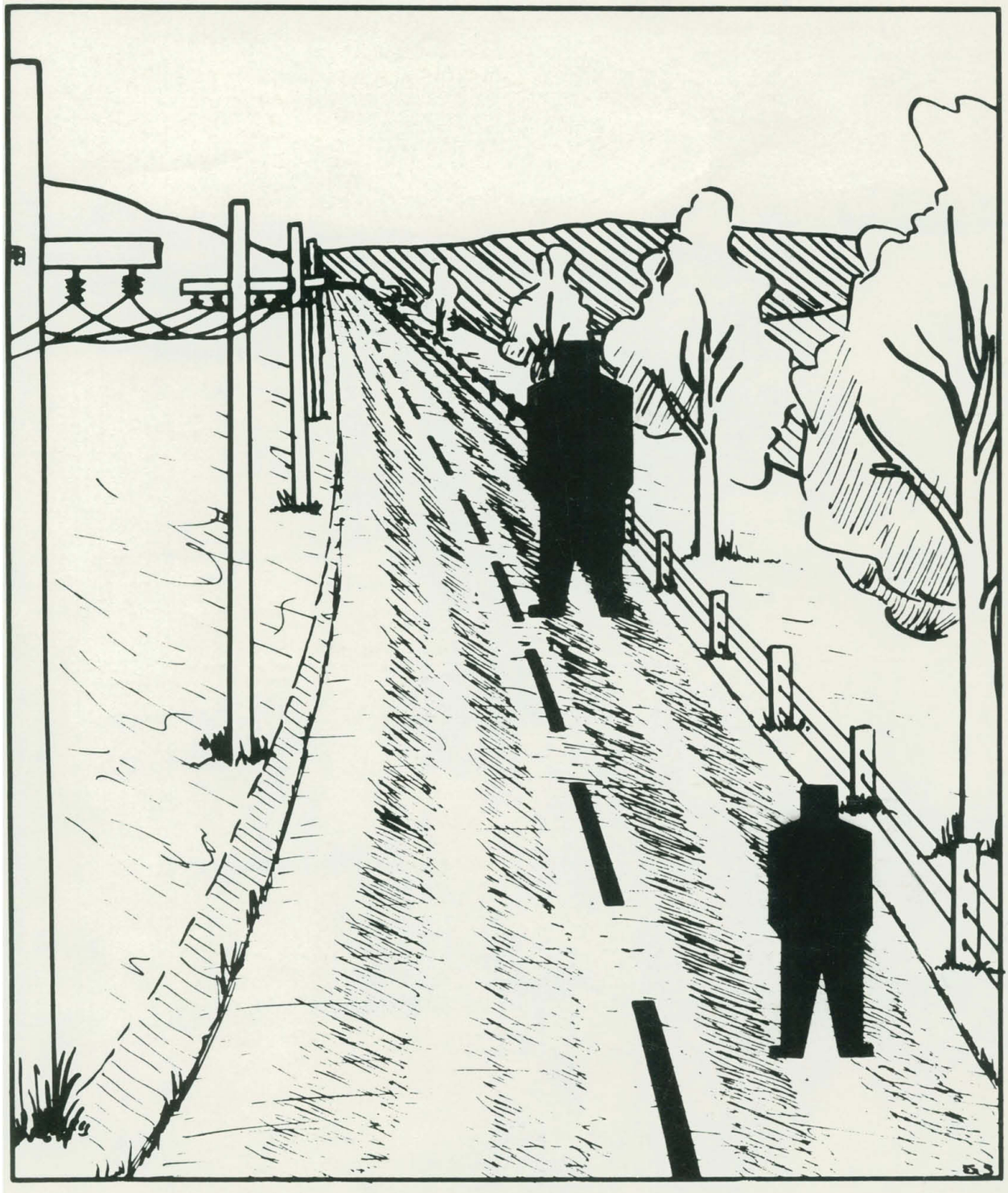
SCIENCE

24 March 1972

Vol. 175, No. 4028

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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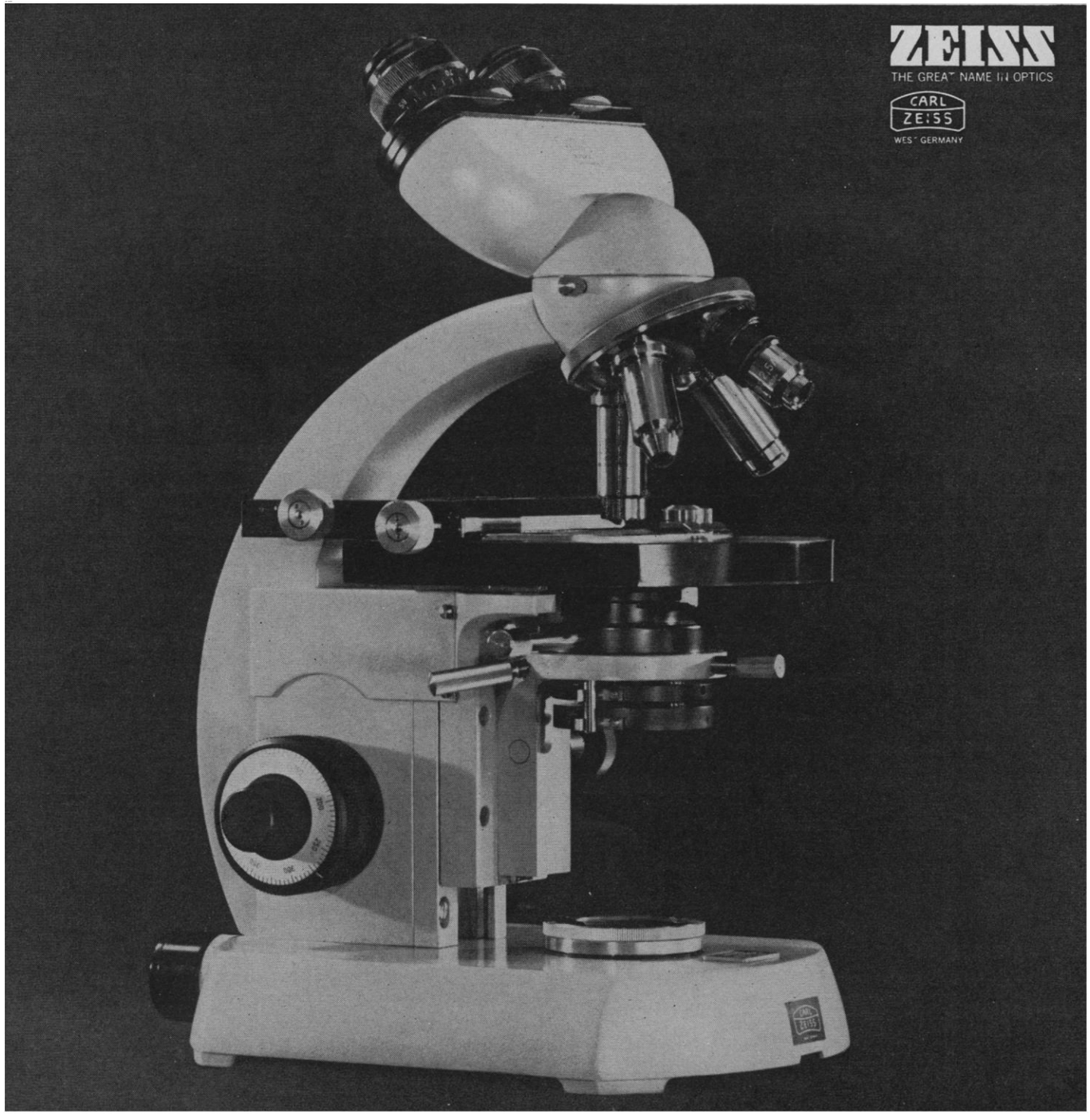

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SCIENCE

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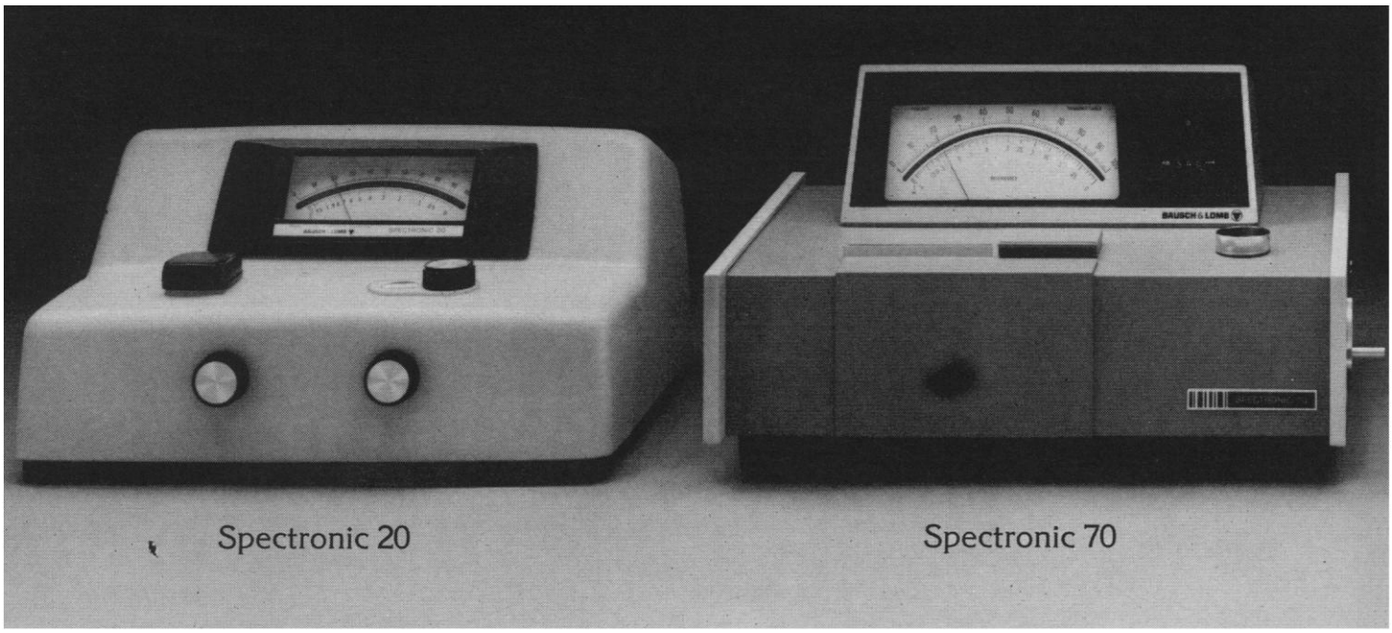
COVER

Figures and objects of the same physical size appear different when their apparent distances differ as a result of a "projected" stimulus for distance. This illusion is one instance of the class of size illusions resulting from manipulation of distance stimuli which normally preserve perceptual constancy. See page 1335. [Drawing by Gary Swinton, Monash University]



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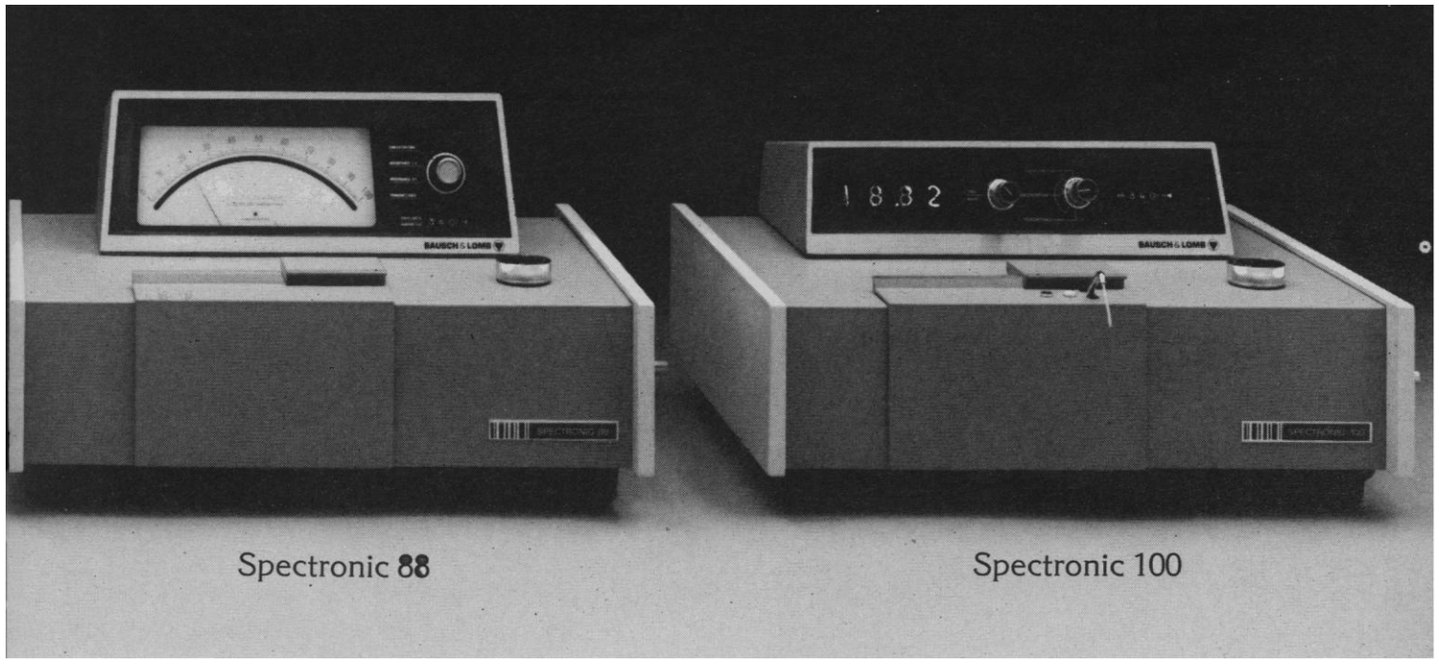

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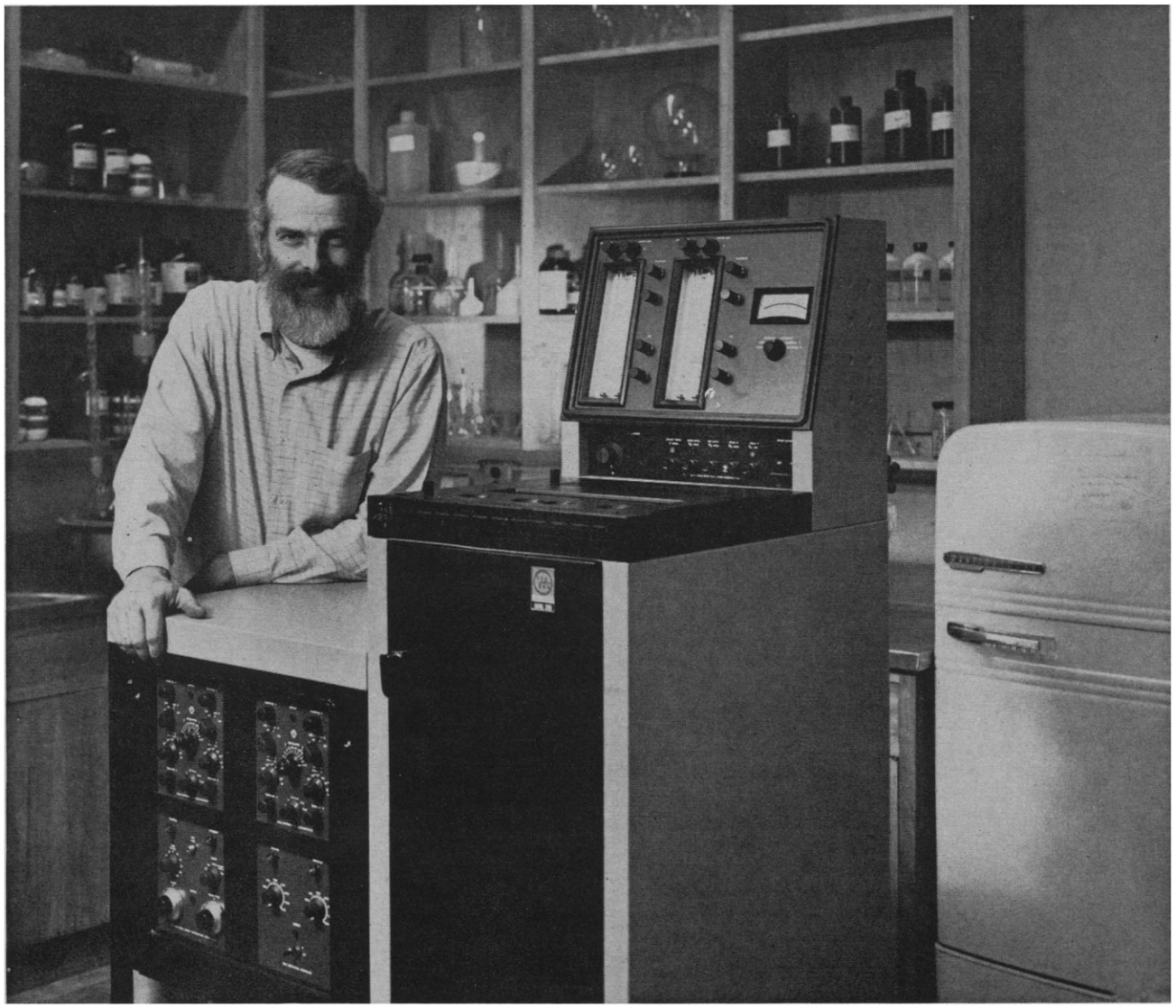

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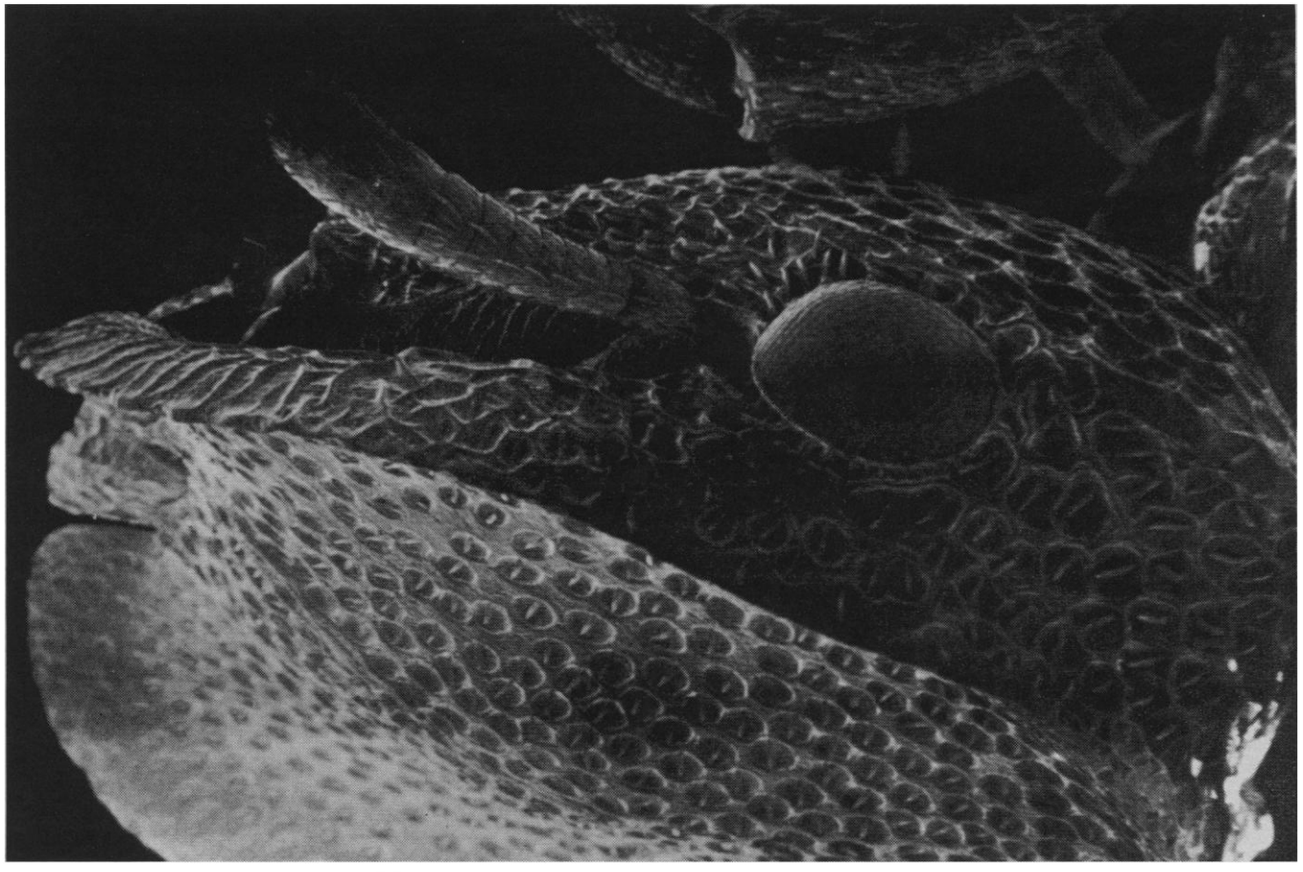

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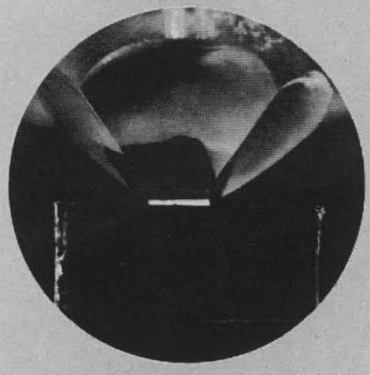

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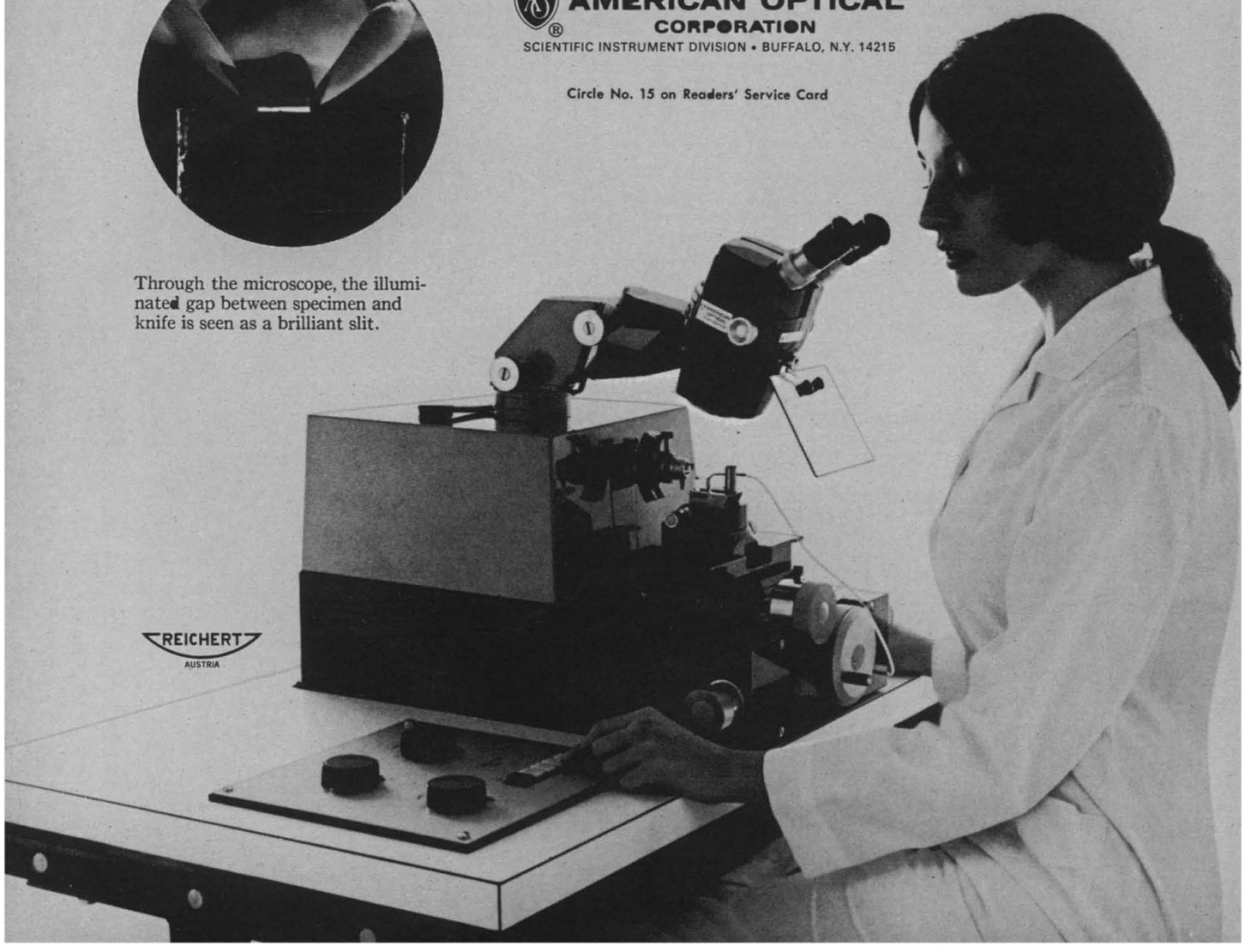

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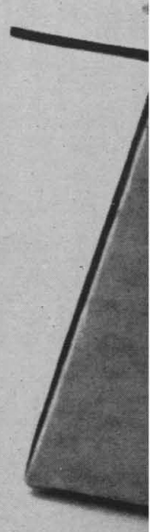
What is Carworth now doing for users of laboratory animals?



The Carworth Letter

The Carworth Letter, a venerable and useful institution, has undergone major content and format changes. It is now a vehicle for getting new information to you quickly. For example, we'll publish research news that might otherwise be unduly delayed. Or brief notes on the housing or care of animals. Or anything else that might be helpful to users of laboratory animals. (Contributions welcomed.) And if you're not now on our mailing list, let us know. We'll need your name, title, department, and address including zip code.

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"The Laboratory Mouse: Selection and Management"

by M. L. Simmons and J. O. Brick

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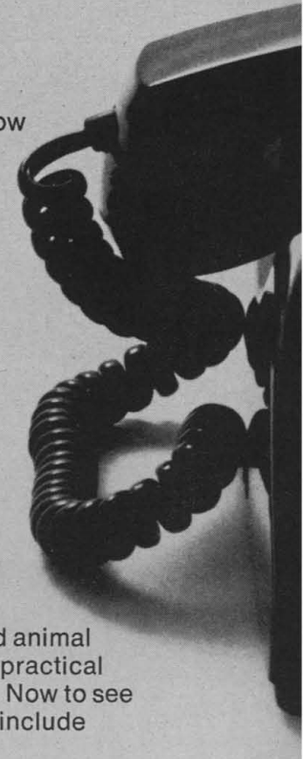

Consultative Services

Do you have problems related to laboratory animal selection, housing or care? Then turn to Carworth. We'll help you evaluate your various experimental requirements, or help with the design of your animal facility and the animals' total environment, or with any other aspect that can influence the ultimate success of your programs.

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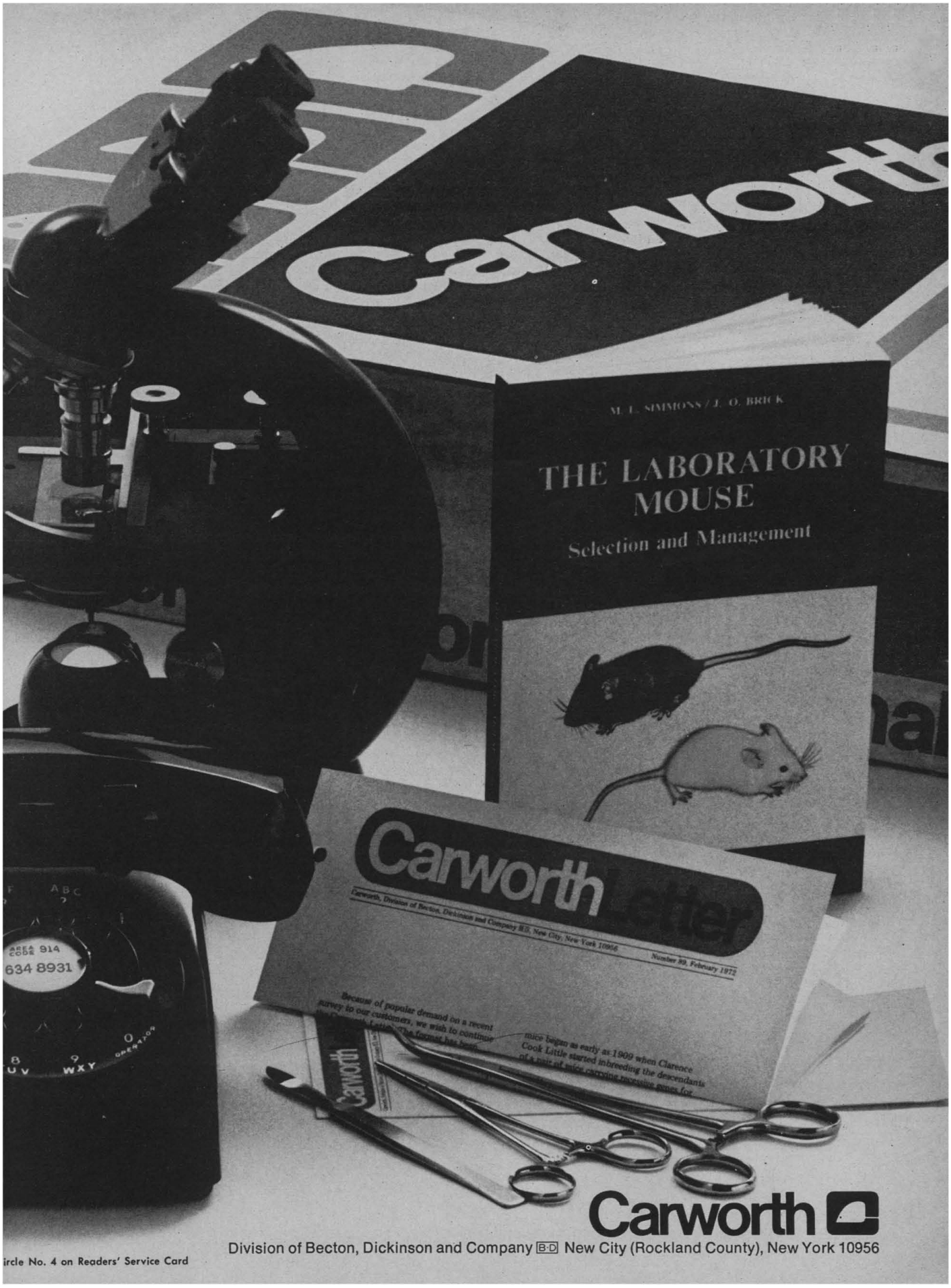

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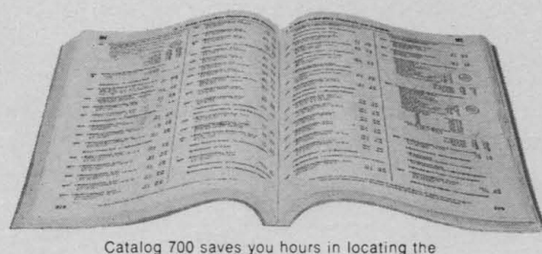

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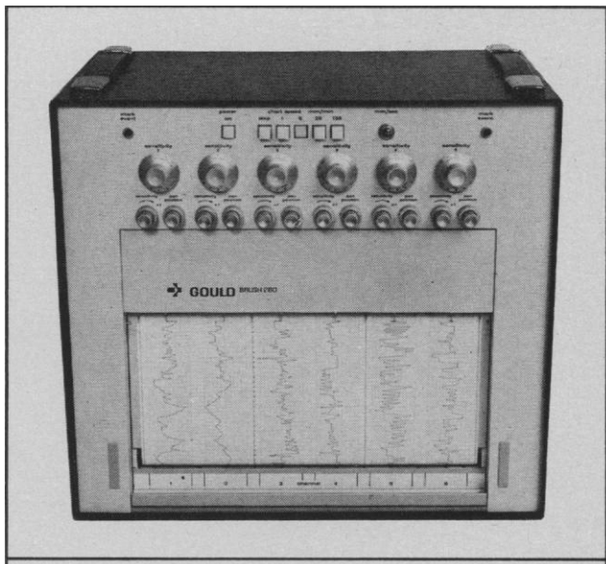

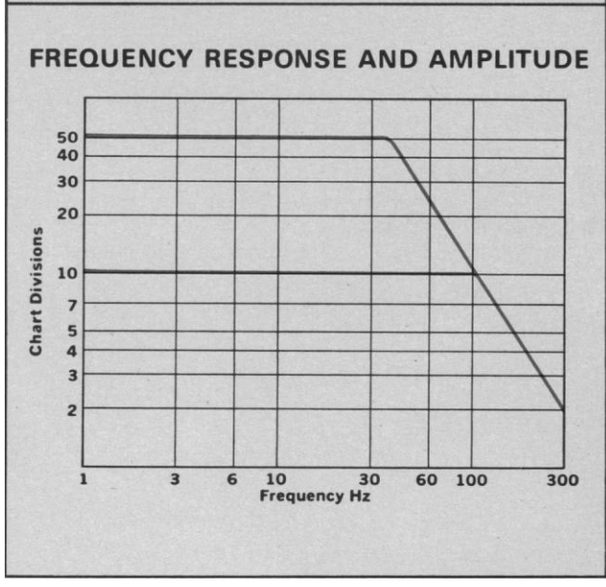

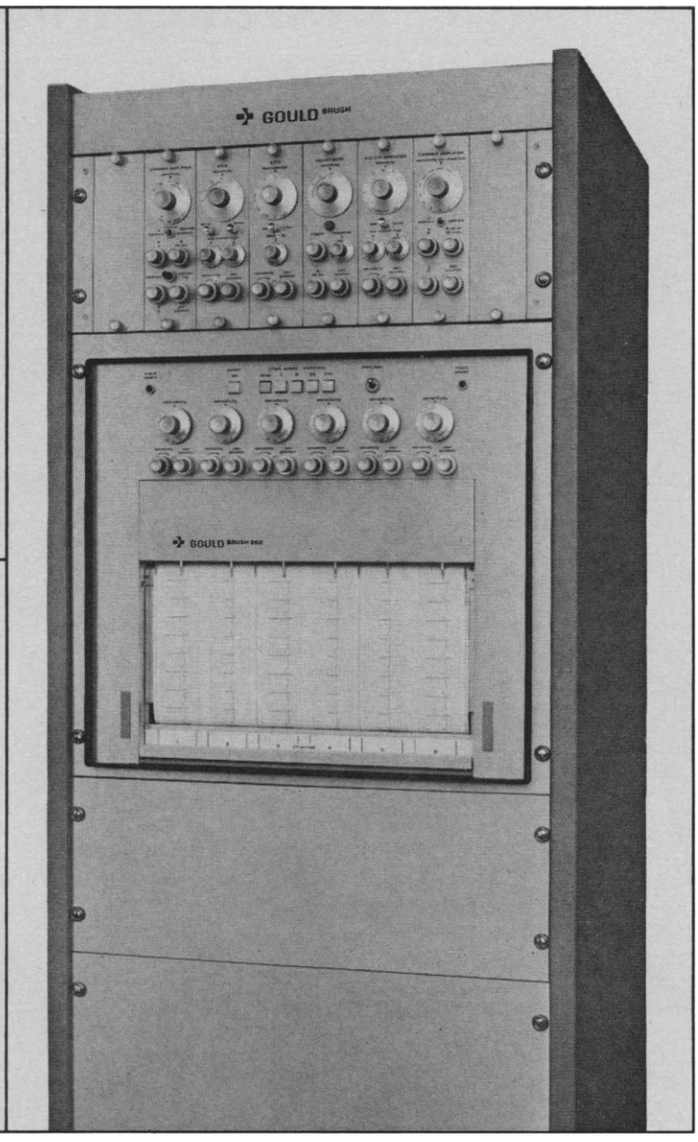

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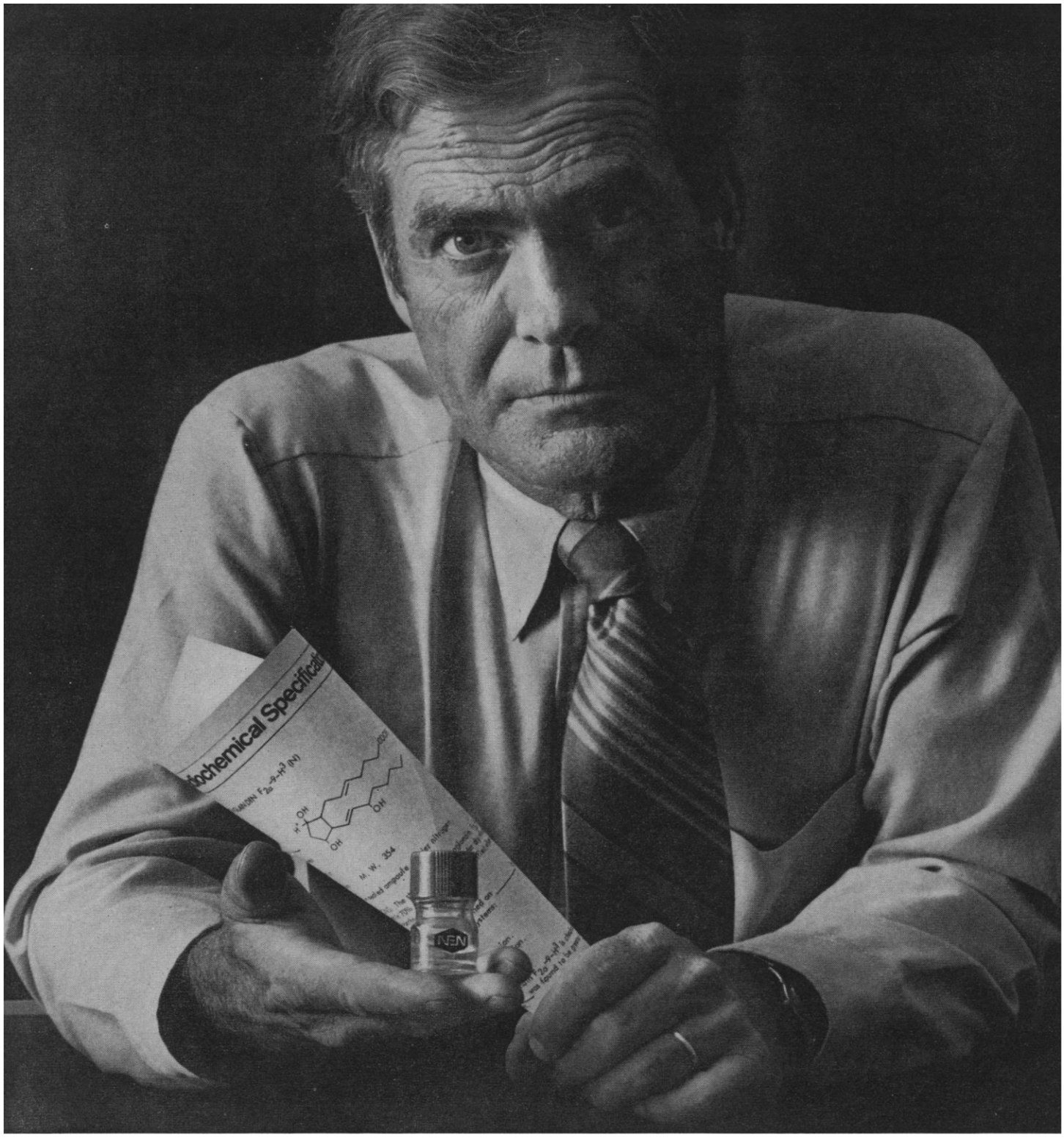

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search, excluding its expenditure for the training of researchers. This $34 million, plus the other $25 million currently spent by other HEW agencies in health-care-delivery research, amounts to a total expenditure of $59 million. This figure is substantially larger than the $18 million mentioned in Bevan's editorial. These funds are being utilized to support a variety of research efforts including the development and evaluation of experimental health-services delivery systems, new types of manpower (including those specially trained for working in rural communities), and a systems analysis of alternative national health-care plans. We expect to learn a great deal from the endeavors now under way. Moreover, a subcommittee of the President's Advisory Committee on Science is looking at the entire question of the future needs of health-services research, and we look forward to incorporating their thoughts into our long-range planning activities.

MERLIN K. DUVAL

Office of the Secretary, Department of Health, Education, and Welfare, Washington, D.C. 20201

Cancer Research

Many lay people believe that if we can put a man on the moon, we can also conquer cancer, if only we spend enough money. Let me point out the fallacy.

NASA and its Soviet counterpart are accomplishing fantastic feats. However, these feats are nothing other than the construction of machinery that is physically powerful and precise enough to reach specified velocities and directions. They have been accomplished with the help of Newton's celestial mechanics, which are two and a half centuries old, plus some more modern, but previously known devices. Man's ability to reach far into interplanetary space captures the admiration of the public. Space probes are scientific instruments comparable to telescopes. One can always build bigger and better instruments if one has enough money and trained manpower. The space probes have served us well; they have brought us much observational information, but to my knowledge no fundamental new concepts have been discovered.

Cancer is a horse of a different color. The nature of cancer is—let us admit it—still unknown. Certainly, much money and trained manpower are required to conquer cancer. But these are not the most important ingredients. We are in search of new ideas and concepts. They can only be gained by totally unprejudiced human brains.

Two of the greatest discoveries of our century, the theory of relativity and the genetic code, were achieved by brains without the help of machinery. The discovery of antibiotics, as that of x-rays, was due to an accidental observation. Other basic, novel concepts, such as the period-luminosity relationship of cepheids on which intragalactic distance estimates are based, and the concept of the expanding universe, which resulted from patient accumulation of observational data with powerful instruments, were unexpected results arrived at by unprejudiced persons. In all these cases, it took an unusually alert mind to notice a totally unknown phenomenon.

So, likewise, it will be necessary in the conquest of cancer for an individual biomedical scientist, unprejudiced by previously learned doctrines, to notice and correctly interpret a hitherto unknown property of malignant tissue. The best environment for this discovery is that of freedom of investigation. The more highly the new cancer agency is organized administratively, the less likely it is for the "breakthrough" to occur within its framework. The National Institutes of Health (NIH) possess a high degree of flexibility. Funding of research at academic institutions through NIH offers the atmosphere in which cancer may be conquered.

HANS ELIAS

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Price Advantage

Readers of the review (11 Feb., p. 621) of the book *Cosmic Gamma Rays* by Stecker might be interested to know that an edition of this book was published by the National Aeronautics and Space Administration and is available from the Superintendent of Documents, Washington, D.C., for $1.25. This edition is paperback, it is true, but that deficiency may not outweigh the tenfold price advantage, compared to the edition published in Baltimore. The NASA edition has the same name, and is further identified by "NASA SP-249."

N. PEARLMAN

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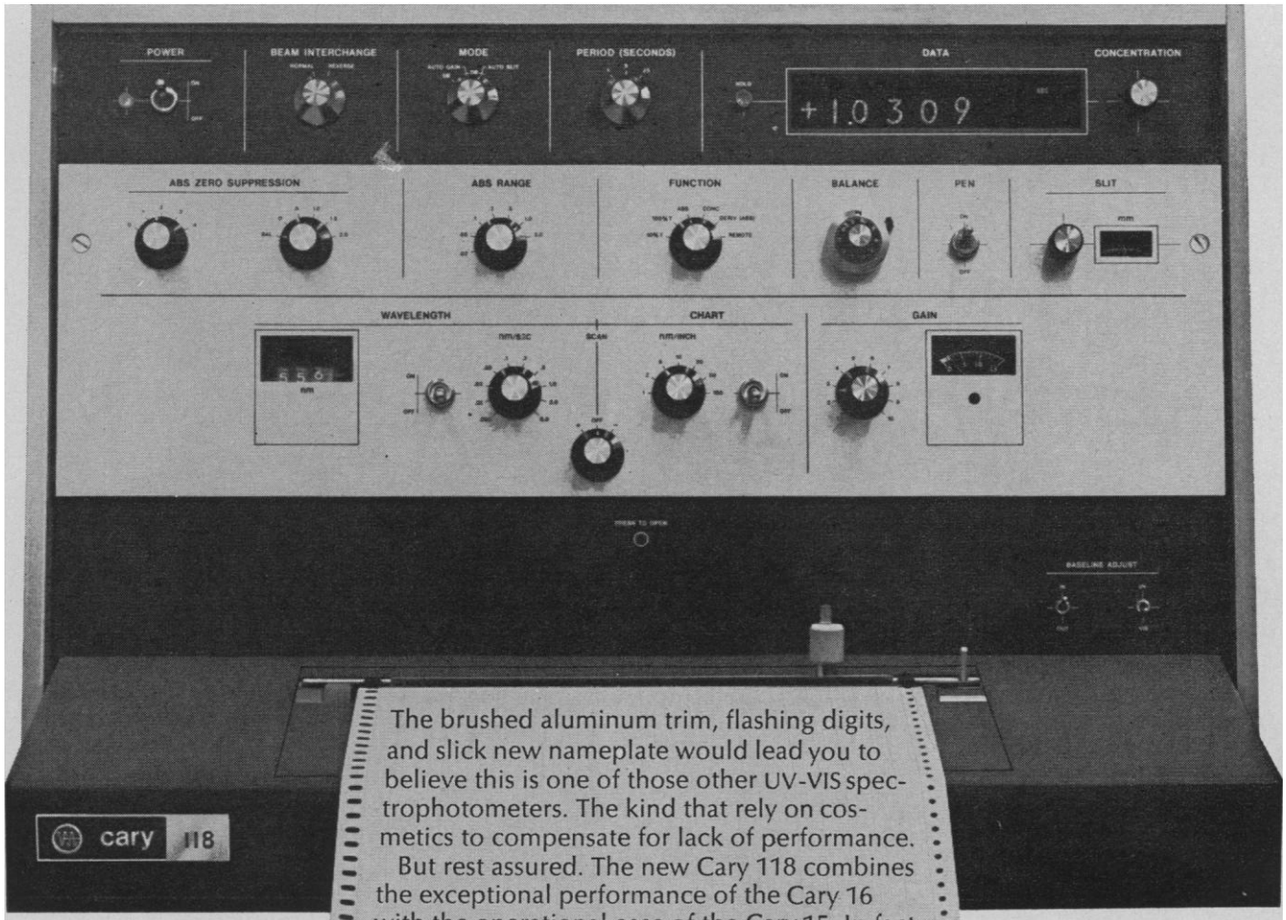
Until the new Cary 118 you could always judge a spectrophotometer by its cover.



The brushed aluminum trim, flashing digits, and slick new nameplate would lead you to believe this is one of those other UV-VIS spectrophotometers. The kind that rely on cosmetics to compensate for lack of performance.

But rest assured. The new Cary 118 combines the exceptional performance of the Cary 16 with the operational ease of the Cary 15. In fact, the features include a double monochromator, a digitally coupled wavelength scan and chart drive, and a photometric accuracy of 0.001 at 1 absorbance.

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The recorder itself is a brand new design. For example, the pen drive has no cables or gears, so there's no backlash. And no detectable pen dead zone.

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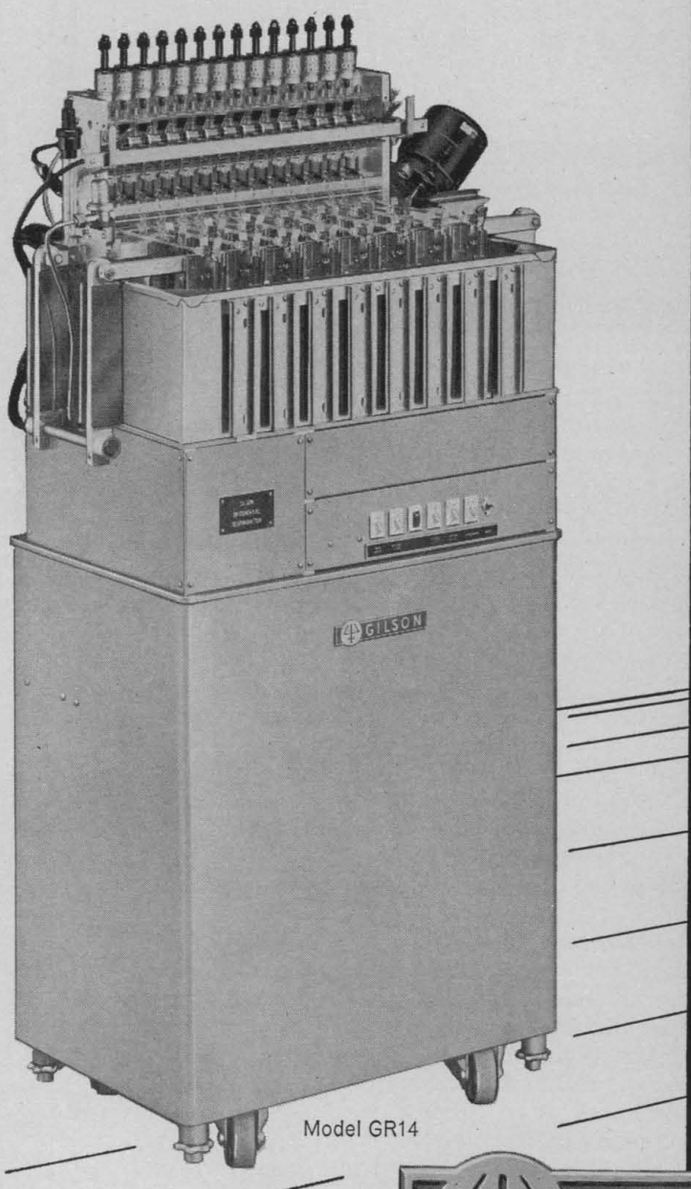

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24 March 1972, Volume 175, Number 4028 **SCIENCE**

Federal Statistics

Increasingly, all manner of powers and responsibilities have been vested in the federal government. At the same time, the government has come to require of citizens and of private organizations a quality of performance of which the government itself seems incapable. An especially timely example is a differing performance with respect to statistical material. In many instances the latest government statistics are only as recent as 1969. Yet individuals and companies are expected to file accurate income tax returns within a few months following the end of their fiscal year. In some instances government officials merit patience when the sources of basic data are numerous and widespread. However, many of the big corporations carry on comparably complex operations, and they are expected to function expeditiously. Moreover, associations of such companies often issue statistics on a weekly basis.

To collect and analyze the enormous amounts of statistical material it ultimately issues, the government spends very large sums of money. In most cases very few people pay much attention to the data, so no great harm other than an unnecessary tax burden is sustained. There are other instances, however, in which the government's inefficiency affects its own responsibilities or makes it more difficult for other components of society to function as well as they might. A recent example of the latter has been the failure of government to provide current statistics on the number of unemployed scientists and engineers. The Bureau of Labor Statistics is carrying on a study to predict the demand for scientists in 1980, but no one seems to know where we stand today.

Perhaps more serious, since it touches all citizens, is the government's failure to provide timely information on pollution. The latest easily available data are those appearing in the annual report of the Council on Environmental Quality for 1971 issued in August 1971. These data are by no means comprehensive, but they give, for example, information on important air pollutants such as SO_2 and NO_x. The latest figures are for 1969, and we are informed that 1970 figures will not be available until next May. In the meantime, in the absence of data, numerous federal, state, and local actions are being taken.

One of the ironies of the situation is that, as a result of federal and local action, progress is being made in abating pollution. Why keep it a secret?

A tough-minded approach to government statistics seems called for. What is the value of accurate information in fast-changing fields when the figures are years out of date? The government is able to furnish in a timely fashion a few important indexes. Why can it not move faster in other fields?

One of the important lessons of recent years is that fairly accurate information can be quickly obtained by using sampling techniques such as the opinion polls. Why not apply such techniques to obtaining unemployment data or for predicting future job opportunities?

Today many of the data on various pollutants are collected by electronic sensors. Why not feed these data into a central electronic processor and have printouts on demand?

The present pace at which government statistics are assembled is appropriate to the days of the pony express, the quill pen, and laborious arithmetic. Time is overdue for the government to begin to move with the late 20th century and to produce the kind of current information that it demands of others.—PHILIP H. ABELSON

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