Instructions for Contributors

The Editors of *Science*

Manuscripts submitted to *Science* for consideration for publication can be handled expeditiously if they are prepared in the form described in these instructions.

Submit an original and two duplicates of each manuscript. With the manuscript send a letter of transmittal giving (i) the name(s) of the author(s); (ii) the title of the paper and a one- or two-sentence statement of its main point; (iii) the name, address, and field of interest of 4 to 6 persons outside your institution who you think are qualified to act as referees for your paper; (iv) the field(s) of interest of readers who you anticipate will wish to read your paper.

Editorial Policies

All papers submitted are considered for publication. The author's membership or lack of membership in the AAAS is not a factor in selection. Papers are accepted with the understanding that they have not been published, submitted, or accepted for publication elsewhere. Authors will usually be notified of acceptance, rejection, or need for revision in 4 to 6 weeks (Reports) or 6 to 10 weeks (Articles).

Types of papers. Five types of signed papers are published: Articles, Reports, Letters, Technical Comments, and Book Reviews. Familiarize yourself with the general form of the type of paper you wish to submit by looking over a recent issue of the journal, and then follow the instructions for that type of paper.

Reviews. Almost all Articles, Reports, and Technical Comments, whether solicited or not, are sent to two or more outside referees for evaluation of their significance and soundness. Forms showing some of the criteria reviewers are expected to consider are available on request.

Editing. Papers are edited to improve the effectiveness of communication between the author and his readers. The most important goal is to eliminate ambiguities. In addition, improvement of sentence structure often permits readers to absorb salient ideas quickly. When editing is extensive, with consequent danger of altered meanings, papers are returned to the author for correction and approval before type is set. Authors are free to make additional changes at this stage.

Proofs. One set of galley proofs or an equivalent is provided for each paper. Keep alterations to a minimum, and mark them only on the galley, not on the manuscript. Extensive alterations may delay publication by 2 to 4 weeks.

Reprints. An order blank for reprints accompanies proofs.

Writing Papers

Organize your material carefully, putting the news of your finding or a statement of the problem first, supporting details and arguments second. Make sure that the significance of your work will be apparent to readers outside your field, even if you feel you are explaining too much to your colleagues. Present each step in terms of the purpose it serves in supporting your finding or solving the problem. Avoid chronological steps, for the purpose of the steps may not be clear to the reader until he finishes reading the paper.

Provide enough details of method and equipment so that another worker can repeat your work, but omit minute and comprehensive details which are generally known or which can be covered by citation of another paper. Use metric units of measure. If measurements were made in English units, give metric equivalents.

Avoid specialized laboratory jargon and abbreviations, but use technical terms as necessary, defining those likely to be known only in your field. Readers will skip a paper they do not understand. They should not be expected to consult a technical dictionary.

Choose the active voice more often than you choose the passive, for the passive voice usually requires more words and often obscures the agent of action. Use first person, not third; do not use first person plural when singular is appropriate. Use a good general style manual, not a specialty style manual. The University of Chicago style manual, the style manual of the American Institute of Physics, and the *Style Manual for Biological Journals*, among others, are appropriate.

Manuscripts

Prepare your manuscript in the form used by *Science*. Use bond paper for the first copy. Submit two duplicates. Double-space title, abstracts, text, signature, address, references (including the lines of a single reference), figure legends, and tables (including titles, columns, headings, body, and footnotes). Do not use single spacing anywhere. Put the name of the first author and the page number in the upper right-hand corner of every page.

Paging. Use a separate page for the title; number it page 1. Begin each major section—text, references and notes, and figure legends—on a new sheet. Put each table on a separate sheet. Place figure legends and tables after the references.

Title. Begin the title with a word useful in indexing and information retrieval (not "Effect" or "New").

References and Notes. Number all references to the literature, footnotes, and acknowledgments in a single sequence in the order in which they are cited in the text. Gather all acknowledgments into a single citation, and keep them short ("I thank," not "I wish to thank"). Cite all references and notes but do not cite them in titles or abstracts. Cite several under one number when feasible. Use *Chemical Abstracts List of Periodicals* for abbreviations of journal names. If the journal is not listed there, provide the full name. Use the following forms:

Journal: H. Smith, *Amer. J. Physiol.* **98**, 279 (1931).

Book: F. Dachille and R. Roy, *Modern Very High Pressure Techniques* (Butterworth, London, 1961), pp. 163–180.

Chapter: F. Dachille and R. Roy, in *Reactivity of Solids*, J. H. De Boer, Ed. (Elsevier, Amsterdam, 1960), p. 502.

Illustrations. Submit three copies of each diagram, graph, map, or photograph. Cite all illustrations in the text and provide a brief legend, to be set in type, for each. Do not combine line

drawings and photographs in one illustration. Do not incorporate the legend in the figure itself. Use India ink and heavy white paper or blue-lined coordinate paper for line drawings and graphs. Use heavier lines for curves than you use for the axes. Place labels parallel to the axes, using capital and lower-case letters; put units of measurement in parentheses after the label—for example, Time (sec). Plan your figures for the smallest possible printed size consistent with clarity.

Photographs should have a glossy finish, with sharp contrast between black and white areas. Indicate magnification with a scale line on the photograph.

Tables. Type each table on a separate sheet, number it with an arabic numeral, give it a title, and cite it in the text. Double space throughout. Give each column a heading. Indicate units of measure in parentheses in the heading for each column. Do not change the unit of measure within a column. Do not use vertical rules. Do not use horizontal rules other than those in the heading and at the bottom. A column containing data readily calculated from data given in other columns can usually be omitted; if such a column provides essential data, the columns containing the other data can usually be omitted.

Plan your table for small size. A one-column table may be up to 42 characters wide. Count characters by counting the widest entry in each table column (whether in the body or the heading) and allow three characters for spaces between table columns. A two-column table may be 90 characters wide.

Equations and formulas. Use quadruple spacing around all equations and formulas that are to be set off from the text. Most should be set off. Start them at the left margin. Use the solidus for simple fractions, adding the necessary parentheses. But if braces and brackets are required, use built-up fractions. Identify handwritten symbols in the margin, and give the meanings of all symbols and variables in the text immediately after the equation.

Articles

Articles, both solicited and unsolicited, may range in length from 2000 to 5000 words (up to 20 manuscript pages). Write them clearly in reasonably nontechnical language. Provide a title of one or two lines of up to 26 characters per line and a subtitle consisting of a complete sentence in two lines with a character count between 95 and 105 for the sentence (spaces between words count as one character each). Do not break words at the ends of lines. Write a brief author note, giving your position and address. Do not include acknowledgments. Place title, subtitle, and author note on page 1. Begin the text on page 2.

Insert subheads at appropriate places in the text to mark your main ideas. The set of subheads should show that your ideas are presented in a logical order. Keep subheads short—up to 35 characters and spaces.

Provide a summary at the end.

Do not submit more than one illustration (table or figure) for each 4 manuscript pages unless you have planned carefully for grouping. With such planning many illustrations can be accommodated in the article. Consult the editorial office for help in planning.

Reports

Short reports of current research results may vary in length from one to six double-spaced manuscript pages of text. The shorter papers receive preferred treatment. Limit illustrative material (both tables and figures) to one item for each three manuscript pages. Three items is the maximum. A research report should have news value for the scientific community or be of unusual interest to the specialist or of broad interest because of its interdisciplinary nature. It should contain solid research results or reliable theoretical calculations. Speculations should be limited and is permissible only when accompanied by solid work.

Title. Begin the title with an important word (preferably a noun) that is likely to be useful to indexers. The title may be a conventional one (composed primarily of nouns and adjectives), a sentence (containing a verb) or a structure with a colon (Nictitating Membrane: Classical Conditioning and Extinction in the Albino Rabbit). Limit it to three lines of complete words of no more than 32 characters per line (spaces between words count as one character each). Do not use abbreviations. Type the title in the middle of page 1.

Abstract. Provide an abstract of 45 to 55 words on page 2. The abstract should amplify the title but should not repeat it or phrases in it. Qualifying words for terms used in the title may be used. Tell the results of the work, but not in terms such as "——— was found," "is described," or "is presented."

Text. Begin the text on page 3. Put the news first. Do not refer to unpublished work or discuss your plans for further work. If your paper is a short report of work covered in a longer paper to be published in a specialty journal, you may refer to this paper if it has been accepted. Name the journal. If the manuscript has not been accepted, refer to it as "in preparation." Omit references to private communications. Do not use subheads.

Signature. List the authors on the last page of the text and give a simple mailing address.

Received dates. Each report will be dated the day an acceptable version is received in the editorial office.

Letters

The Letters section provides a forum for discussion of matters of general interest to scientists. Letters are judged only on clarity of expression and interest. Keep them short and to the point; the preferred length is 250 words. The editors frequently shorten letters.

Technical Comments

Letters concerning technical papers in *Science* are published as Technical Comments at the end of the Reports section. They may add information or point out deficiencies. Reviews are obtained before acceptance.

Book Reviews

The selection of books to be reviewed is made by the editors with the help of advisers in the various specialties; arrangements are then made with reviewers. A sheet of instructions accompanies each book when it is sent to the reviewer.

Cover Photographs

Particularly good photographs suitable for use on the cover are desired.

SCIENCE

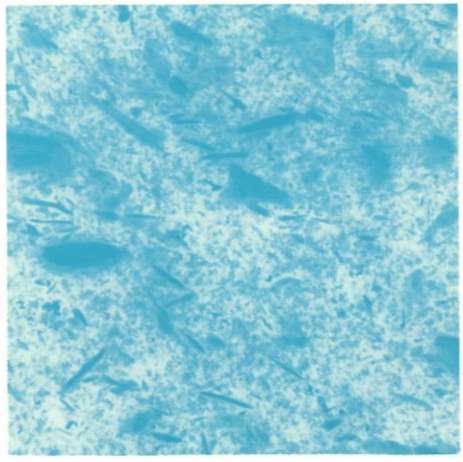
2 October 1970

Vol. 170, No. 3953

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

CryoKit

Low Temperature Ultramicrotomy



Add the CryoKit to your Ultrotome and you can freeze and section specimens in no time.

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By adding the CryoKit to the Ultrotome, you have two instruments in one, to do normal room temperature sectioning as well as lowtemperature sectioning.

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Sales and service in USA: New York, Boston, Washington, Chicago, St. Louis, Atlanta, Houston, Los Angeles; in Europe: Stockholm, The Hague, Copenhagen, Rome, Vienna, London; and throughout the world.

Micrograph A

Detail of nephron proximal cell from mouse kidney. Prepared and sectioned with CryoKit and Ultrotome Temp.: specimen -140° C, knife -60° C.

Micrograph B

Red rubber tubing. Prepared and sectioned with CryoKit and Ultrotome. Temp.: specimen -80° C, knife -110° C.

14800-A 14 - 11

Only the Nikon Model M has a time-lapse exposure system that automatically adjusts for both the lighting and density of your culture. Once set up, the Nikon Model M literally works by itself, recording uniform exposures of your tissue culture. All through the night and day.

Our secret is the unique Nikon CFMA microflex attachment that integrates the functions of an intervalometer, motor drive and automatic exposure control with computer-like efficiency. So small it's hidden behind the camera.

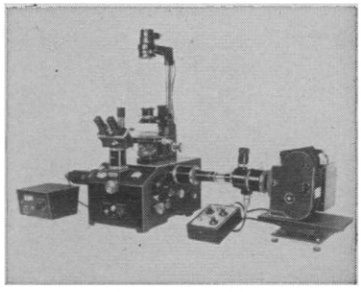
But that's not all. There's Nikon's impressive dual optics which permit simultaneous observation, cinemicrography and still photomicrography. You can see and manipulate the culture at eye level and take pictures at the same time.

There's rock-like stability assuring vibration-free photographic results with easy accommodation of flasks, petri dishes, culture chambers and incubators.

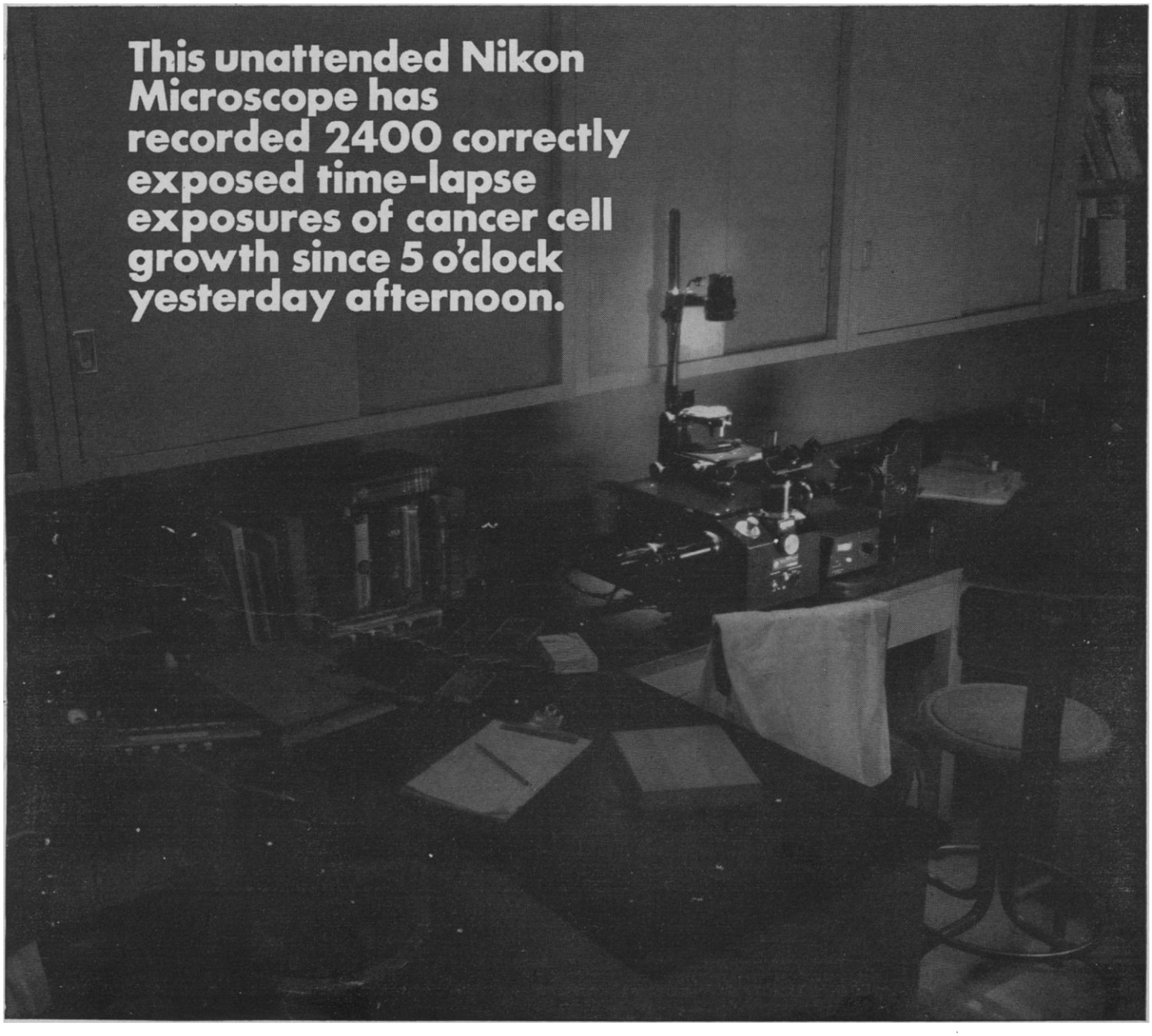
There's the wide variety of Nikon attachments—the data illuminator, the long working distance phase contrast condensers, the differential interference contrast attachment and the interference phase attachment—all exclusively devised for the Model M. And like all Nikon optical instruments, the focusing controls are located for easy, precise adjustments.

Then there's the extra plus of our quartz-iodine lamp which permits shorter exposure times without having to use electronic flash for stop motion photography.

In fact, the Nikon Model M is the kind of microscope you'd probably design for yourself. Write for information to: Nikon, Inc., Instrument Division, Subsidiary of Ehrenreich Photo-Optical Industries, Inc., Garden City, New York 11530. (516) 248-5200. (In Canada: Anglophoto Ltd., Ontario)



Nikon M Inverted Microscope



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COVER

Male gypsy moth, exhibiting excitement, while held by wings on rack in laboratory during bioassay of female sex attractant. See page 87. [Lawrence M. Rana, U.S. Department of Agriculture]

The x-ray energy analysis sys sixth sense for your scanning

Adding an x-ray energy analysis system to your scanning electron microscope is a little like adding intuition to vision. It provides a whole new range of insights into observable detail.

With it, you can detect the distribution of any given element throughout your sample (above atomic number 10).

Or determine the elemental composition of any spot or line scan on the specimen.

In just a few minutes. Without interfering in any way with the normal operation of the scope.

Its potential is enormous.

Fractures, cultures, and junctions

For example, if you're a metallurgist, you can study the distribution of elements in an alloy. Observe composition changes in fractures. Evaluate welding and bonding techniques, locating layers of similar materials with great precision.

If you're in the life sciences, you can discern the various elements in tissue. Detect concentrations of tracers. Follow changes in cultures.

Or, if you work with semiconductors, you can inspect devices for purity, junction location, etch accuracy, doping consistency. You can run the whole gamut of tests required to assure the quality control of your product.

As you can see, there are some great possibilities.

There are also some pitfalls.

To avoid them, it helps to know what to look for in an x-ray energy analysis system.

Si(Li) and MCA

When a sample is bombarded with electrons, it emits x-rays which are characteristic of the elements it comprises.

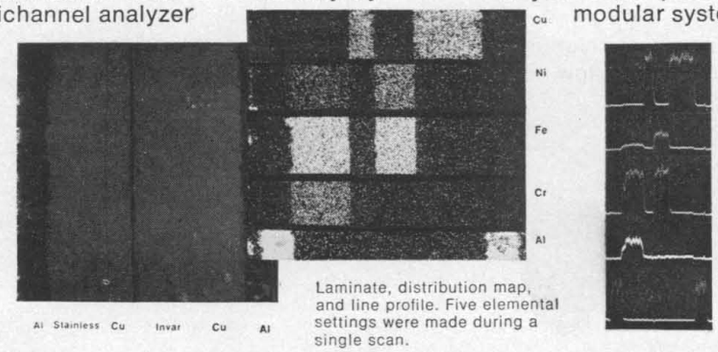
The x-ray energy analysis system detects these x-rays with a lithium-doped silicon—Si(Li)—crystal, operated at cryogenic temperatures.

It then sorts the x-rays according to their energies, and displays the resulting spectrum on its CRT or accompanying strip-chart recorder.

This sorting process is done electronically by means of a multichannel analyzer (MCA).

To produce a distribution map, the system is adjusted to permit only a single energy level to produce an output pulse. This pulse is used to intensity-modulate the SEM display tube in the usual manner as the specimen is scanned.

This same pulse can be applied to the display CRT's deflection (Y) plates to produce a profile of the signal for semiquantitative purposes.



Laminate, distribution map, and line profile. Five elemental settings were made during a single scan.

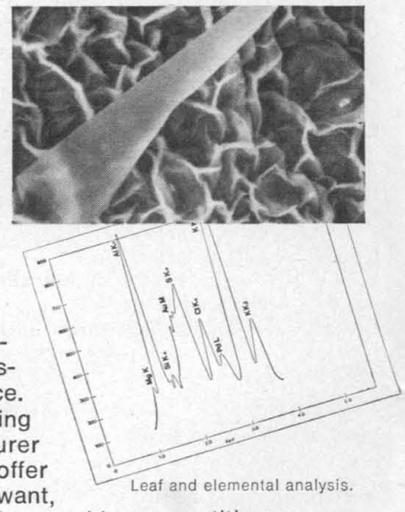
How do you know what good is?

Check the resolution spec.

Resolution, as we use it, is expressed in electron volts (eV), and smaller is better.

Why? A smaller figure enables you to move farther down on the periodic table of elements in your ability to distinguish between—or resolve—two elements of adjacent atomic number.

It's also an indication of sensitivity: the lower the number, the more sensitive your system is to trace quantities of an element.



Leaf and elemental analysis.

It is *not* an indication of spatial resolution. Spatial resolution is a function of microscope parameters and specimen material, and is about ¼-½ μ for x-ray analysis.

Needless to say, the better the system's energy resolution, the higher its price.

However, if you're willing to pay for it, any manufacturer in the field can probably offer you any resolution you want, down to about 150eV. At roughly competitive prices.

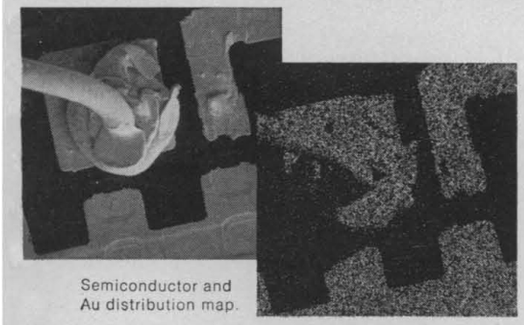
So, when you decide to buy an x-ray system, your choice of supplier has to be based on other considerations.

You could study other performance parameters: resolution versus count rate, number of analyzer channels, etc., etc.

Or you could ponder the relative merits of a modular system versus a single-unit system. (We sell modular systems, so we talk about the ability to add ratemeters, pulsers, or other functions when you want them, plus ease of maintenance.)

But in the end, there's

tem:
electron microscope



Semiconductor and
Au distribution map.

one factor which should outweigh all other considerations in your final decision.

And now a word from the sponsor

Reliability.

You must have a reliable system. If your system has better specs, or a lower price, but it doesn't work, what you have is a better-spec'd, lower-priced ornament.

And you must have a reliable supplier.

He has to deliver what he says he will, when he says he will. And he has to back it up with reliable service.

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World's largest spectrometer facility.

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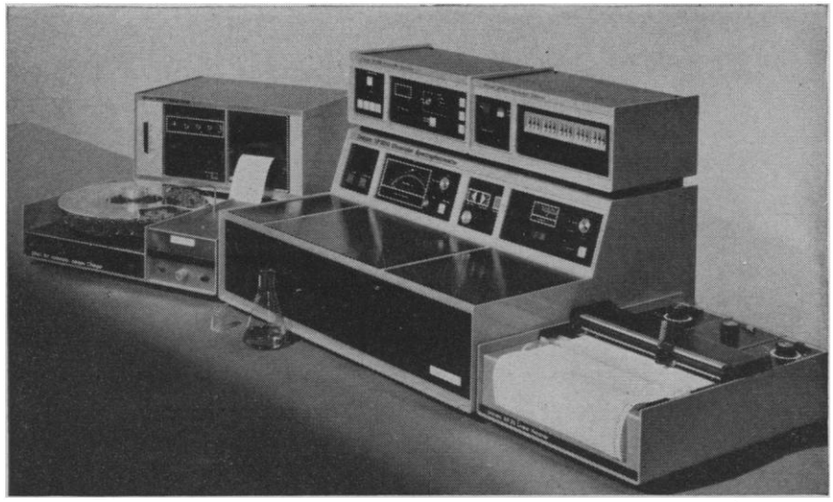
3 ways to go into analysis.



1. Unicam SP1800 Spectrophotometer

Low cost double beam grating instrument from $5,000

Four absorbance scales and concentration presentation

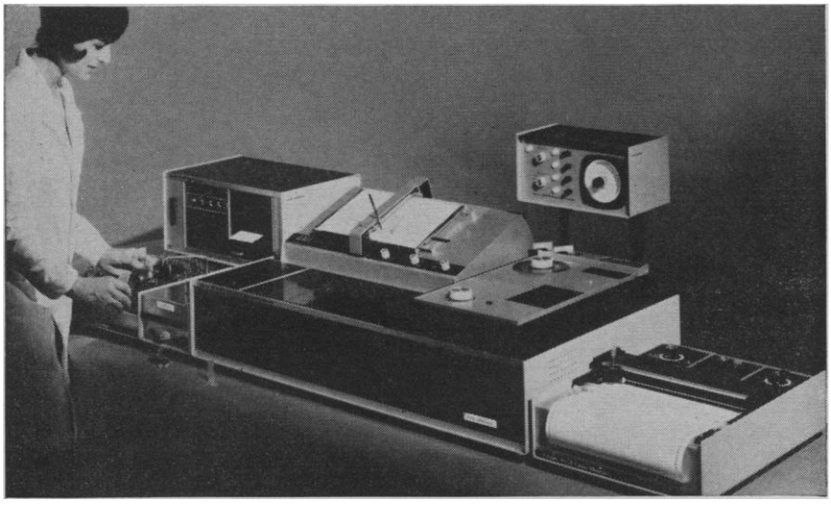
Multichannel kinetic capability

Second sample position (for turbid solutions)

Automatic wavelength selection

Digital printout

Automatic sample changer



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Exceptional kinetic capability

Second sample position

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Concentration calibration capability

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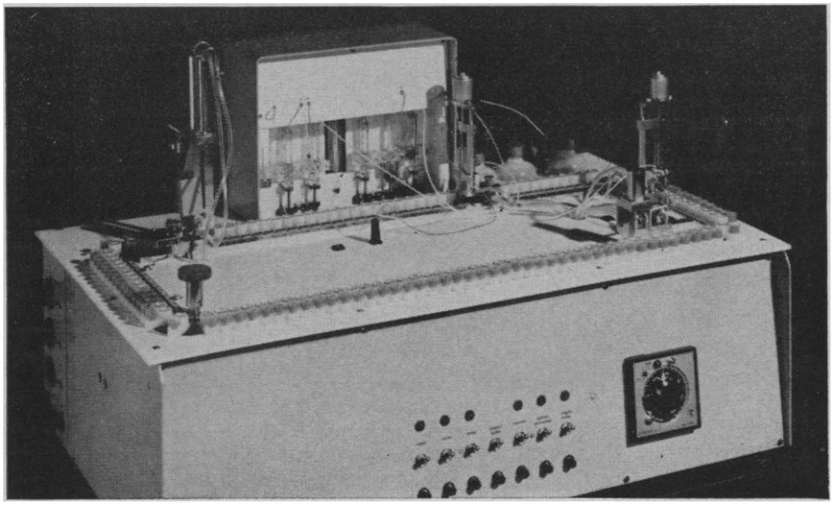
Automatic wavelength selection



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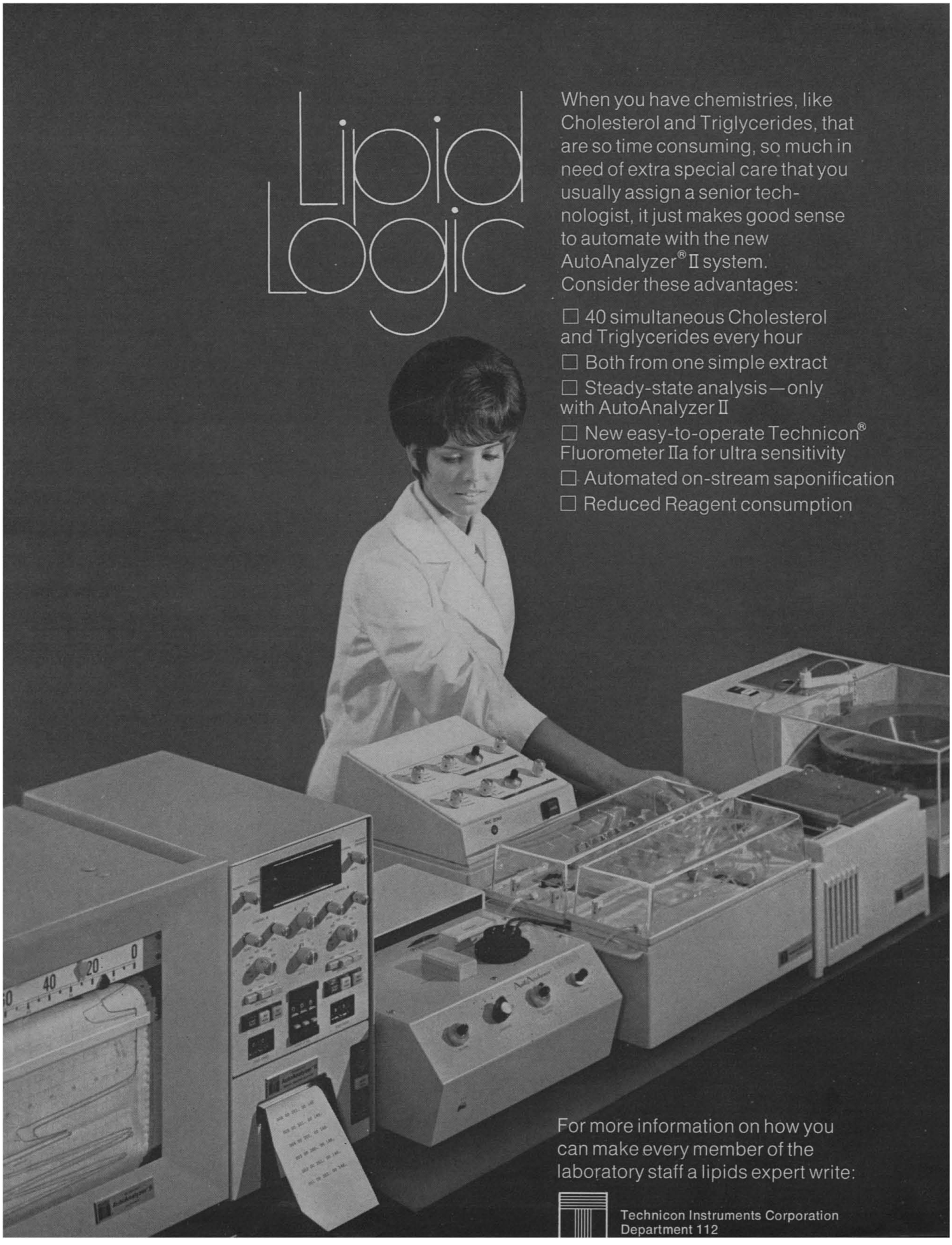
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☐ Both from one simple extract
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Just a dozen examples of what's currently new—and unbreakable —in Nalgene Labware:

New Teflon FEP Labware. 125, 250 and 500 ml transparent separatory funnels (Cat. No. 4301); 1 and 2 oz. bottles (Cat. No. 1600); 50 and 250 ml Erlenmeyer flasks (Cat. No. 4106). All Nalgene Labware of Teflon is unbreakable, autoclavable, inert to virtually every chemical, non-stick and non-wetting, withstands temperatures from −270° C to +205° C. This is practically indestructible labware!

150 mm "Personal" Desiccator. Every bench chemist and student should have his own desiccator. And here's one that's priced to make this possible in most laboratories. Unbreakable, transparent TPX cover, blue polypropylene body that no desiccant can affect. With aluminum plate or use any 140 mm plate. Only $8.95. (Cat. No. 5315).

New Dropping Bottles. The *only* unbreakable bottles that always deliver just one drop at a time—never a stream—no matter how hard you squeeze. Drops are precise, about 0.04 ml. Two styles: the Drop-Dispenser Bottle in 15 to 250 ml sizes (Cat. No. 2411). Or for those who prefer to hold the bottle in an upright position, the Unitary design in 125 and 250 ml sizes. (Cat. No. 2410). Both are polyethylene.

Quick-Action Spigot. This new design eliminates all the old plastic spigot bugaboos. Flow control is positive. Unbreakable polypropylene body won't turn when valve is opened. Furnished on all new Nalgene aspirator bottles, easily installed by you to update older models. (Cat. No. 6422).

Volumetric Flasks. The first plastic volumetric flasks—as accurate as glass, will do anything a glass flask can do except break. Autoclavable. New 50 and 200 ml sizes provide a size range from 50 to 1000 ml. Polypropylene. (Cat. No. 4000).

Rectangular Bottles. Just great if you're cramped for storage space because these versatile wide mouth bottles use ⅓ less shelf space. Unbreakable linear polyethylene, leakproof closures. From 4 to 32 oz. (Cat. No. 2007).

5-Gallon Amber Polyethylene Bottle. We have made it easier to handle and store larger volumes of light-sensitive materials. This new bottle has two carrying handles, leakproof closure. Other amber bottles in 1 oz. to 2 gal. sizes. (Cat. No. 2204).

Fernbach Culture Flask. Saves valuable cultures because this transparent, autoclavable polycarbonate flask won't break or shatter if accidentally knocked over. Wide surface area for culture growth, 2800 ml capacity. Use as a super-size Erlenmeyer flask, too. (Cat. No. 4105).

Polycarbonate Erlenmeyer Flasks. These transparent flasks have extra rigidity and strength. Autoclavable and particularly useful in clinical work. With the new 25 ml size, there are now 6 sizes from 25 to 1000 ml. (Cat. No. 4103).

Squibb Pear Shape Separatory Funnels. A new 1000 ml size for larger separations has been added to this popular line of *unbreakable* funnels. They show separation lines right down to the stopcock housing. TFE plugs eliminate the need for lubrication. Polypropylene construction resists virtually all chemicals, even HF. All models are autoclavable. From 125 to 1000 ml. (Cat. No. 4300).

Polypropylene Erlenmeyer Flasks. This popular autoclavable flask is a handy receptacle for many color change titrations and precipitations. Sizes range from new 25 ml size to 2000 ml, which is graduated in 200 ml increments. (Cat. No. 4102).

Evaporating and Titrating Dish. Unbreakable polypropylene with opaque white color that provides an excellent background for color titrations. Resists fluoride solutions and HF, can be used with infrared heat to 135° C. Spout designed for easy pouring, even into tiny openings. (Cat. No. 5520).

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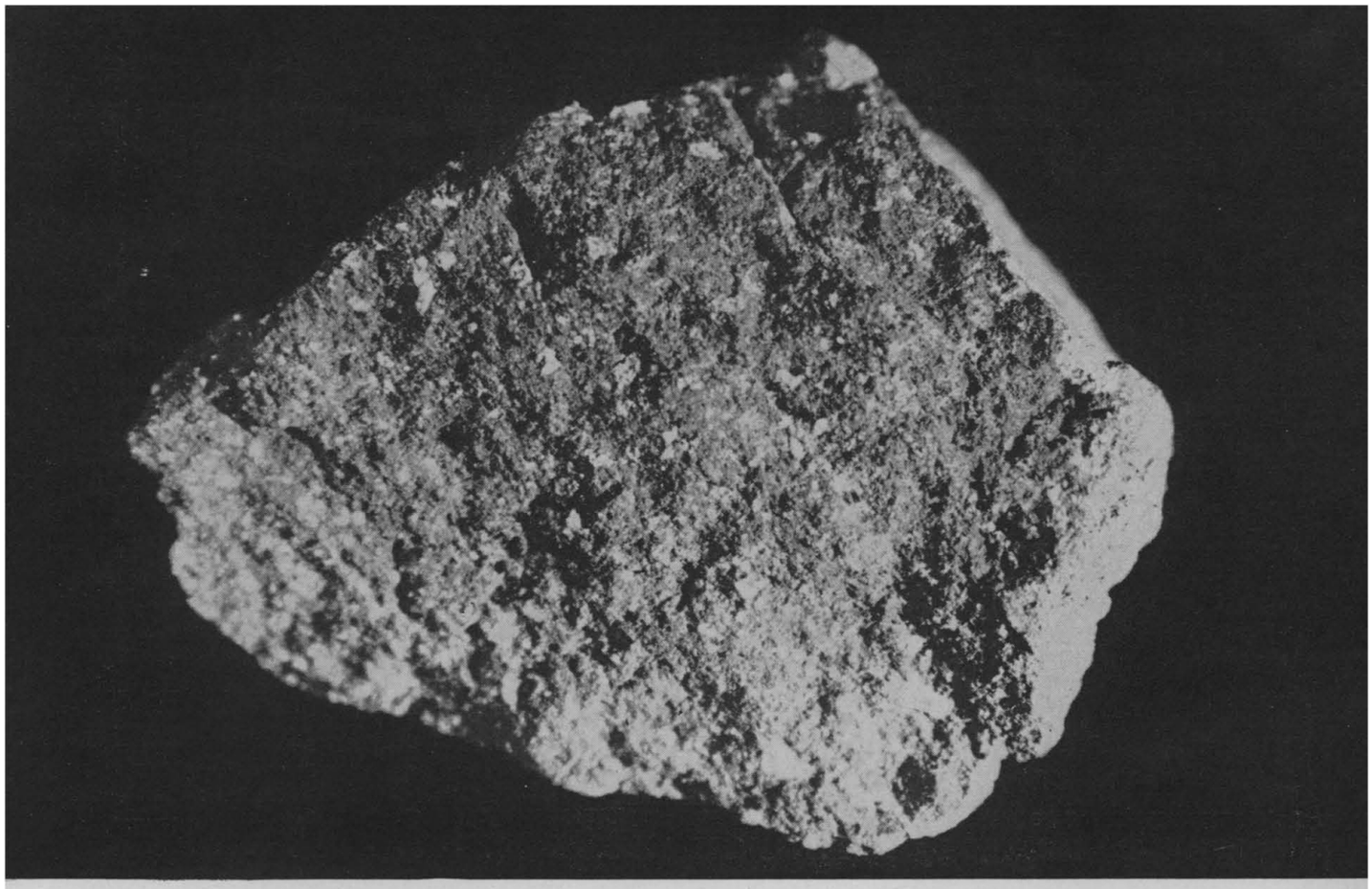
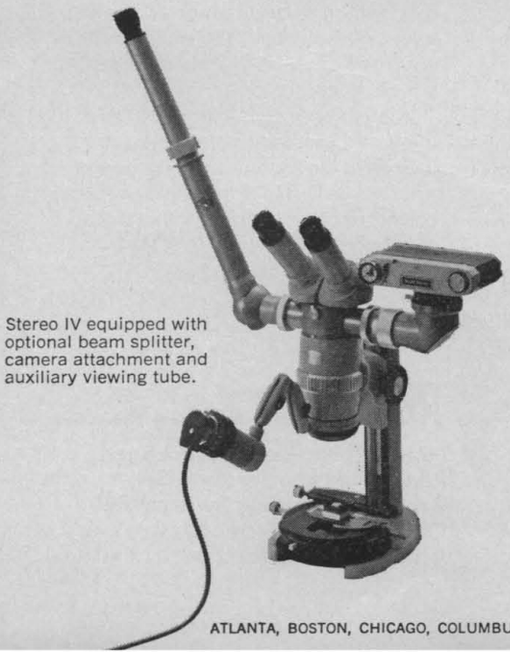


When lunar rock was first studied, the Zeiss Stereomicroscope was set up like this.



Stereo IV equipped with optional beam splitter, camera attachment and auxiliary viewing tube.

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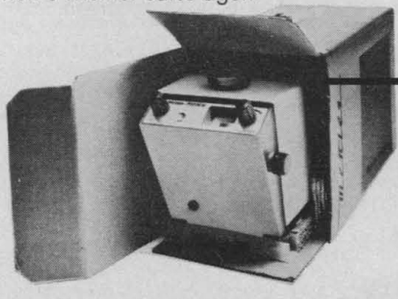

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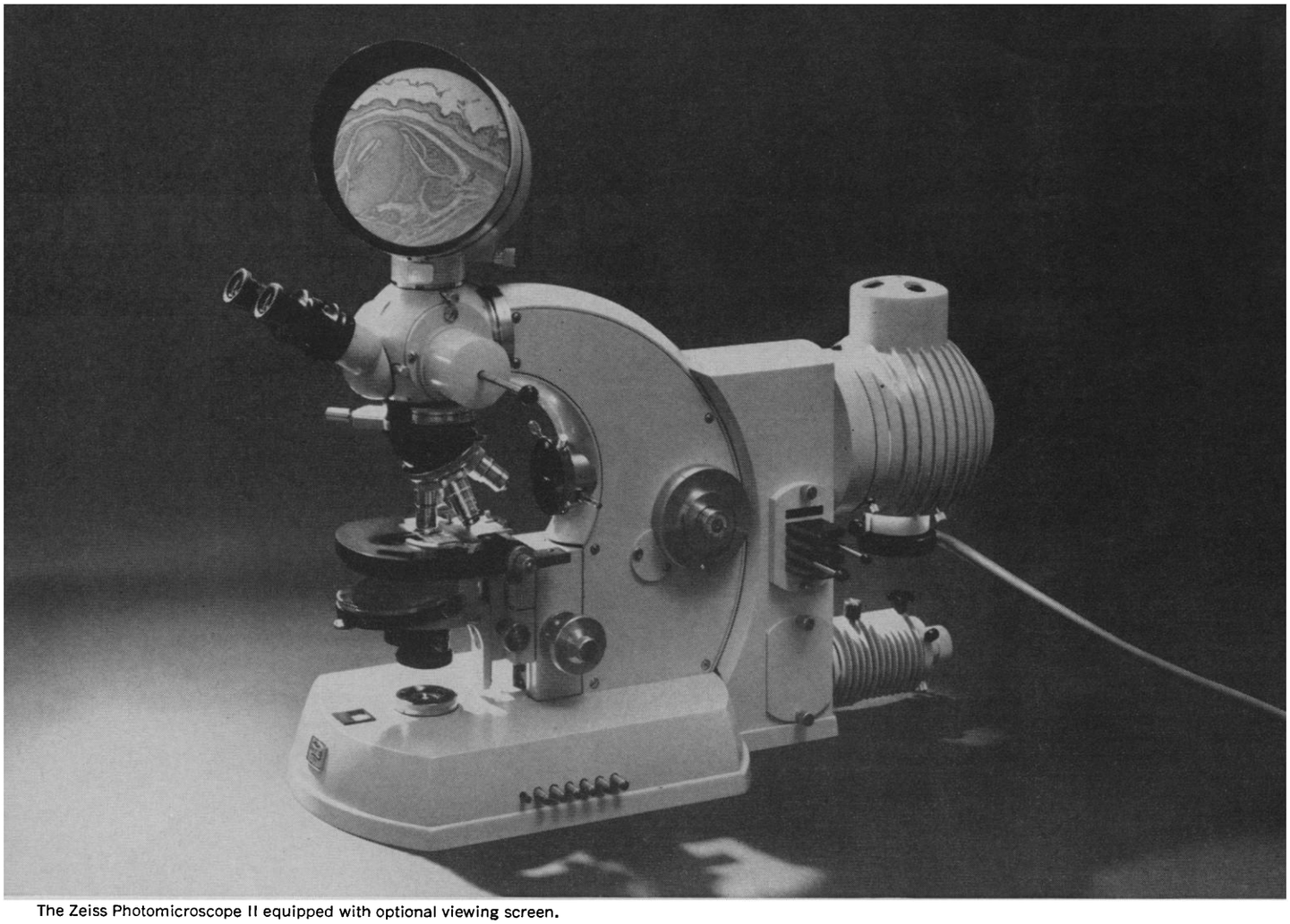

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The Zeiss Photomicroscope in NASA's lunar histology lab was set up like this.

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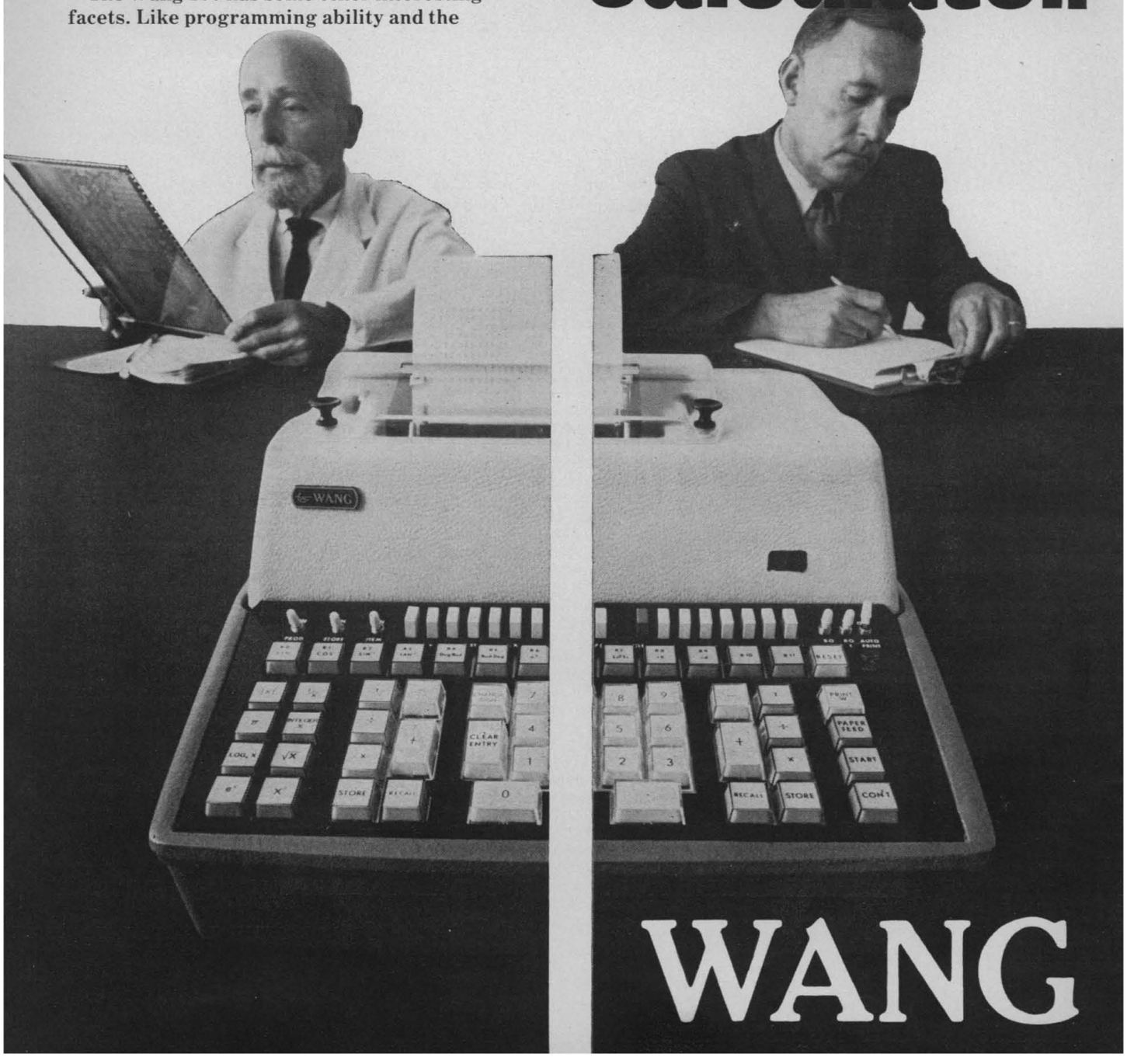

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that the world owed them a living while they pursued their own personal interests. We are the fools who opened Rutherford's Pandora's box, and in so doing we deified ourselves as his inheritors. And now, from our Mount Olympus, we scold a disenchanted citizenry which is beginning to question our godliness in telling it how to live and work so that it can continue to meet our presumptuous demands for bigger and better ivory towers. We are indeed obsessed—with ourselves as *Scientists.*

ETHEL WARD MCLEMORE
11625 Wander Lane,
Dallas, Texas 75230

DDT and Safer Substitutes

In response to Hoffman (Letters, 10 July), it is not at all surprising that "the greatest losses to growers of sweet cherries and grapes have been due to an increasing population of birds, rather than a decreasing population." It is a basic principle of ecology that oversimplification of an ecosystem (that is, by intensive agricultural or residential use of land) results in a decrease in the diversity of the community, but an increase in the numbers of those species which tolerate the changed environment. Insect pests of agriculture are generated in just this manner. The fact that in New York State populations of native birds such as robins, orioles, catbirds, and grackles are reaching pest proportions should be a clear warning that severe damage has occurred.

Pesticides and other pollutants are by no means the only factors which contribute to this simplification, but there is no question that they are having effect. Joseph W. Still (same issue) claims that there has been "irresponsible slander of DDT . . ." but he then joins the ranks of the irresponsible by referring to "isolated and loosely reasoned claims about brown pelicans, bald eagles, and so forth. . . ." I suggest that Still take a second look at the number of reports in the scientific literature and the reasoning behind them. They are neither isolated nor loosely reasoned.

I know of no ecologist who is unaware of the benefits of DDT to human health and agriculture; to argue that DDT has not saved lives and increased crop production would be foolish. The disturbing fact is that we are just beginning to understand the subtle ef-

fects of DDT on living organisms, despite the fact that the compound has been used commercially for more than 20 years. Most ecologists are not demanding complete abstinence from the use of pesticides; these chemicals are absolutely essential to the production of food in quantity by our current agricultural system. What the ecologists are asking is that, where nonpersistent substitutes for DDT are available, they be used. Granted, the cost of these substitutes is usually higher than that of DDT, and this cost would undoubtedly be passed on to the consumer. But I submit that the continued use of chemicals such as DDT is the greatest act of ecological irresponsibility, especially in light of the fact that safer substitutes are available.

ERIC V. JOHNSON
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Energy without Pollution

I strongly concur with John N. Nassikas, chairman of the Federal Power Commission, who was quoted in "Energy crisis: Environmental issue exacerbates power supply problem" (26 June, p. 1554) about the need for a comprehensive energy policy to effect balanced objectives of efficient utilization of our energy resources in harmony with the environment. I do not confine this concern to the United States either.

The amount spent on research and development for electrical power generation utilizing fossil fuels is pitifully small. We must increase our efficiencies in conversion to electrical energy, as well as to utilize the thermal energy presently being rejected. Although the article was concerned mainly with electrical energy (about ⅓ of the energy utilized in the United States), the conclusions are applicable to all forms of energy: we need better utilization of all energy resources—for example, a transit system more energy-efficient than the present individual automobile. . . .

DANIEL BERG
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. . . Boffey in his article briefly alludes to what may prove to be the only truly successful long-term solution—the development of controlled thermonuclear power. In view of pollution problems

(chemical, thermal, and radiological), it seems appropriate to list some of the obvious advantages of such power sources as they are envisioned. The fuel supply is essentially limitless. Air pollution problems are eliminated. Compared to fission power plants, radiological hazards are reduced by many orders of magnitude. Direct conversion systems might be upward of 90 percent efficient, thus drastically reducing thermal pollution. With such characteristics, generating plants could be located much nearer the cities they serve, improving reliability and efficiency and reducing the number of unsightly cross-country high voltage transmission lines.

As Boffey states, suitable thermonuclear fusion has not yet been produced. Nevertheless, there is cause for optimism based on the recent successes of the Russian Tokamak machines in which plasma confinement times of 20 milliseconds at densities of 5×10^{13} have been achieved and in the less publicized success of the Lawrence Radiation Laboratory 2X machine which has attained comparable densities at less times but at higher temperatures. The successor to 2X, called 2XII, will be operational about October of this year and is expected to produce plasmas of higher energy density than any created before. The operating regime approaches fusion reactor conditions.

Engineering studies have been underway for some time to take advantage of the plasma when it becomes available. These studies deal with power stations using both conventional and direct conversion schemes. Present funding of the controlled fusion effort in the United States amounts to only $30 million per year, much less than the premium we pay for white sidewall tires on our new cars. A 15 percent increase in funding per year could be used without waste, but for the new fiscal year which began 1 July, the funding was cut. What a dismal sense of priorities.

R. G. HICKMAN
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The calculation of the Committee for Environmental Information that "in the year 2000 . . . power plants of all kinds will produce roughly enough heat to raise by twenty degrees the total volume of water which runs over the surface of the United States" is based on steam power plants, which will be obsolete well before the year 2000. Closed-cycle, nuclear-powered gas turbines, developed by the Swiss and already in production, need only a small amount of heat to be extracted from the gas, and the gas can be cooled by air. The amount of heat rejected to the atmosphere is negligible compared to heating by solar radiation, even if the power production increases tenfold—and there is no contamination of the atmosphere.

Breeder reactors will be ready to use in a few years and they can be combined with methods of energy-conversion other than using steam. Also underground transmission lines are not a novelty—high-voltage direct-current lines are in operation in Europe. Thermal and atmospheric pollution as well as other environmental problems caused by energy production can be solved by the actual state of art, but we must act now.

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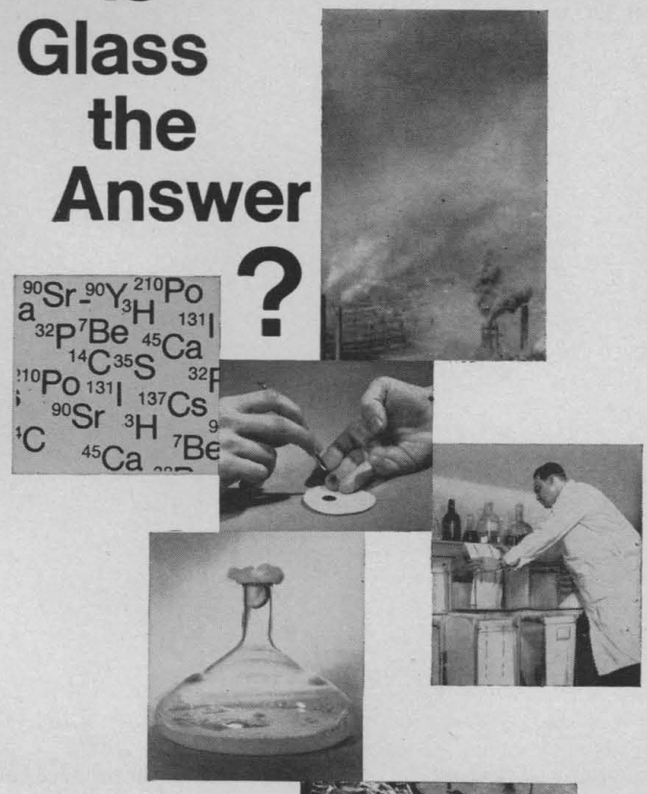

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2 October 1970, Volume 170, Number 3953

SCIENCE

Introducing William Bevan

On 1 October 1970, a new Executive Officer assumed the principal administrative responsibilities of the AAAS. Like his predecessor, Dael Wolfle, William Bevan is a psychologist of high professional standing who has subsequently acquired notable administrative skill and experience. His contributions to the fields of sensory psychology and perception exceed 130 in number, and include a jointly authored bibliography on *Fatigue, Stress, Bodily Change and Behavior* (1957), and a book, *Contemporary Approaches to Psychology* (1967), edited with H. Helson. Most recently, since 1966, he has served as vice president and provost of the Johns Hopkins University, where he earned the cordial respect and cooperation of the faculty, students, and his fellow administrators. He has served increasingly on public and private advisory bodies and committees.

Born in 1922 in Pennsylvania, William Bevan received his A.B. degree from Franklin and Marshall College in 1942, and an M.A. and Ph.D. from Duke University in 1943 and 1948, respectively. He also earned a Phi Beta Kappa key and membership in Sigma Xi. He has taught psychology at Duke University, Heidelberg College, Emory University, and Kansas State University. At the last-named institution, he gravitated from the chairmanship of his department to a deanship (arts and sciences) and then to a vice presidency for academic affairs. He has nevertheless always managed to continue some teaching and research, even during the busy years at Johns Hopkins. He spent the year 1965–66 at the Center for Advanced Study in the Behavioral Sciences (Stanford).

During the next decade the AAAS hopes to enter a period of greatly augmented growth and influence. Although it is already the largest general scientific organization in the United States, it consists mainly of scientists, engineers, physicians, and other professional persons in science and technology. If the goals, so strongly emphasized in recent years, of assisting the applications of science to human welfare and of promoting the public understanding of science are to be fulfilled, much more must be done than heretofore. Membership must be extended to include many persons who are interested in science and who are concerned about its effects but who are not scientists themselves. Young people, many of them potential scientists, must be enlisted. Without disturbing the characteristics of *Science*, so excellent for its present public, other means of communication with the general public and the younger generations must be developed—possibly a new periodical, a television program, or a science newspaper. The ways and means of developing such a program are of vital interest to William Bevan, who foresees the AAAS as the responsible public voice and agent of science in the halls of government, in science education, and in the public forum. The Board of Directors is highly pleased to have found a man who will welcome the challenge of such responsibilities and make the AAAS a larger influence in a world increasingly dominated by the advancement of science and its applications to human welfare.

BENTLEY GLASS, *Chairman of the Board of Directors, AAAS*

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(Continued from page 56)

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