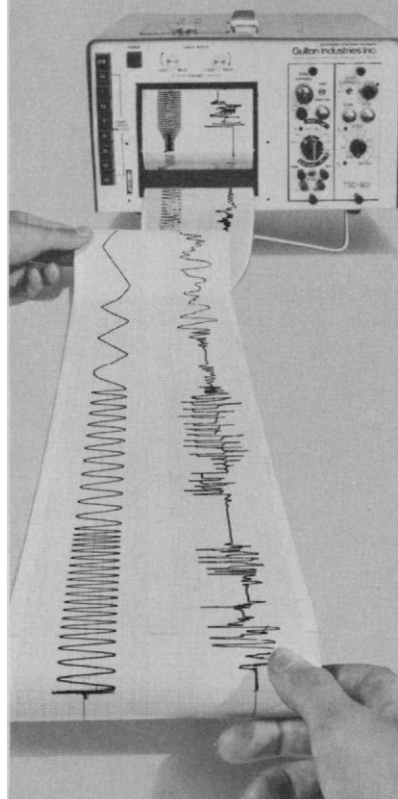
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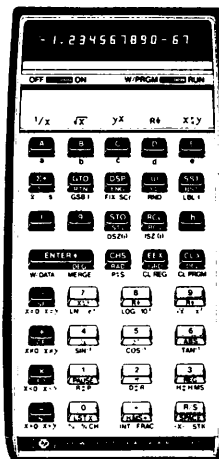
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