25 June 1982 • Vol. 216 • No. 4553

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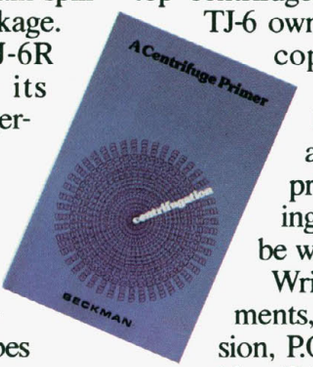
SCIENCE

Why the TJ-6 continues to be the most popular tabletop centrifuge.

Five years after its introduction, the Beckman TJ-6 in both its nonrefrigerated and refrigerated (TJ-6R) models, is even more popular in biochemical, clinical, and industrial labs.

Why? Users tell us every time they get a chance—in letters, phone calls, visits to our instrument exhibits. They like the TJ-6 because it is well designed, a pleasure to use, and is so trouble free. They like the unusually quiet operation; the rotor bowl that lifts completely out for easy cleaning; the stainless steel buckets designed to contain spillage in case of tube breakage. Those with a Model TJ-6R especially appreciate its advanced, frost-free refrigeration system.

Users also like the sample capacity of the TJ-6—a full liter. And the Maxi-Carrier tube racks that are so convenient, and hold so many tubes of so many sizes.



If you're thinking about a tabletop centrifuge, be sure to ask a TJ-6 owner. And send for a copy of our equally popular Centrifuge Primer with the abc's of centrifuge principles and operating tips. No lab should be without either one.

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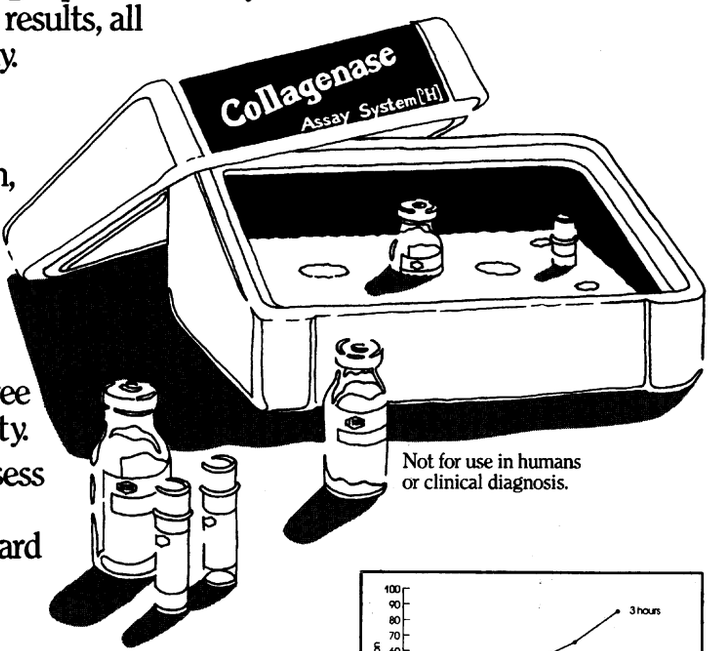

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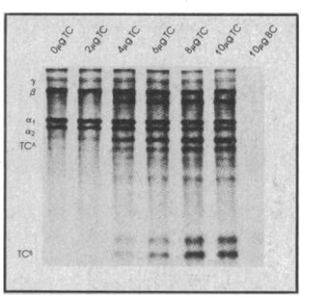
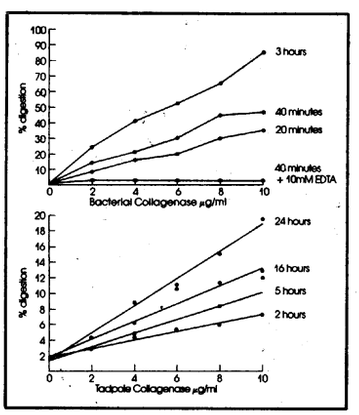


Gel analysis showing products released from tritiated collagen after 24 hours of incubation with either tadpole (TC) or bacterial (BC) collagenase.



Digestion of tritiated collagen by varying quantities of purified bacterial and tadpole collagenases.

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COVER

General view of the excavation in 1970 into the east-west profile left by D. A. E. Garrod in the Tabun Cave on Mount Carmel. This 10-meter section yielded evidence of about 75,000 years of human development early in the last interglacial-glacial cycle. Removal of material in alternate 1-meter squares allowed close control of the complex natural stratigraphy. See page 1369. [A. J. Jelinek, Department of Anthropology, University of Arizona, Tucson 85721]

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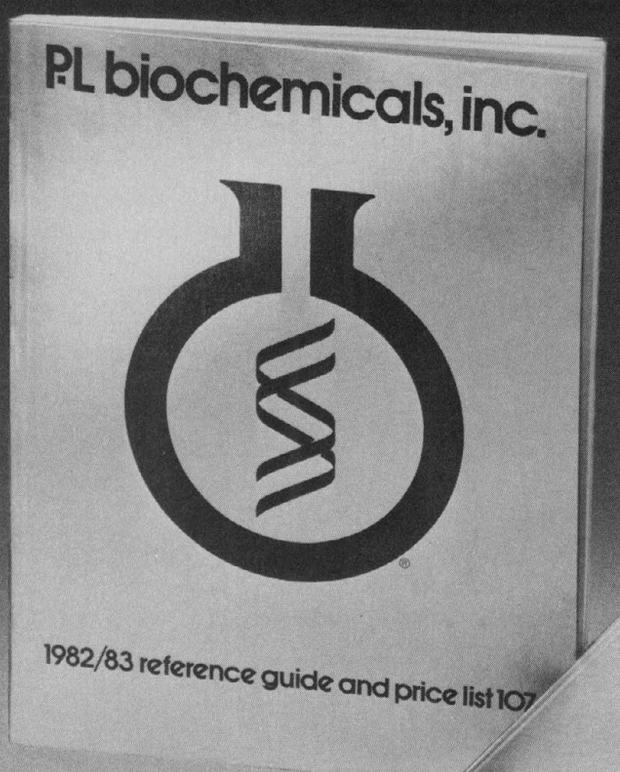

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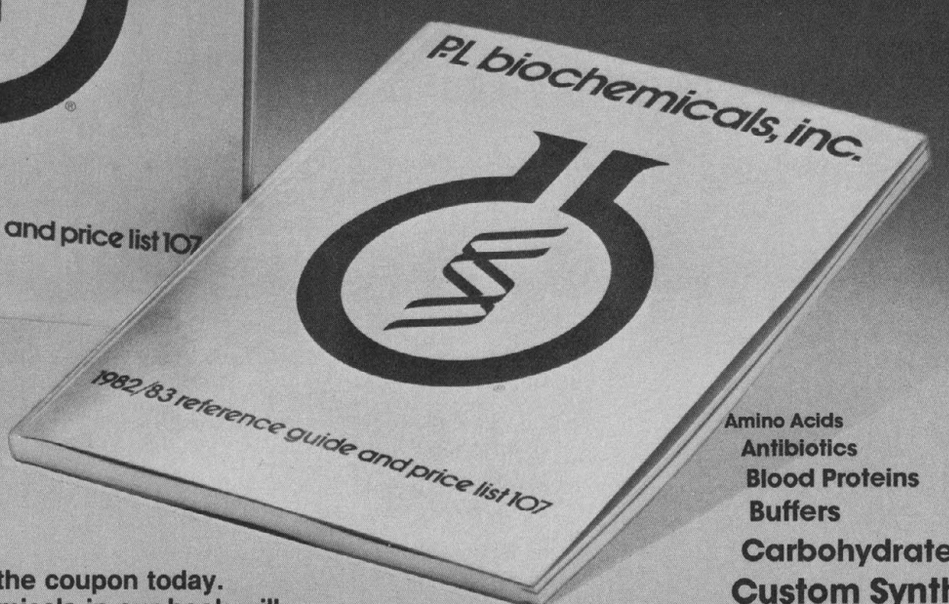

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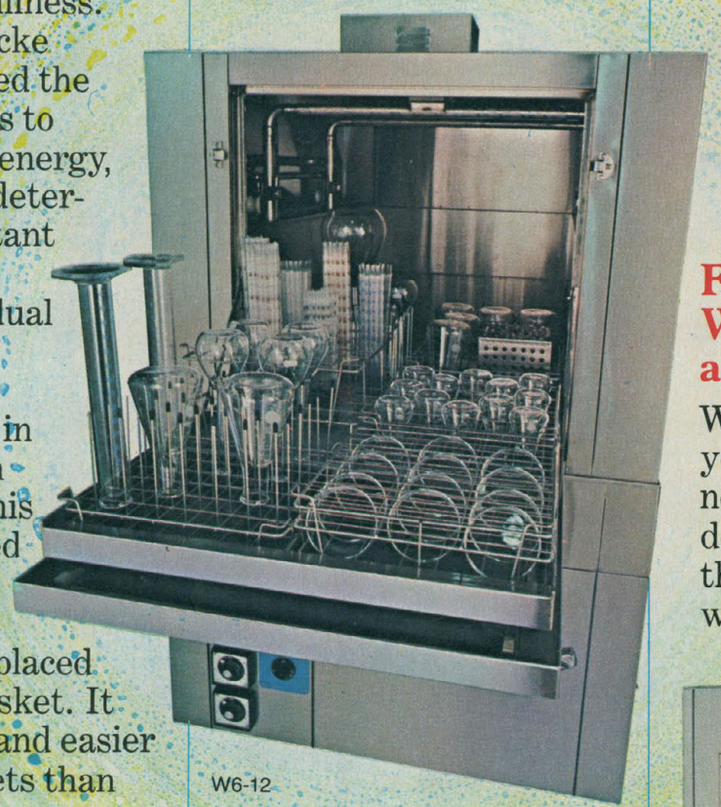

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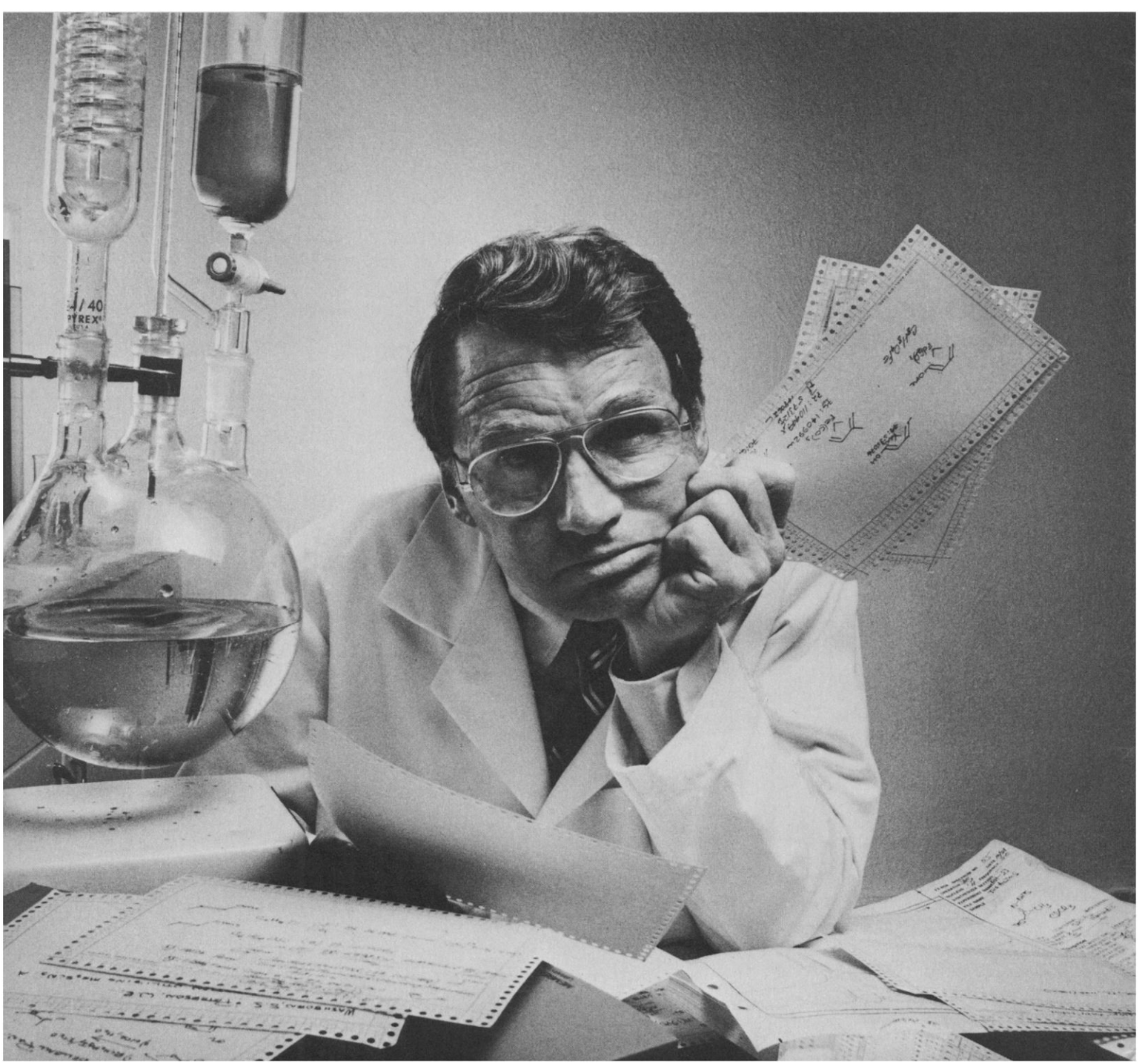

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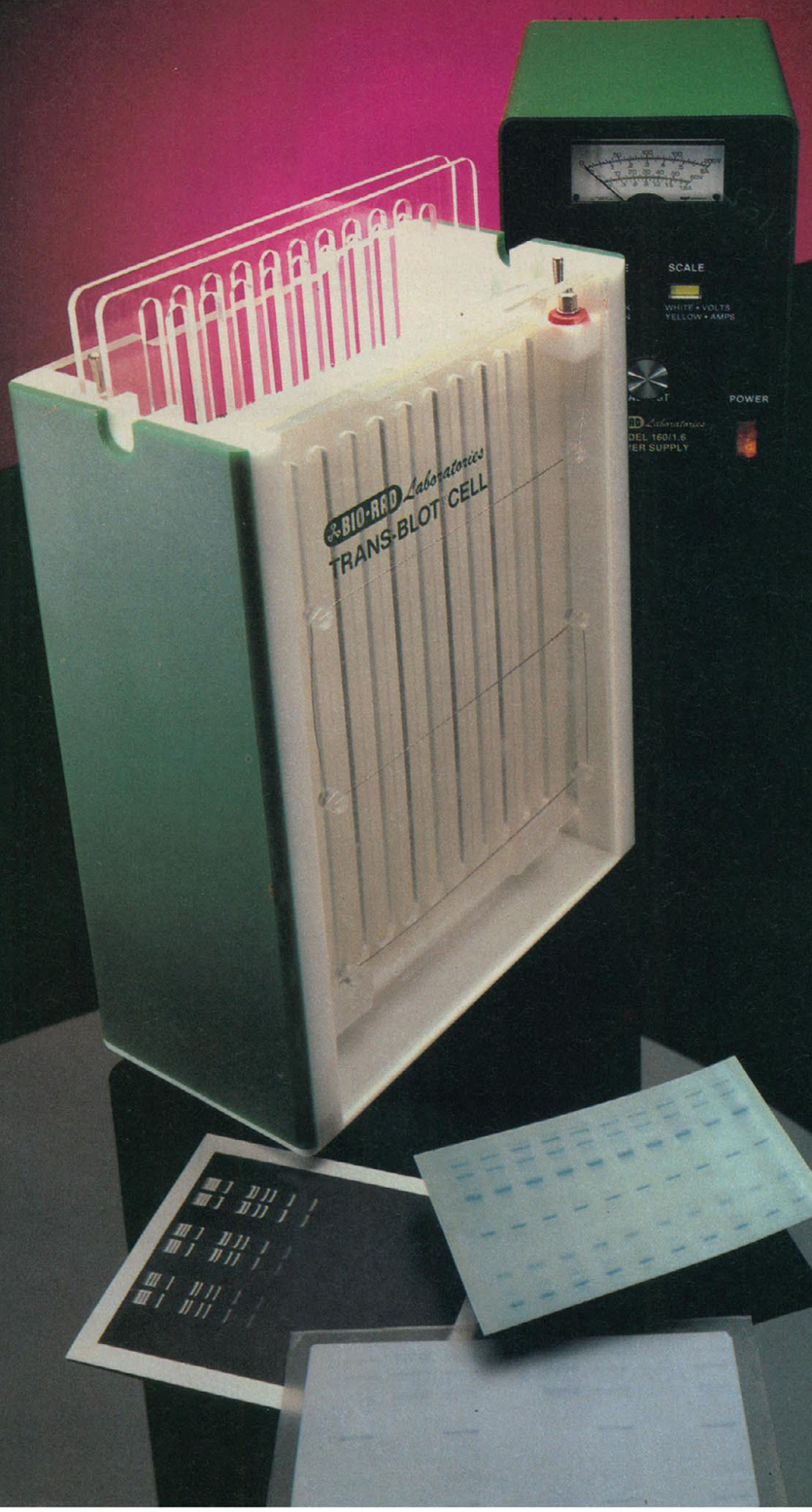

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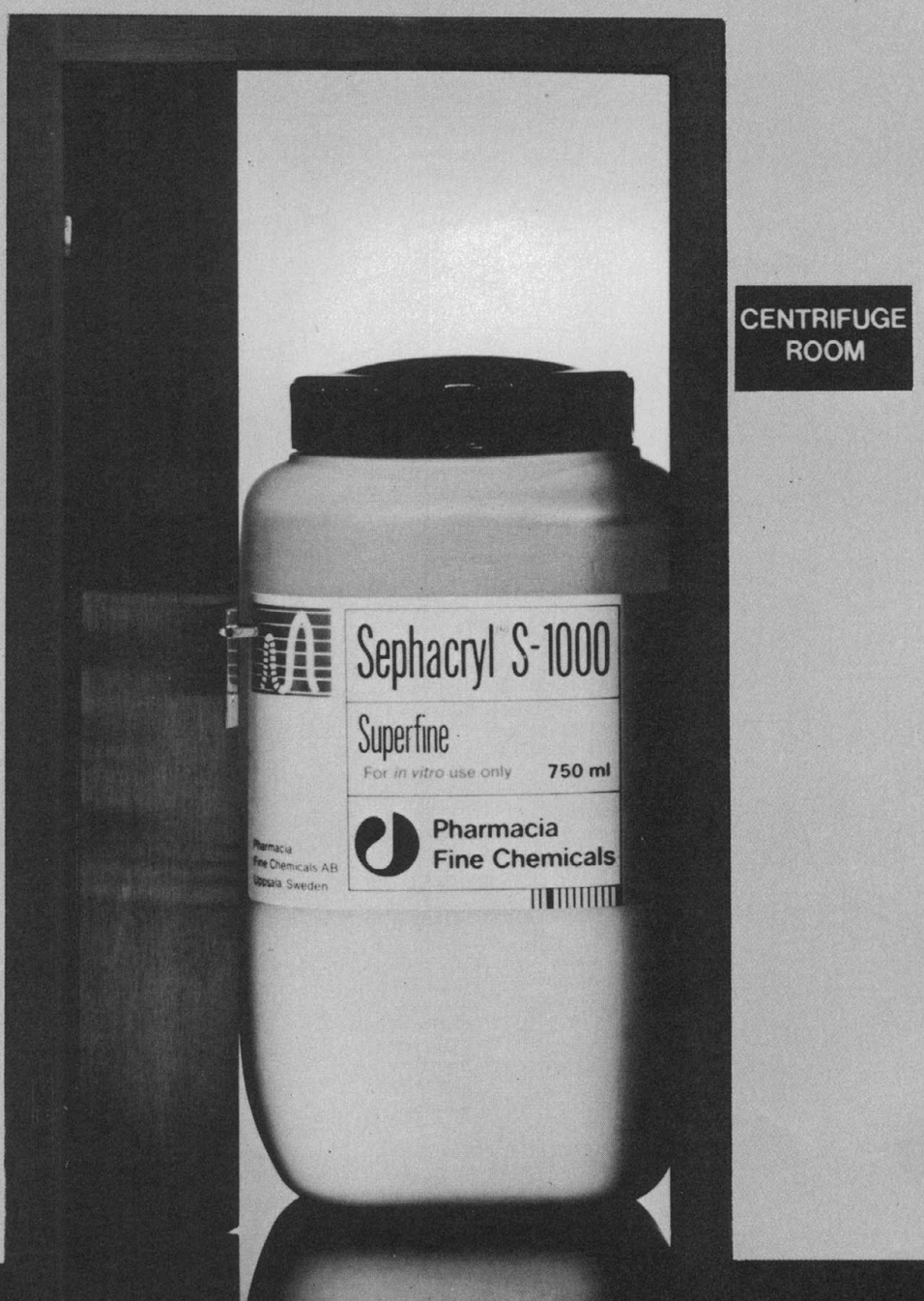

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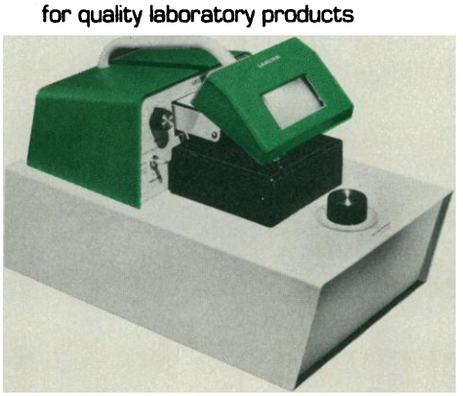

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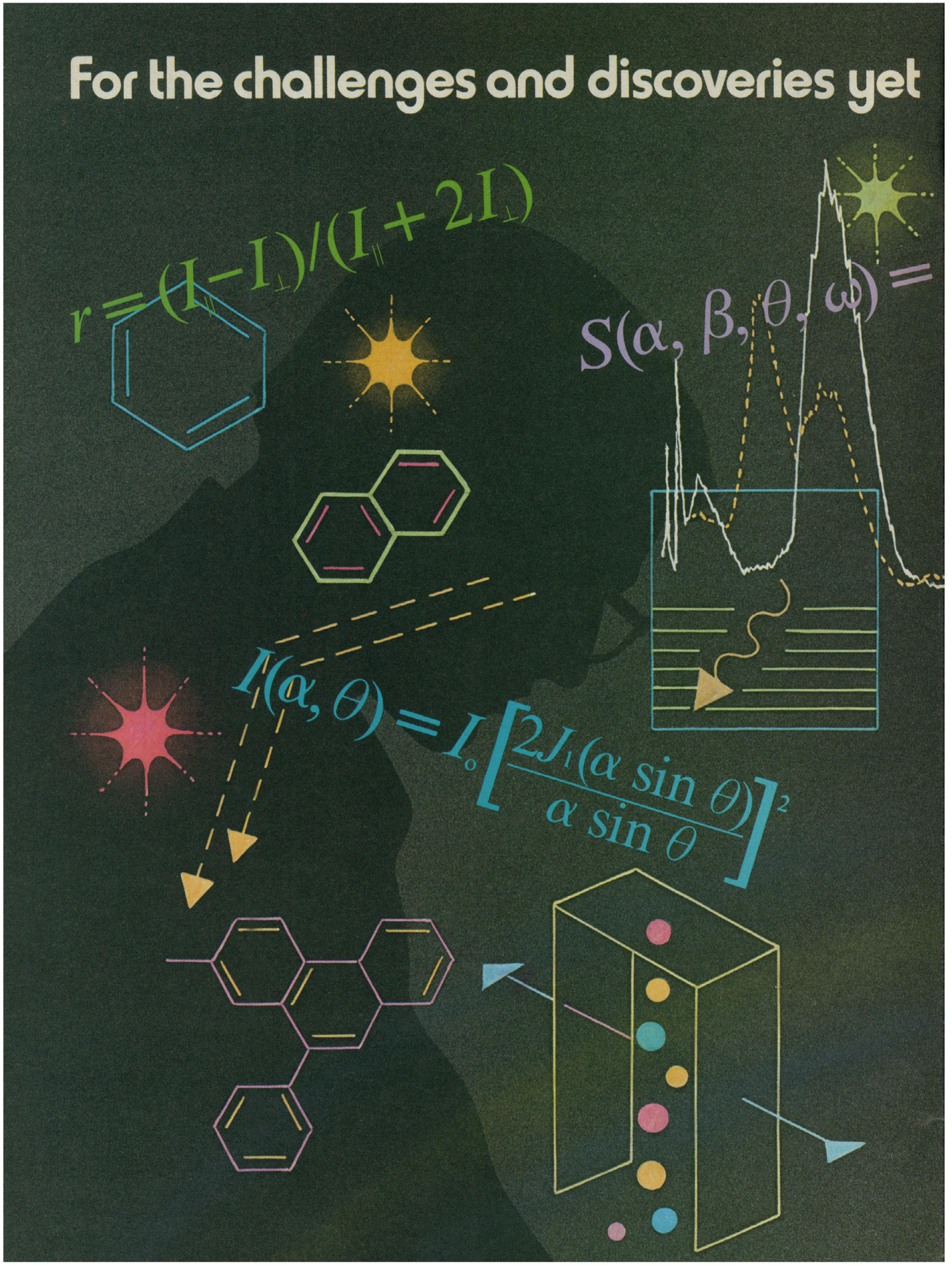

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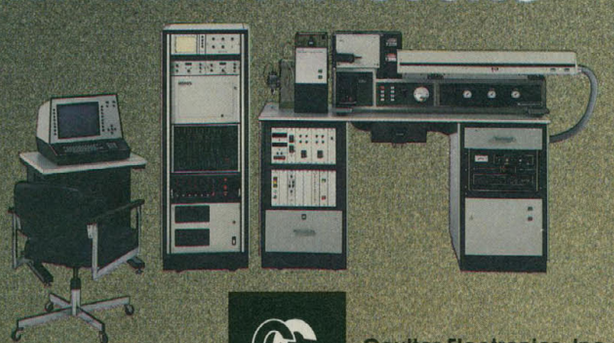

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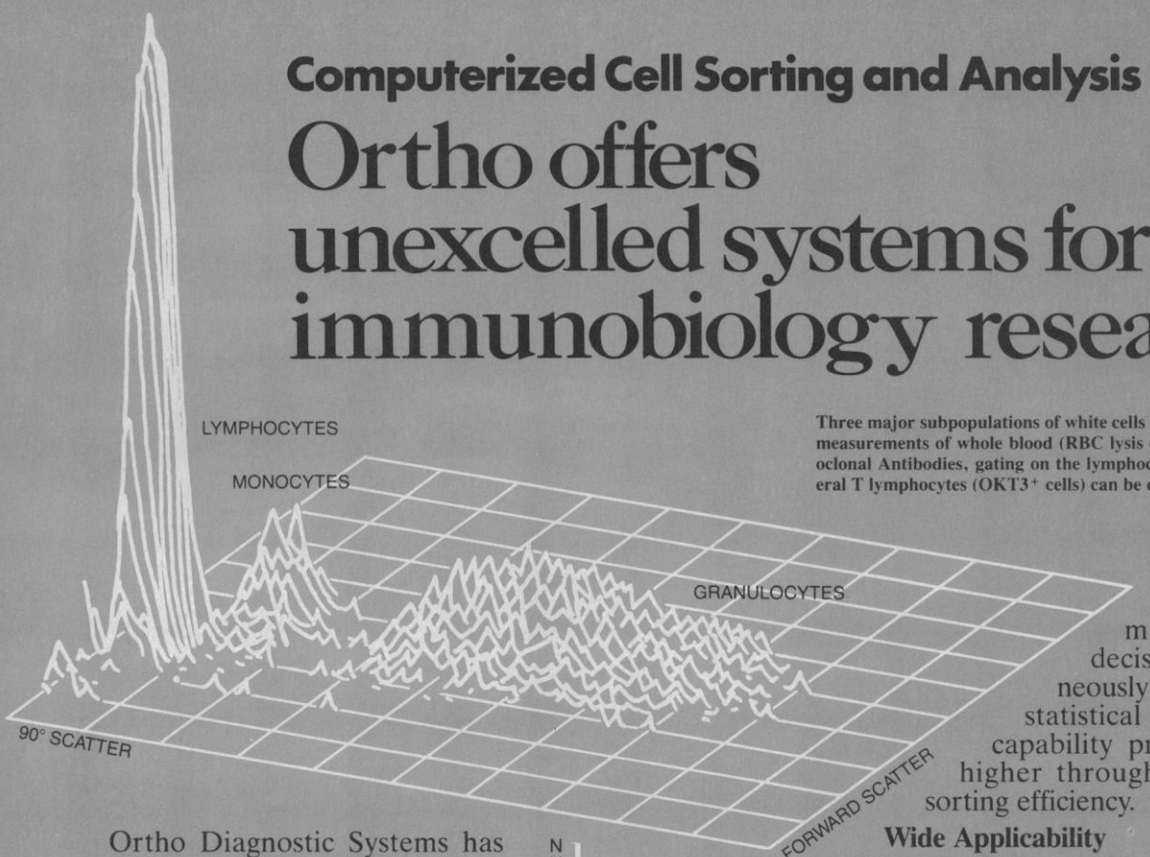
Ortho offers unexcelled systems for immunobiology researchers



Three major subpopulations of white cells by forward and 90° light scatter measurements of whole blood (RBC lysis only). Using Ortho-mune Monoclonal Antibodies, gating on the lymphocyte population, human peripheral T lymphocytes (OKT3⁺ cells) can be quantitated and/or sorted.

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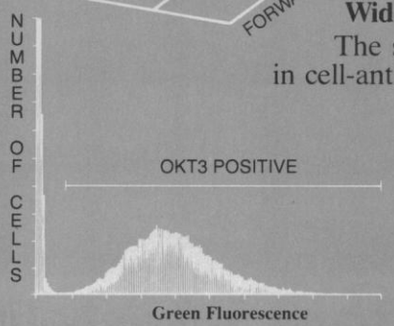
Versatile Instrumentation

The Ortho Cytofluorograf* Flow Cytometer is an example of that leadership and commitment to research. As the only flow cytometer to offer a choice of five lasers, (including two installed as standard), the Cytofluorograf provides exceptional applications flexibility.

Flexibility is enhanced further by a modular design which allows the system to be upgraded as research needs change. Performance too is outstanding with analysis rates of up to 10,000 cells per second. And only Cytofluorograf offers direct measurement of seven optical parameters including axial light loss, a valuable technique that allows the use of non-fluorescent stains.

The new 2150 Computer and software can acquire up to 16 histograms and simultaneously display any four of these, all in real-time, allowing the operator complete control over all aspects of the experiment. Because 2150 has two independent microprocessors, it can perform rapid multiparameter sort decisions while simultaneously providing complete statistical data analysis. This capability provides significantly higher throughput and increased sorting efficiency.



Wide Applicability

The system has proved extremely valuable in cell-antigen and tumor studies. It can also be employed for research into cell sizing, DNA and chromosome analysis and many aspects of cell kinetics and microbiology. The exceptional versatility of the system allows it to keep pace with the researcher's interests, never to limit them.

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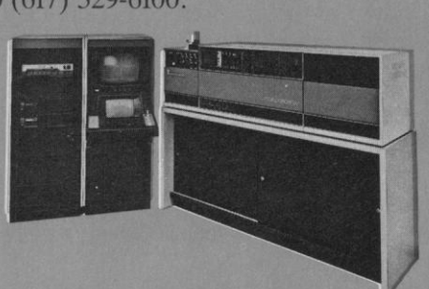
The results of these investigations and others are published in Protocols so that other researchers may share the results. Free copies are available by contacting Ortho.

Ask about the Cytofluorograf Flow Cytometer, 2150 and the complete range of Ortho services. Contact Ortho Diagnostic Systems Inc., Research Instruments Division, 410 University Avenue, Westwood, MA 02090 (617) 329-6100.

Ortho Diagnostic Systems Inc



* T.M. of Ortho Diagnostic Systems, Inc.

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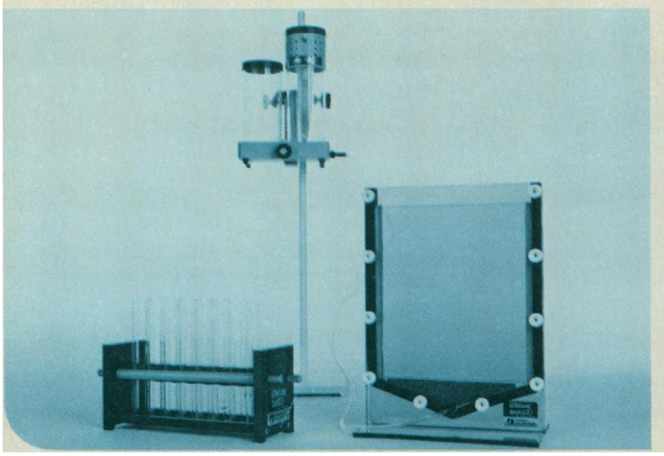

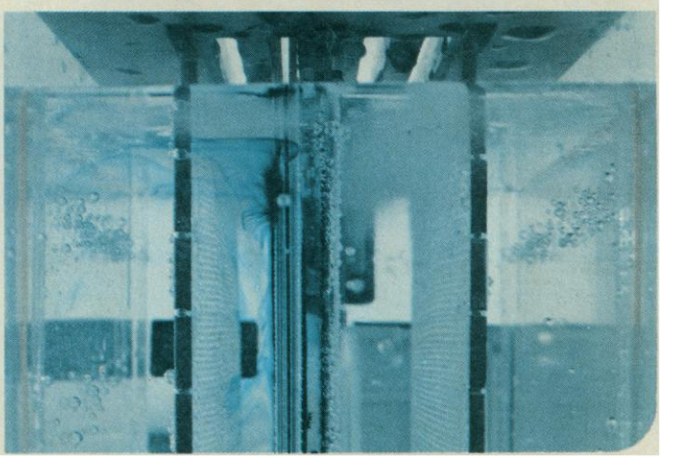

Disc, SDS, gradient and 2-D gel electrophoresis are easy with the Pharmacia system.

In electrophoresis good results depend on good gel preparation. Gel casting is easy when you have all the parts you need readily available. The Pharmacia system has been designed to enable you to cast the best gels possible. It includes suitable gel casting apparatus with over 12 convenient gel rod and cassette sizes. This gives you all the necessary components for easily and reliably preparing your gel. Alternatively avoid gel preparation completely with Pharmacia premade gradient gels. These gels can be run both with and without SDS.

Once the gel is run you want to see the result as soon as possible. An easy and rapid approach is to stain and destain by transverse electrophoresis with the Pharmacia gel destainer. Dye is rapidly removed with a circulation pump and ion exchange absorbent so that you can see the results in as little as thirty minutes. As well as using it for both electrophoretic and diffusion staining and destaining you can also fix gels and remove SDS. The gel destainer is equally suitable for other transverse electrophoretic techniques such as transfer blotting (eg Southerns).

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Vertical Gel Electrophoresis Equipment

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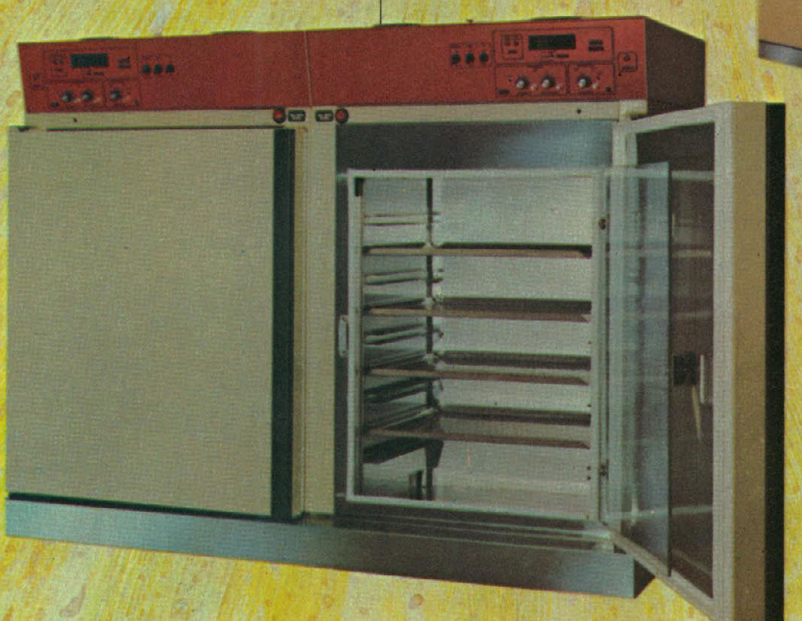

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25 June 1982, Volume 216, Number 4553 SCIENCE

On-line Databases Vital for Scientific Research

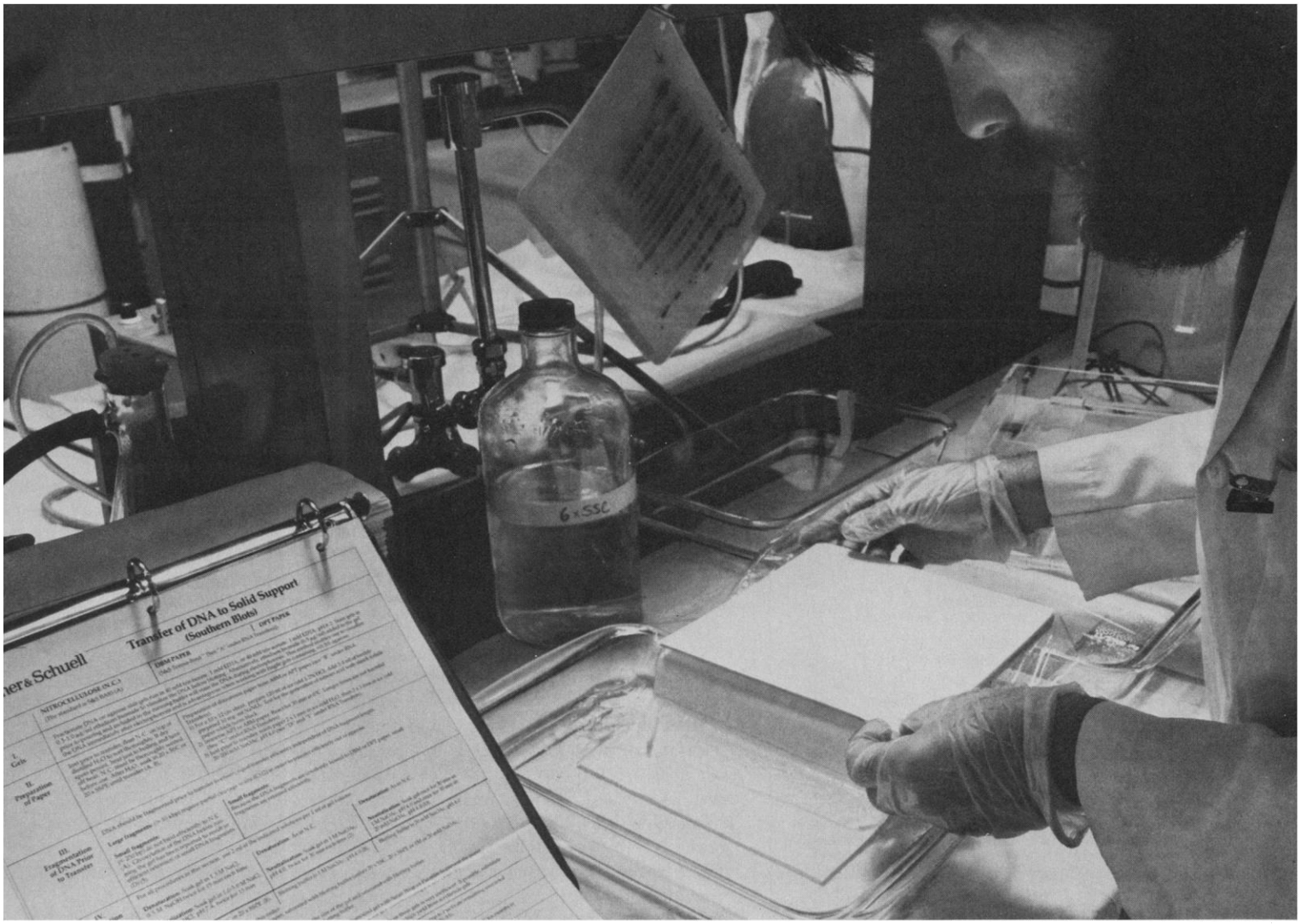
Most academic scientists are aware of the existence of computerized databases, but only a small fraction use them. Those who do are finding that the development of machine-readable databases has revolutionized the process of information retrieval, especially for locating published scientific literature. In the 1980's the use of these databases is likely to increase dramatically, as scientists have more experience with the excellent results obtainable from on-line literature searching. A typical database can be accessed by typing search requests into a terminal which is linked to a remote computer. The end product of a brief interactive session with the computer is a list of references to the published literature. Today more than 100 databases, covering most areas of science, are available to clientele of research libraries. While many of these databases are already available in hard copy (paper abstracts or indexes), most observers recognize that on-line information retrieval is markedly superior to manual searching, even of the same sources.

The advantages are many. The computer is very adept at searching long files. On-line searching offers greater flexibility than manual systems, since natural language supplied by a scientist as well as controlled language taken from various thesauri can be used as access terms to find references. Another advantage is that single- and multiple-word terms, or even truncated terms, can be input into the computer. The procedure is enhanced by the way in which the computer processes this input with the use of Boolean logic. Two or more words can be linked together with AND or OR logic, as in a Venn diagram. Where the concepts overlap, the computer can pick out specific references which satisfy the search strategy. On-line databases offer a special advantage for multidisciplinary research problems, which bring together several subjects; here a scientist need not be familiar with the other fields to effect a successful search. As final benefits, on-line databases contain up-to-date information and the scientist obtains a customized printout of the search results for future consultation.

Unfortunately, there remain several obstacles to the full utilization of on-line databases. First there is the element of cost, as libraries must subscribe to the databases from commercial sources. Often the cost of a search exceeds $30, and it may be even more when several databases are involved. The cost problem might be solved by the parent institution agreeing to fund the library for this service in much the same way as for more traditional reference services. Another funding option is through research grants. On-line searching could be considered part of the fixed cost of doing research, like books and microfilm, and thus be included in the university's overhead. The overhead monies generated from grants could then be used to fund on-line searches. Scientists might also consider including on-line library expenses in their grant proposals and then charge the grants directly.

A second problem is the delivery method for this service. In most libraries, a scientist must go through an intermediary (usually a librarian) for terminal access, search formulation, and search execution to complete an on-line search. This can be inconvenient, as librarians are not always available to help. Further, the scientist must interpret the research problem to the librarian before a search can be done. A logistical problem also exists in many libraries. Library computer terminals are often located at inconvenient points on campus or are too few in number to be readily available. Clearly, scientists need to be trained to do their own on-line literature searches. They can use other terminals, which are often available in their offices and laboratories, and do the searches at their convenience.

The number of databases will continue to grow in the future. The kinds of information available on-line will increasingly expand beyond bibliographic data to include more numerical and other data. On-line information retrieval will be indispensable to productive research. Scientists must seek to understand and adopt this new technology.—JOHN SANDY, *General Libraries, University of Texas, Austin 78712*



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To Be Awarded for an Article or a Report Published in *Science*

The AAAS–Newcomb Cleveland Prize is awarded annually to the author of an outstanding paper published in *Science* from August through July. This competition year starts with the 7 August 1981 issue of *Science* and ends with that of 30 July 1982. The value of the prize is $5000; the winner also receives a bronze medal.

Reports and Articles that include original research data, theories, or syntheses and are fundamental contributions to basic knowledge or technical achievements of far-reaching consequence are eligible for consideration for the prize. The paper must be a first-time publication of the author's own work. Reference to pertinent earlier work by the author may be included to give perspective.

Throughout the year, readers are invited to nominate papers appearing in the Reports or Articles sections. Nominations must be typed, and the following information provided: the title of the paper, issue in which it was published, author's name, and a brief statement of justification for nomination. Nominations should be submitted to AAAS–Newcomb Cleveland Prize, AAAS, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Final selection will rest with a panel of distinguished scientists appointed by the Board of Directors.

The award will be presented at a session of the annual meeting. In cases of multiple authorship, the prize will be divided equally between or among the authors.

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