SCIENCE

28 June 1968

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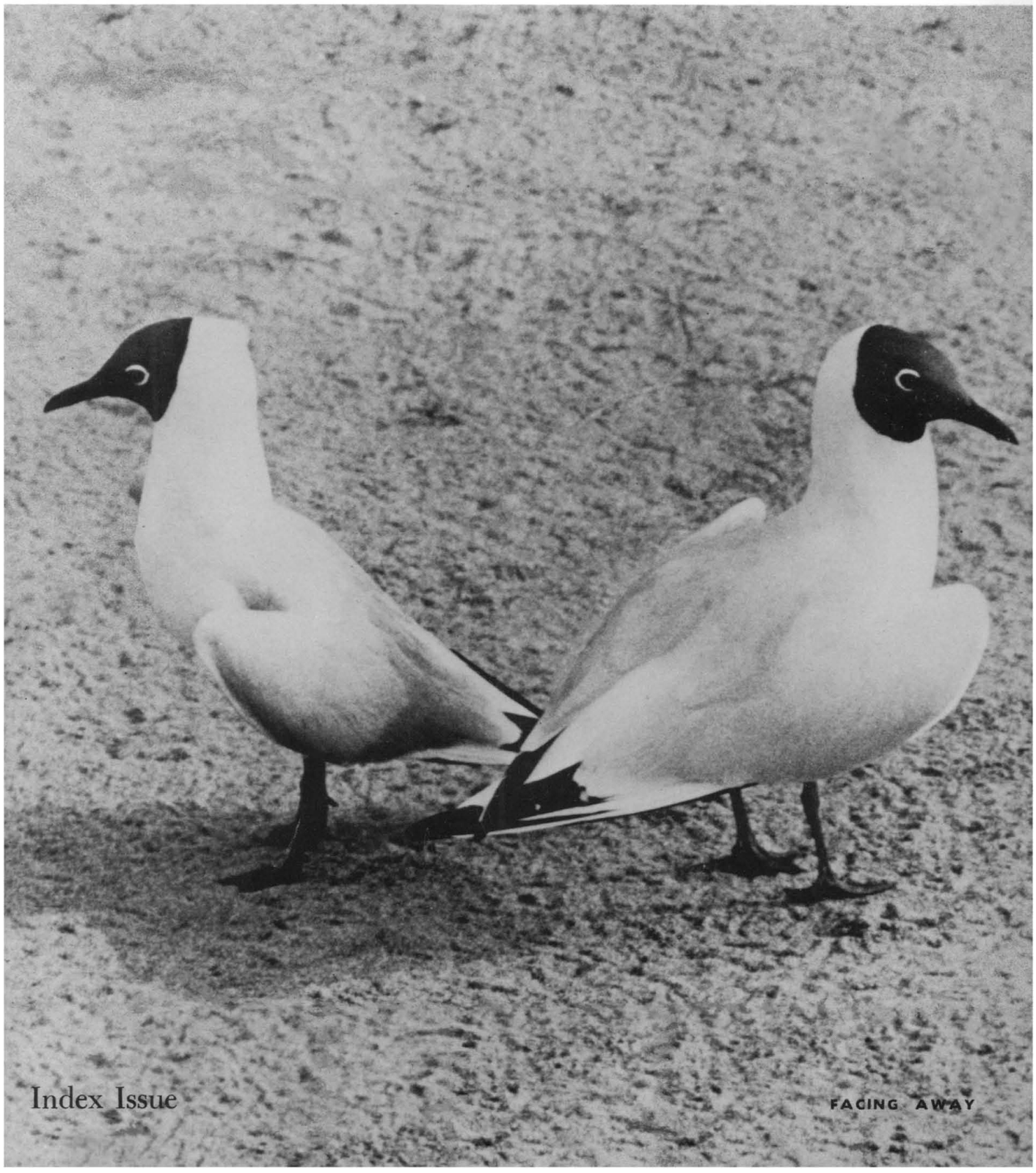
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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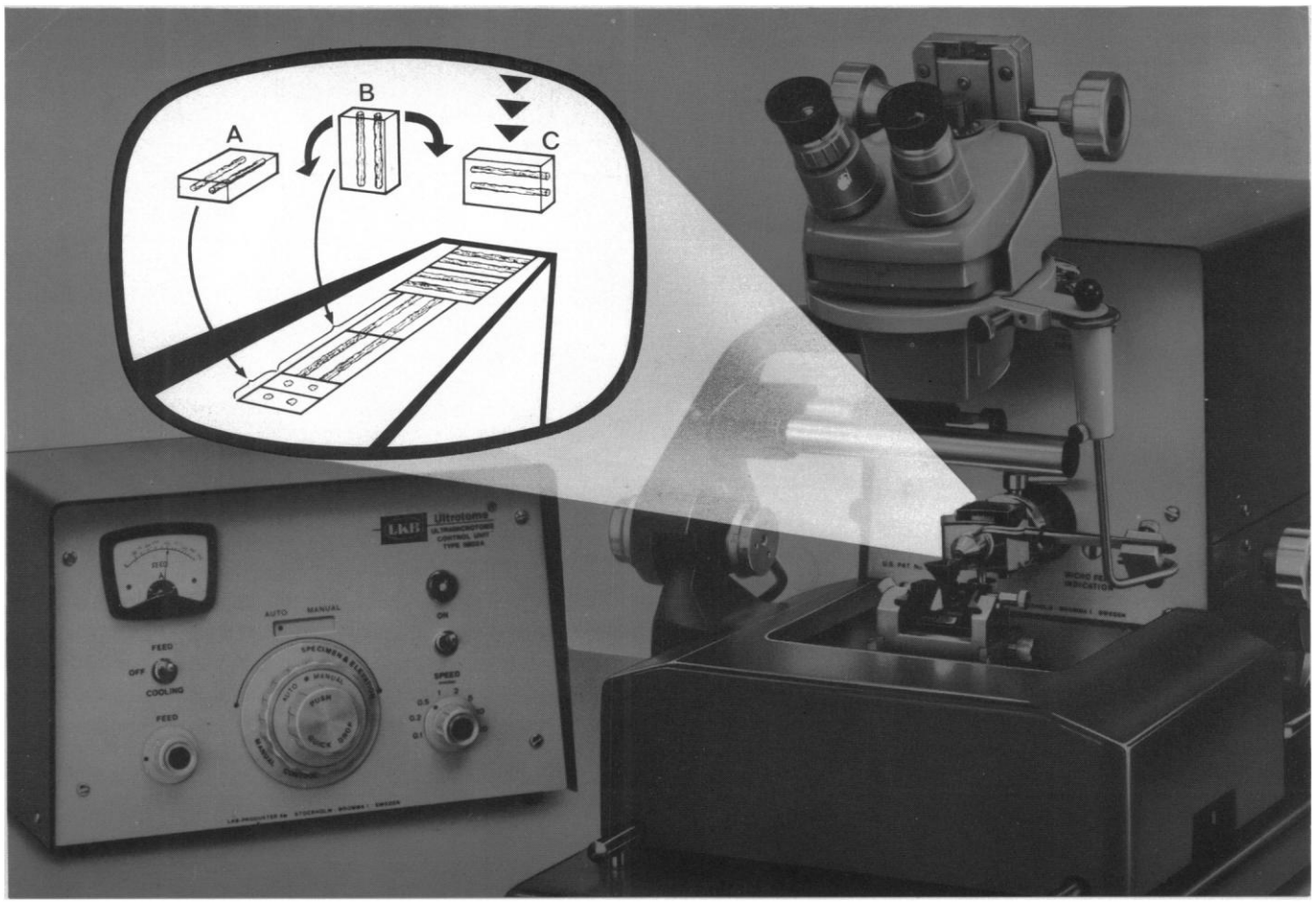
FACING AWAY



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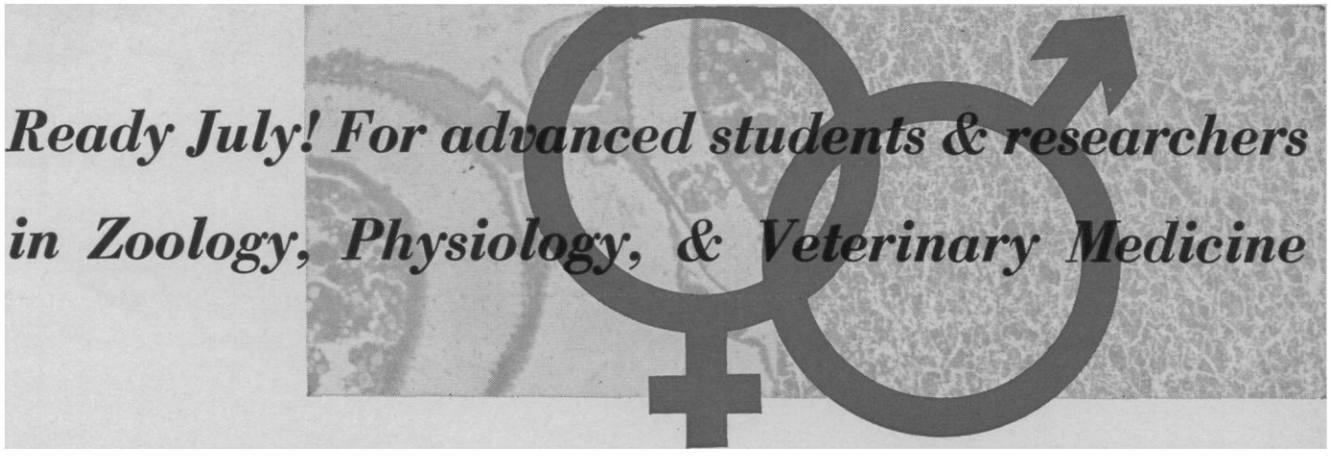

Reproductive Physiology of Vertebrates

ARI van TIENHOVEN, Ph.D.

Cornell University

In this much-needed text and reference, an internationally recognized authority meticulously examines and compares the reproductive mechanisms of the different classes of vertebrates. The book is organized by topics—Sex Determination, Anatomy, Cyclic Phenomena, Viviparity, etc. —rather than by species. It emphasizes the neural and endocrine mechanisms involved in the regulation of reproduction, and the interactions between them. Dr. van Tienhoven considers the role of the hypothalmus, the interactions between behavior and the endocrine system, and the effects of environment on reproduction. Possible pathways by which environment might exert its influence are suggested. An extensive number of valuable tables compare the hormone secretions and concentrations in different vertebrates. This book will be welcomed by advanced students and researchers in zoology, physiology, and veterinary medicine.

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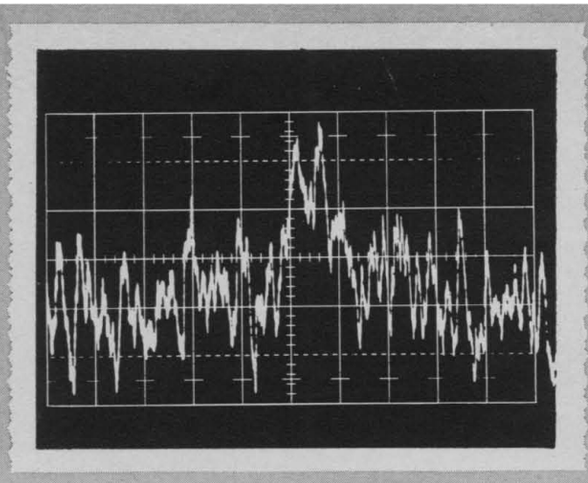
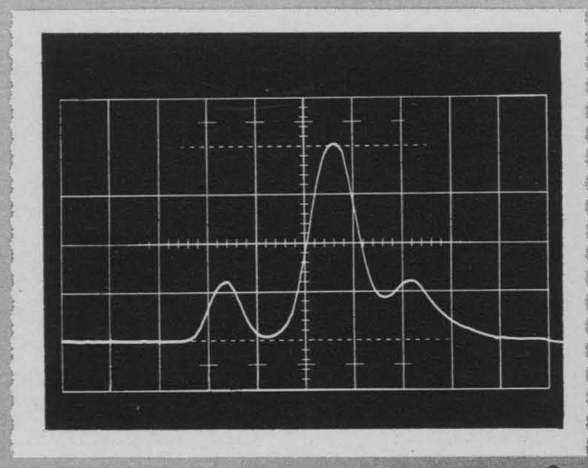
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

"Facing Away," the most common appeasement posture of the Black-headed Gull. Experiments have shown that the brown facial mask acts as an intimidation or distance-increasing device, and that facing away facilitates approach in the sex partners. See page 1411. [N. Tinbergen, University of Oxford, Oxford, England]

Noisy Signal?





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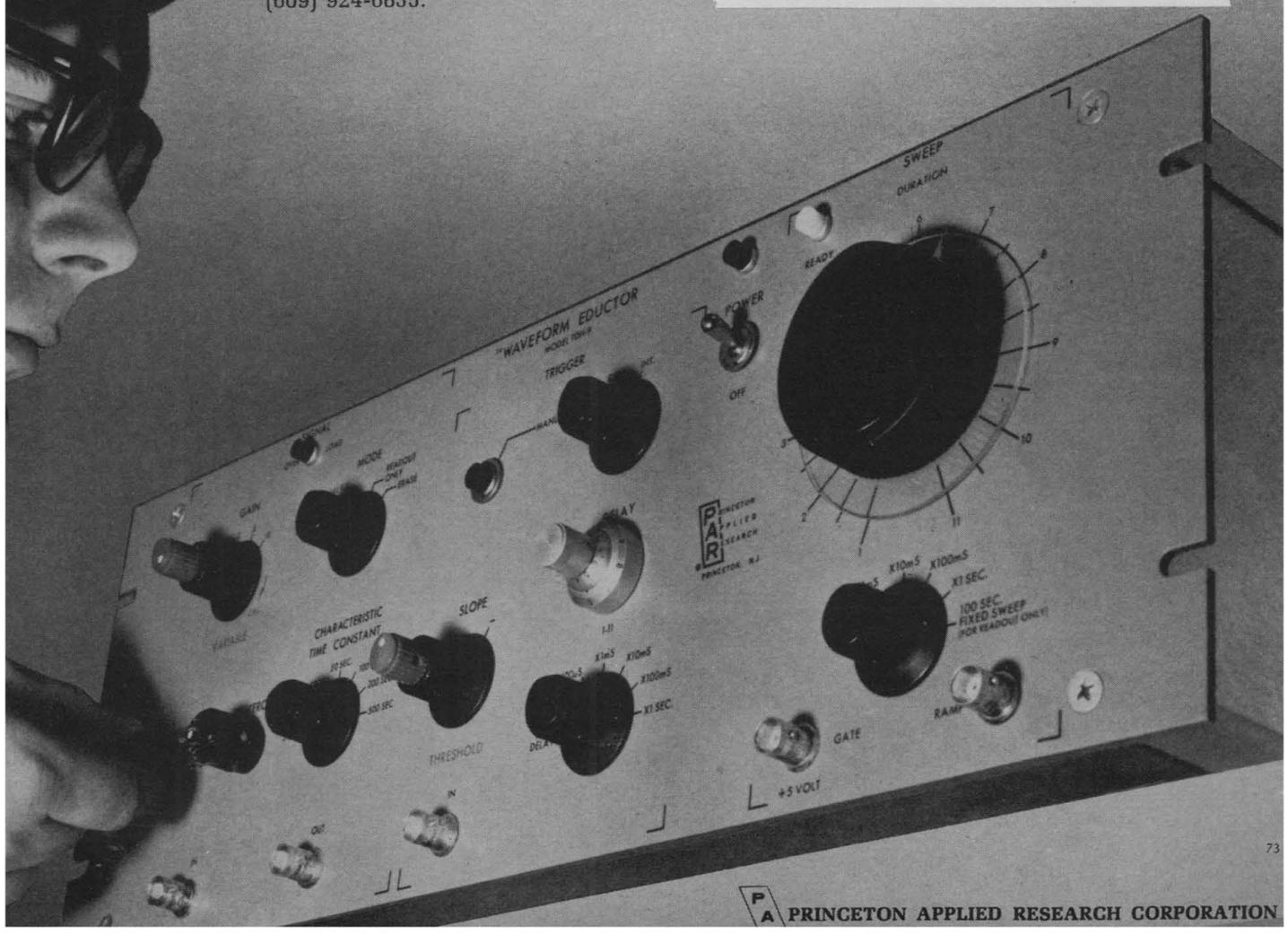

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PA PRINCETON APPLIED RESEARCH CORPORATION

pertinent historical review of molecular biology ("That was the molecular biology that was," 26 Apr., p. 390), Stent makes no mention of the definitive proof of deoxyribonucleic acid (DNA) as the basic hereditary substance by O. T. Avery, C. M. MacLeod, and H. McCarty [*J. Exp. Med.* **79**, 137 (1944)]. The growth of the informationist school of molecular biology rests upon this experimental proof.

Historical recognition is due those whose work has stimulated an army of recruits to enlist in a new field of science. I am old enough to remember the excitement and enthusiasm induced by the publication of the paper by Avery, MacLeod, and McCarty. Avery, an effective bacteriologist, was a quiet, self-effacing, nondisputatious gentleman. These characteristics of personality should not prevent the general scientific public represented by the audience of *Science* to let his name go unrecognized.

CARL LAMANNA
Office of the Chief of Research and Development, Department of the Army, Washington, D.C. 20310

Even though my essay was not intended to be a definitive history of molecular biology and hence kept the number of names mentioned to a, quite possibly scurrilous, minimum, I do agree, in retrospect, with Lamanna's stricture that I really *should* have made explicit mention of Avery's proof during the Romantic Period that DNA is the hereditary substance. However, Lamanna's assertion that "the growth of the informationist school of molecular biology rests upon this experimental proof" is, in my opinion, quite untrue. As I shall set forth in more detail elsewhere, Avery's 1944 discovery made a surprisingly small impact on geneticists, both molecular and classical, for many years, and it was only the Hershey-Chase experiment of 1952 which caused these people to focus on DNA. The reason for this delay was neither that Avery's work was unknown to or mistrusted by them nor that the Hershey-Chase experiment was technically superior. Instead, Avery's proof had been merely "premature," in that the views generally held about the structure of DNA in the 1940's, particularly the "tetranucleotide" hypothesis, did not, as I trust Lamanna also remembers, provide any theoretical framework within which the role of DNA as carrier of hereditary information could be understood. By the time of the Hershey-Chase experiment, however, the notion of DNA as a long polynucleotide of variable nucleotide sequence had gained currency, and now, as demanded by Eddington's Rules of doing science, confidence could be placed in the experimental findings because they were confirmed by theory.

GUNTHER S. STENT
Department of Molecular Biology, University of California, Berkeley

Rice: Expansion, Not Explosion

Far be it from Rice University to squander a massive $33 million on the few projects mentioned in "News in Brief" (12 Apr., p. 169). We'll handle these projects with the $1-million grant from the Ford Foundation. Inadvertently *Science* gave its readers the impression that Rice had succeeded in squeezing a Saturn rocket engine into a Tin Lizzy.

Proceeds from our 3-year $33-million campaign are to be used for a major 10-year expansion program of Rice University. By the end of May, the drive had reached a total of $32.5 million in gifts and pledges. It will be concluded in December of this year.

Here's the correct breakdown of our $33-million campaign: $6 million for scholarships and fellowships; $6 million for faculty; $2.5 million for architecture and fine arts; $1.2 million for engineering; $600,000 for biology; $600,000 for mathematical sciences; $1.5 million for physics and chemistry; $2 million for our Fondren Library; $1 million for major equipment; $7 million for undergraduate housing; $1.3 million for graduate housing; $300,000 for health center; and $3 million for immediate working capital needs. Not included in the $33-million campaign are Rice University's long-range requirements, including a graduate school of management which may cost $8.5 million and a 3000-seat auditorium with a $3.7-million cost estimate.

The above clarification should give some measure of hope to those of your readers whose faith in the shrinking dollar is hanging by the thinnest of threads. To this I wish to add that even in Texas we still tend to be cautious with millions and would not think of forcing $33 million down the slender throat of a $1-million project.

LELAND L. ESTES
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Glycine	40μc
L-Histidine	15μc
L-Isoleucine	50μc
L-Leucine	140μc
L-Lysine	60μc
L-Phenylalanine	80μc
L-Proline	50μc
L-Serine	40μc
L-Threonine	50μc
L-Tyrosine	40μc
L-Valine	80μc
TOTAL	1000μc

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- L-Histidine-3-H^3 (NET-194)
- L-4-Hydroxyproline-5-H^3 (NET-122)
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SCIENCE

Implementing Budget Cuts

With completion of congressional action on the Revenue and Expenditure Control Act of 1968, the White House and the Executive Branch are the new focus of uncertainty. For the past several months, administrators of science-oriented agencies have been preparing to cope with cuts in expenditures. The agencies have gone through so many exercises involving so many alternative sets of assumptions that one administrator was heard to say, "We suffer from battle fatigue coupled with confusion." As a result of their exercises, all agree that limitations on expenditures will create difficult practical problems. The situation faced by the National Institutes of Health is illustrative.

President Johnson, with the advice of the Bureau of the Budget, will apportion cuts to the various departments. According to Secretary Cohen, the Department of Health, Education, and Welfare, of which NIH is a part, is likely to receive orders to reduce its expenditures by between $0.7 and $1 billion below the budgeted $14.4 billion. Secretary Cohen also has estimated that only $3.3 of the $14.4 billion of budgeted expenditures for fiscal 1969 are subject to administrative control, and it is from this small fraction that the cuts in expenditures must come. As part of HEW, NIH must bear its share of the reduction.

In making reductions, NIH in turn faces inflexibilities. Legal commitments for construction and for training grants must be met. In earlier years NIH undertook moral commitments to sponsor investigators for extended periods. For example, in 1965, 1966, and 1967 many grants were made in which it was indicated that work would be supported for 5 years. If all such commitments were met in full, limited funds would be available for new grants or for renewals of those whose term is completed, and young investigators especially would suffer. Thus, NIH may find it necessary to ask that investigators being supported on continuation grants accept reductions in the level of support.

The appropriation for the National Science Foundation for this year will be cut. However, that seems to concern the Foundation less than the unknown separate reductions in its authorized expenditures. The size of the permitted expenditure will be determined directly by President Johnson and the Bureau of the Budget. The Foundation faces inflexibilities similar to those in prospect for NIH, in the form of moral commitments made earlier to many investigators. The Foundation and its Board seem especially concerned that graduate students and young faculty members should not suffer unduly. Some Board members feel that, depending on the severity of the reduction apportioned to it, the Foundation may find it necessary to delay grant payments, or necessary to ask investigators to accept cuts, and it may have to discontinue payment of summer salaries for investigators, to diminish support of postdoctoral fellows, and to postpone authorizations for purchase of large equipment.

Faced with the necessity of making substantial reductions in expenditures, the granting agencies are seeking to keep to a minimum the damage that will ensue. Their task will be facilitated if they receive understanding cooperation from academic scientists. Those scientists who are disappointed by actions taken by the granting agencies should address their complaints to the root source of the problem—the Congress and the President.—PHILIP H. ABELSON

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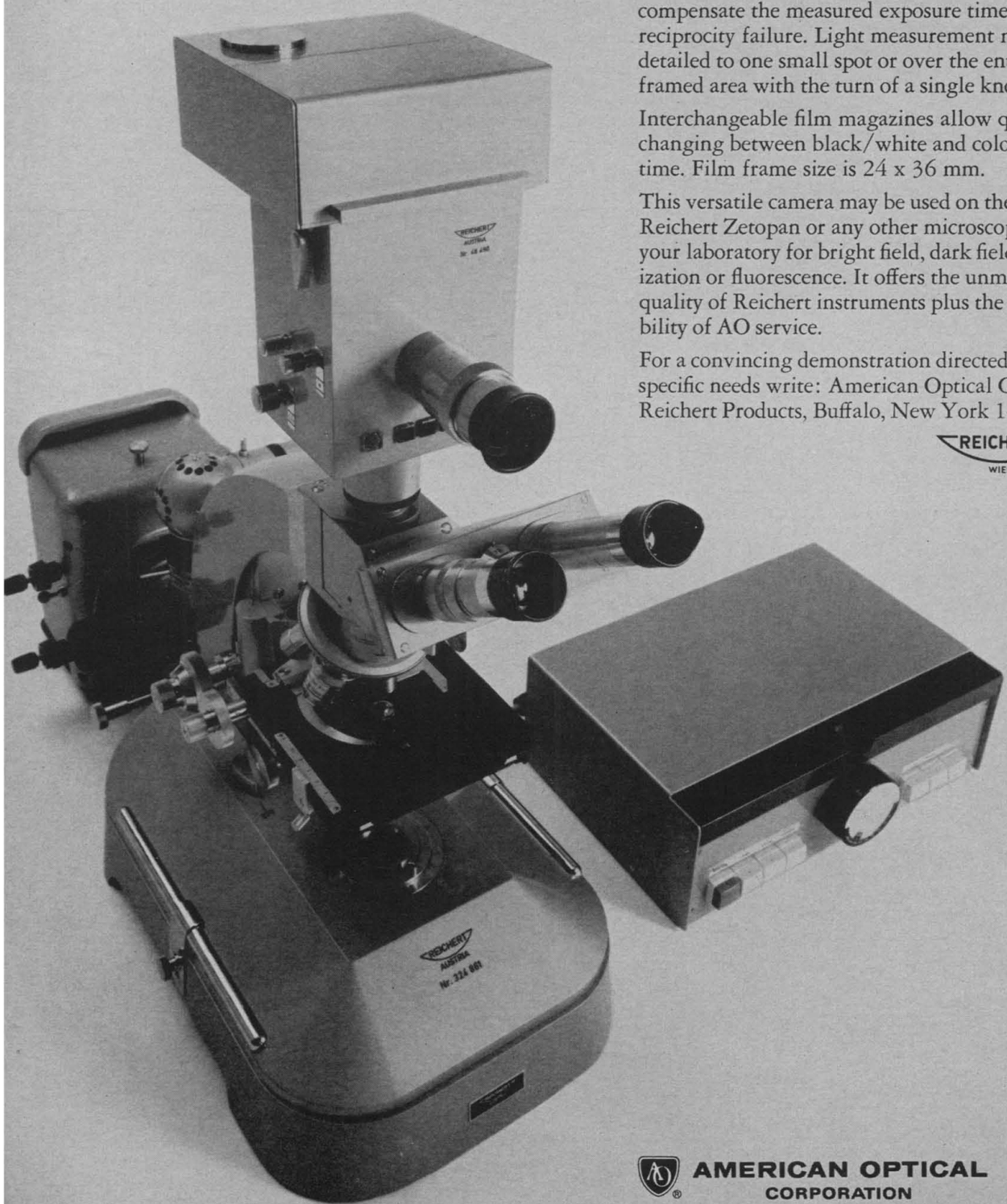

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