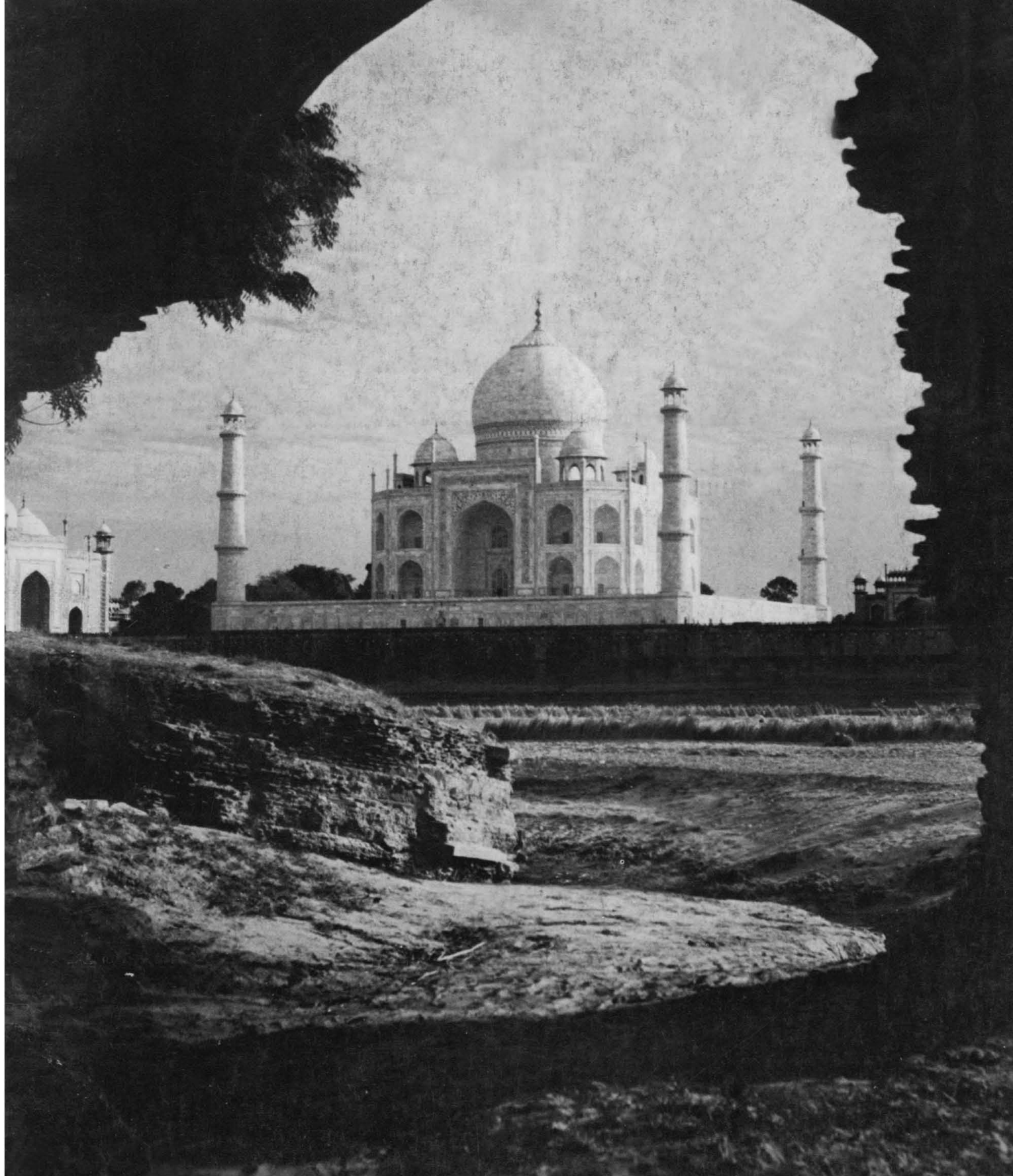


SCIENCE

23 September 1977

Volume 197, No. 4310

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



Which of these Ultracentrifuge Accessories can you use in your research?



No matter what your centrifugation needs, Beckman can supply them. In ultracentrifugation, Beckman offers four L5 models with top speeds from 40,000 to 75,000 rpm, plus a full line of rotors, tubes and accessories.

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For literature on the L5's, ask for brochure SB-400; for accessories ask for catalog PL-174. Write Beckman Instruments, Inc., Spinco Division, 1117 California Avenue, Palo Alto, CA 94304.

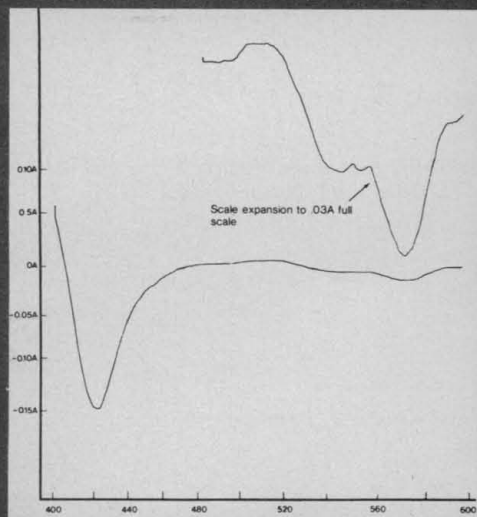


- 1. Rotors** — a complete selection of 36 Beckman fixed angle, swinging bucket, zonal, continuous flow, and vertical tube rotors.
- 2. Tubes** — five different tube materials, including cellulose nitrate.
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- 5. Slow Acceleration Accessory** for reorientation and shallow gradient studies.
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transmission sample position to the true absorbance...



Difference spectrum of microsomal fraction
after addition of 17OH — progesterone

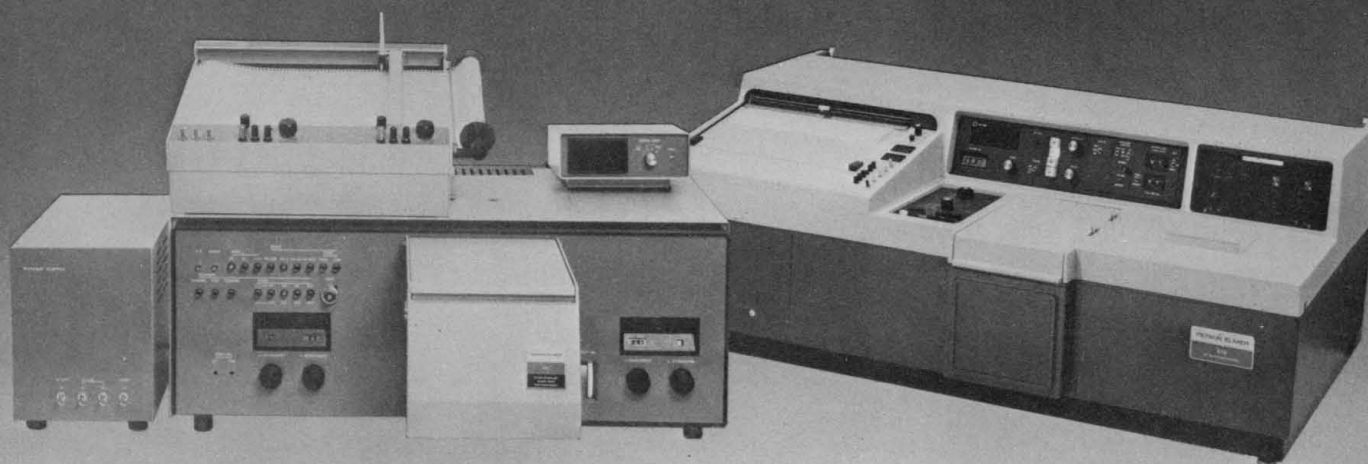
The dual-wavelength approach

Whenever the sample turbidity changes unpredictably it becomes impossible to prepare a reference which exactly matches the sample. The dual-wavelength approach used in our Model 556 allows the sample to act as its own reference by passing two wavelengths through the solution to exactly compensate for turbidity changes. One wavelength monitors the changing sample absorbance, the other, set close by, is scattered by the suspension in the cell and the instrument displays the difference between the two. Keep the reference wavelength fixed and scan the other to record a spectrum, even repetitively. Employ

dual wavelength for rapid mix kinetics, gel scanning or thin layer chromatography and see how it improves results.

If the tear-off card has been used, for further information contact: Instrument Division, Norwalk, CT 06856 USA Bodenseewerk Perkin-Elmer & Co., GmbH, 7770 Ueberlingen, West Germany

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23 September 1977

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SCIENCE

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COVER

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The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

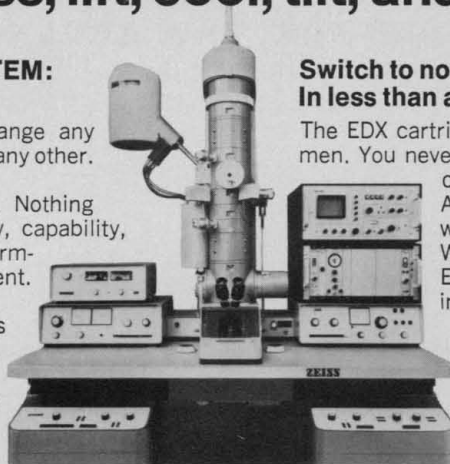
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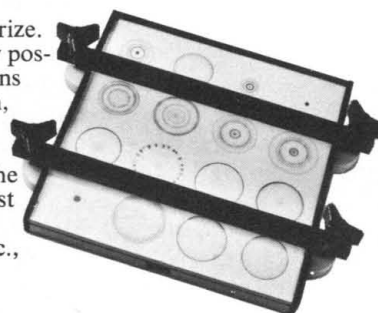
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S-9

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Repetitive assays? The Bio-Rad Protein Assay provides excellent reproducibility: C.V. 1.2%.

¹ Bradford, M. M., *Anal. Biochem.*, 72, 248 (1976).

More information

For more details on this simple replacement for the Lowry assay, contact:



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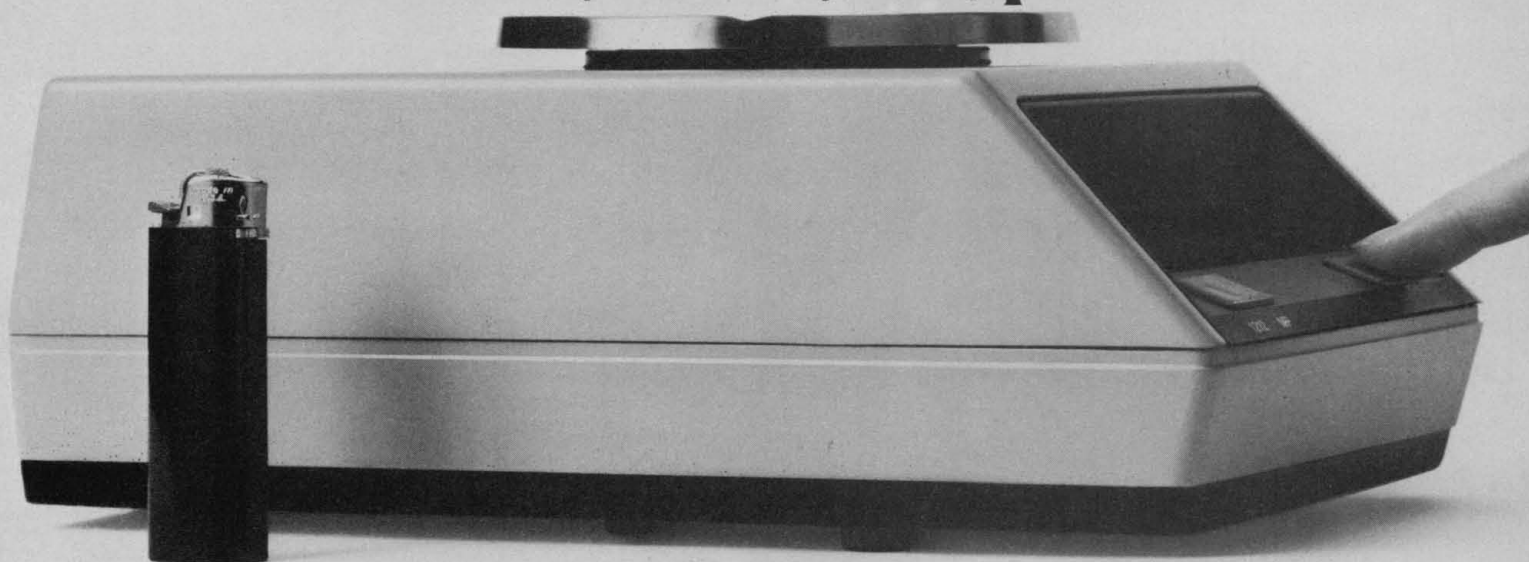
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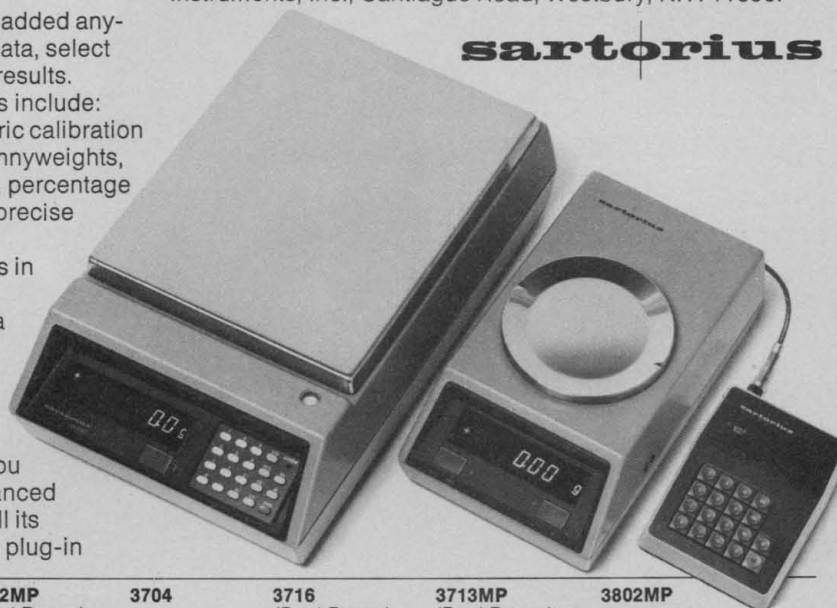
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MODEL (Partial Listing)	1205MP	1202MP	1212MP (Dual Range)	3704	3716 (Dual Range)	3713MP (Dual Range)	3802MP
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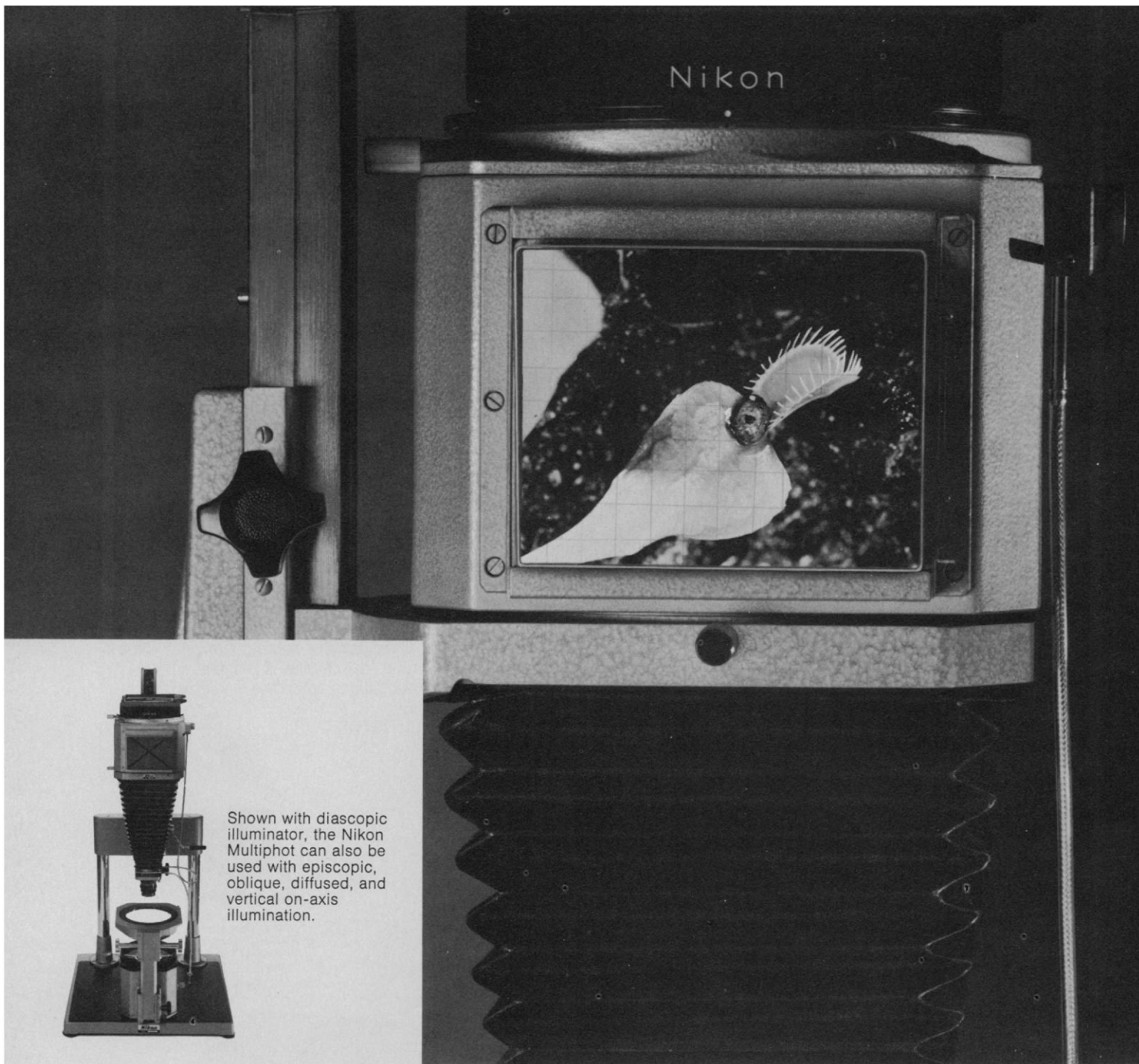
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1. Our average number of enlarged prints made per week (including test prints, remakes, etc) is:

☐ less than 100 ☐ 100-200 ☐ 200-500 ☐ more than 500

2. Most of our black-and-white prints are processed by:

☐ conventional tray-in-sink method
☐ stabilization processing
☐ mechanized processing

3. Those primarily responsible for processing prints are:

☐ researchers
☐ skilled technician
☐ darkroom or lab assistant
☐ central photolab staff

4. Of the following, which *three* factors are most important in your photo processing operation?

☐ convenience (no-mix chemicals, easy maintenance)
☐ saving time (fast turnaround, no sorting or collating)
☐ cost reduction (silver recovery option to cut chemical costs)
☐ increased productivity (more prints in less time)
☐ optimum print stability (file prints with no further treatment)
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Address _____

City _____ State _____ Zip _____

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LETTERS

Oil Refinery near the Taj Mahal

The Indian government is building a large oil refinery in Mathura, 20 miles away from the Taj Mahal. The government says the refinery will have equipment to trap any corrosive chemical emissions. Government laboratories have pledged that this equipment will be effective. However, any mechanical device occasionally breaks down or malfunctions. If this should happen in the case of the refinery, then harmful emissions would spill into the sky, creating a serious danger to the Taj. Sulfur dioxide, when leaked into the atmosphere, mixes with water vapor and forms a sulfuric acid shower that can react with marble (calcium carbonate). Thus, the polished white surface of the Taj could first become discolored, then pitted.

Indian industrial licensing laws unfortunately do not include pollution control standards, with the result that, some years ago, effluents from a public sector refinery literally set the Ganges River on fire. The treasures of the Taj cannot be shifted, but the site of the refinery can be. The government has made a promise to Parliament that the plant will not be operated unless protection to the monument is ensured. The protection they were apparently referring to was to use only crude oil with a low sulfur content in the refinery.

This is not agreeable, either to the Archeological Survey of India or to those who are concerned with the preservation of the rich cultural and architectural heritage of the country. It is therefore necessary to form an International Action Committee to try to prevail upon the government of India to do something about the refinery. The committee will function at the address furnished below and welcomes communications from scientists and intellectuals throughout the world.

LAXMIPURAM P. SRIVATSA
168 South Cross Road, Basavanagudi,
Bangalore, 560004 India

Chrysotile Asbestos: Health Effects

In answer to my letter criticizing their report (17 June, p. 1319) on environmental asbestos pollution in Maryland, Rohl, Langer, and Selikoff (Letters, 19 Aug., p. 716) have produced a long involved effort at persuasion with a vast amount of information. My letter certainly called up a professional job. Unfortunately the information supplied would probably not

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help anyone answer with a reasonable degree of certainty the question at issue: Does the use of serpentine rock from the Hunting Hill quarry near Rockville, Maryland, for the paving of roads, trails, and so forth create a health hazard? Their argument is based on the occurrence of chrysotile in the quarried material and in airborne dust raised by traffic. The link to lung cancer and other diseases, according to them, is that abnormally high incidences of cancer and other lung diseases have been found among workers in asbestos manufacturing industries that use a variety of asbestos minerals—including amosite, crocidolite, and chrysotile.

It is curious that their letter compares the crushed rock at Rockville with the crushed rock of the chrysotile mines of Quebec, Canada. This comparison is indeed relevant, but not in the way they imply. The Quebec mines are among the largest chrysotile-producing mines in the world and have been worked since 1886. Voluminous data have been collected there on mortality causes for 28,000 workers based on records going back more than 50 years. Dust levels related to the various operations have been determined and correlated with mortality causes and rates. More than 50 publications dealing with the subject have been released since 1969. A summary of a few of the findings (1) related to the Maryland situation follows: Cancer-related mortalities in the chrysotile mining and milling industry are much lower than, and cannot be compared with, those in the asbestos manufacturing industries. Thus possible hazards related to dust from quarried rock cannot be judged by experience in those industries. On the other hand, the Quebec data show that exposure to very high dust levels for many years (for example 4 million particles or more per cubic foot at the workplace for 50 years) does result in unacceptable health hazards. Nevertheless the general health of employees in the Quebec chrysotile mining and milling industries is comparable to that of the population of Quebec Province as a whole.

As the serpentinite quarries near Rockville contain much lower concentrations of chrysotile than the mines in Quebec, it would appear that a health hazard related to the use of serpentinite for fill and pavement is unlikely. No reference to the Quebec studies is among the three dozen cited by Rohl, Langer, and Selikoff in their lengthy reply, nor do they discuss the Quebec results in their original report. I wonder why.

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!Kung Ecology

In an otherwise knowledgeable review (13 May, p. 761) of our book *Kalahari Hunter-Gatherers: Studies of the !Kung San and Their Neighbors (I)*, B. J. Williams makes a serious error of fact. In the book we argued that !Kung San (Bushman), in spite of their desert environment and simple technology, have a more than adequate food supply. In taking issue with that view, Williams cites a piece of evidence that he says has not been published and that he calls "the real clincher." He writes, "Lee noted in his Ph.D. dissertation of 1965 that two-thirds of the San population in the Dobe region had been removed from there in a resettlement program only 2 to 3 years prior to his fieldwork. That there were superabundant gathered foods after two-thirds of the population had been removed is not surprising, nor is the superabundance relevant to general hypotheses concerning hunter-gather adaptations."

No such statement appears in Lee's dissertation, nor did such an exodus occur. What Lee did say was that in 1960 the South African government had settled the !Kung of Nyae Nyae but that the Dobe area !Kung from the Bechuanaland side of the border did not join the settlement scheme in any numbers. Lee went on to state that fewer than 50 Dobe !Kung went to the settlement while over 350 continued to hunt and gather in the Dobe area (2, p. 67). In other words, the maximum out-migration indicated was 12.5 percent, not 66.7 percent as Williams says. The settlement of the !Kung of Nyae Nyae, a different population, did not add a single square mile of foraging area to the space available to the Dobe !Kung.

The data available, far from showing a rapidly declining population for the Dobe area, indicate a stable or rising one during the period in question. Lorna Marshall estimated 432 !Kung in the Dobe area in 1952 (3). In 1964 (2, p. 45) Lee counted 433, a figure later revised to 466 after a more thorough census taken in 1967 (4). None of us found any evidence to support a two-thirds drop in population prior to the study period (5). In our research project the findings of each investigator were checked against the work of several others; a discrepancy of

such magnitude could not have gone unnoticed. Williams's assertion leaves the impression that members of the research group somehow suppressed information about massive out-migration in their published work.

This is not the place to go into the complex issues of !Kung ecology and history. Let us just say that, whatever the source of the !Kungs' ample food supply, Williams is certainly in error in attributing it to depopulation.

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5. N. Howell, in (1), pp. 137-151; H. Harpending, in *ibid.*, pp. 152-165.

American Ice Cream

Nicholas Wade states in his article on the current ice cream controversy (News and Comment, 27 Aug., p. 844) that American ice cream is "made from dairy products of one sort or another." Actually, most American ice cream contains approximately 18 percent sweeteners and flavorings and about 0.5 percent stabilizers and emulsifiers. A commonly used stabilizer is carrageenin (extracted from seaweed), and cereal proteins (gluten) are used as emulsifiers. Federal law does not require container listing of ingredients in ice cream, and ice cream manufacturers seem reluctant to divulge this information. As a result, people who cannot tolerate gluten are unable to eat ice cream.

The Food and Drug Administration would do consumers a service if it insisted upon container listing of the exact ingredients in ice cream.

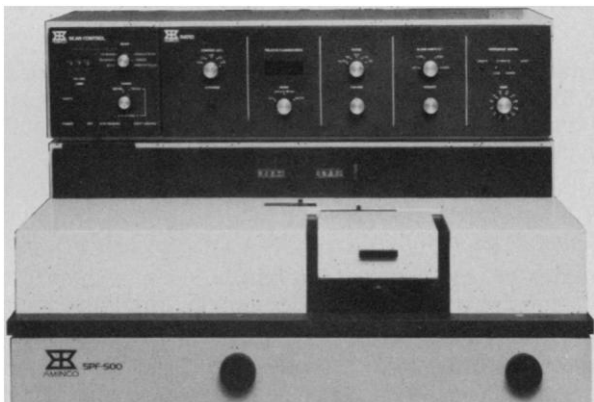
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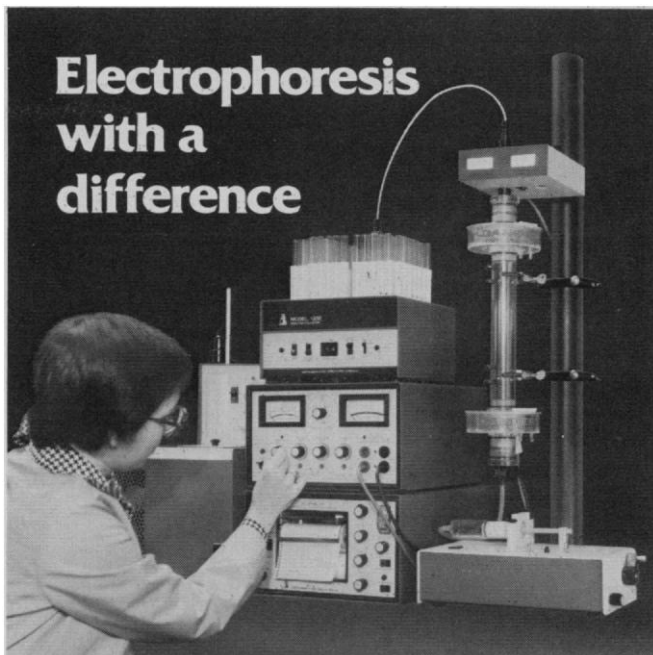
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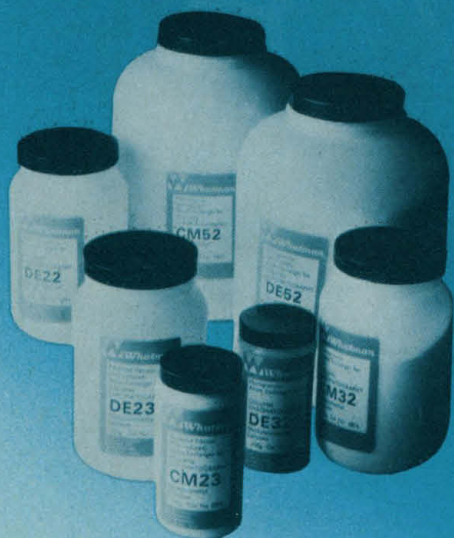
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But Congress often acts constructively. This was true when it enacted Public Law 93-556 in December 1974, creating the Commission on Federal Paperwork. The Commission was given a 2-year mandate and total financial support of about \$10 million. Work of the Commission began 3 October 1975. When its term ends shortly, the Commission will have issued 25 well-written reports and made about 750 recommendations for cutting paperwork. Already about a third of these have been adopted, involving annual savings of \$3.5 billion. Ultimately, after implementation of more of the recommendations, the annual savings could mount to \$10 billion. The staff of the Commission believes that with additional determined efforts, the annual savings might be made to rise to \$30 to \$40 billion.

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The average citizen views the federal government as a single coordinated entity. In a report on federal, state, and local cooperation, the Commission sets forth a quite different view. With the tremendous growth in federal activities (more than 1000 assistance programs) we now live in an era of government by program. The realities are described in the report.*

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"Each program and its bureaucracy has developed its own separate information requirements, separate reporting and recordkeeping systems, separate financial management systems, separate audit systems, separate accounting systems and separate planning requirements. Even within the separate program administrative governments, regulation, information and paperwork requirements have created enormous burdens."

In effect, the Commission is telling us that with the proliferation of programs, a corresponding proliferation of paperwork was inevitable. Some of the paperwork can be eliminated, but the true solution lies in consolidating or eliminating programs.

The Commission on Federal Paperwork has demonstrated that a government organization can be forthright and effective while being responsive to citizens. A new follow-on organization designed to help point the way to more efficient government seems indicated.—PHILIP H. ABELSON

*"Federal/state/local cooperation, final report," staff report submitted to the Commission on Federal Paperwork, 29 June 1977, pp. IV-2 and IV-3.

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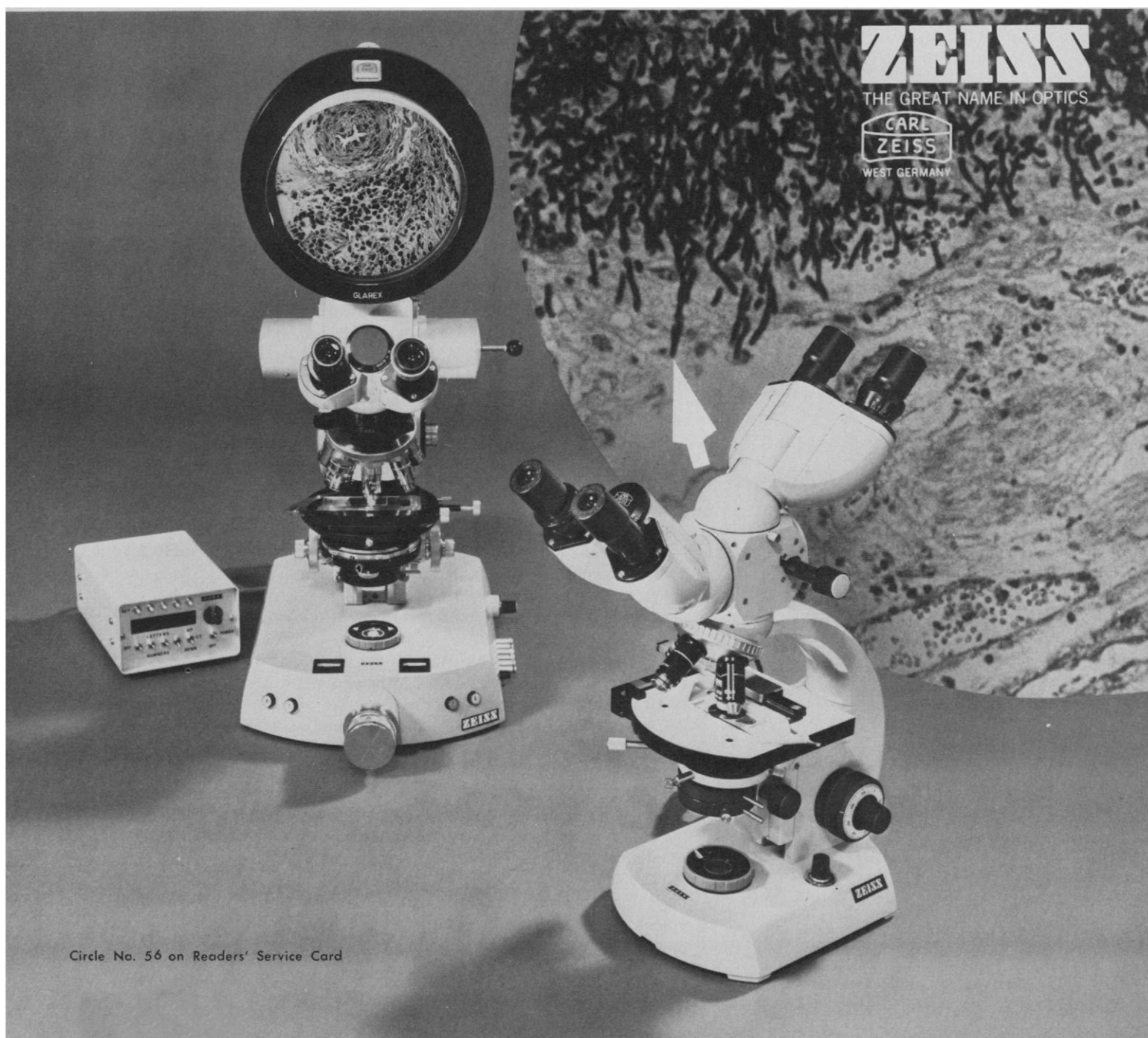
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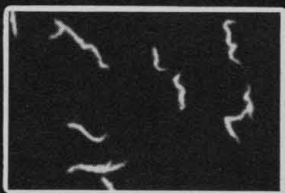
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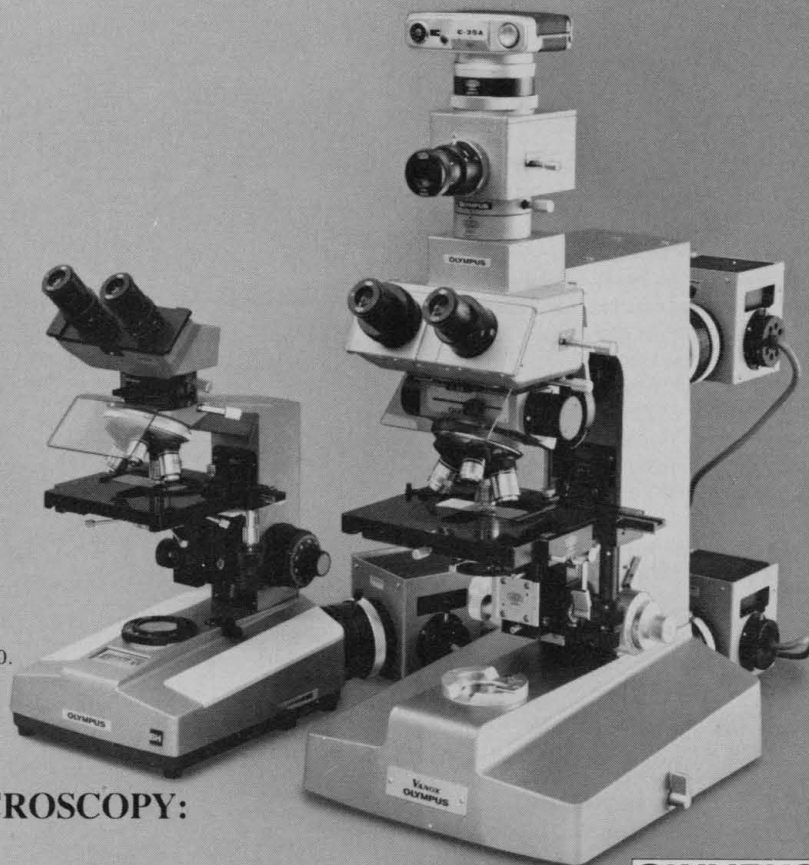
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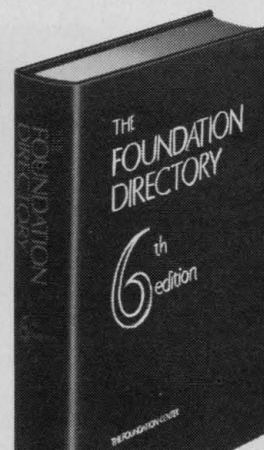
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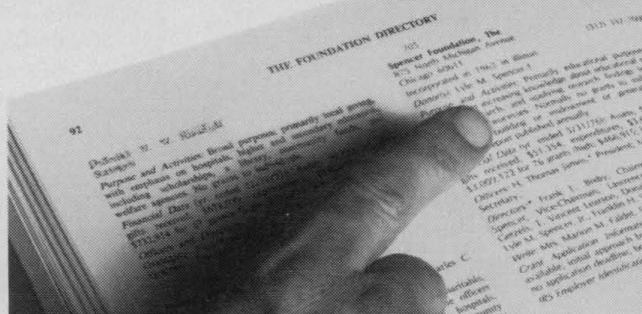


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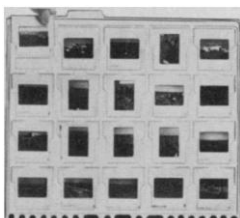




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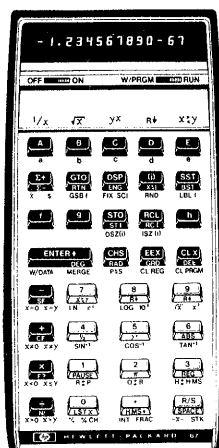


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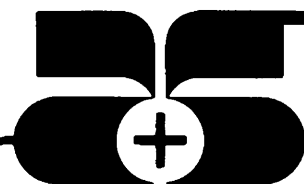
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Guanosine 5'-[α- ³² P] triphosphate, sodium salt	0.5-10Ci/mmol	PB.172
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[G- ³ H]Kainic acid	2-10Ci/mmol	TRK.566
[11,12 (n)- ³ H]Lithocholic acid	25-50Ci/mmol	TRK.560
(carboxyl- ¹⁴ C) Orotic acid	>50mCi/mmol	CFA.588
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