SCIENCE

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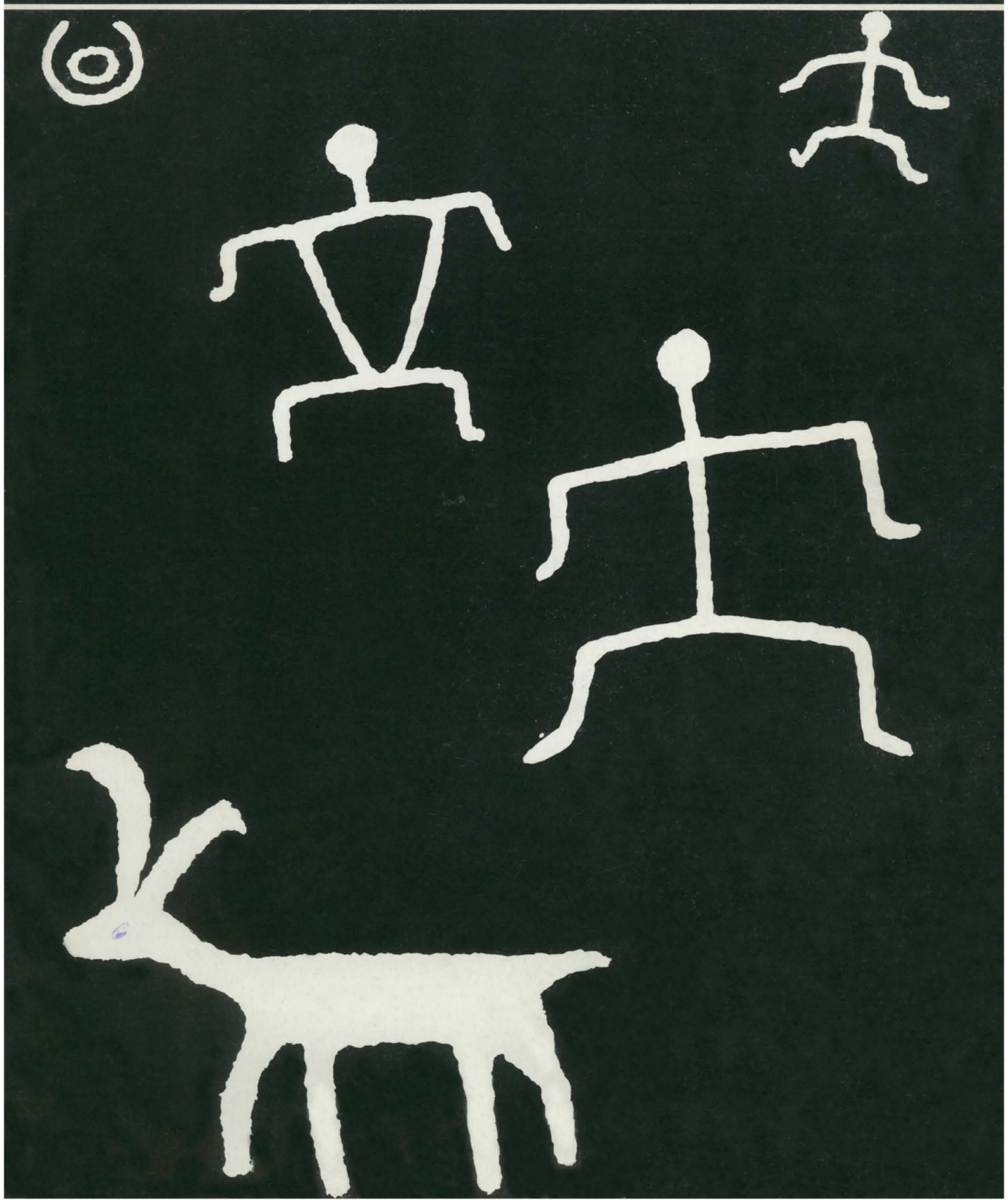

Suggested Reading for the

Environmental Teach-In

Estuaries

The development of coastal areas has been very rapid in recent years, but knowledge of estuarine environments has not kept pace with the necessity to resolve problems arising from their intensive use. This is the first comprehensive collection of scientific papers covering the comparatively new field of estuarine research.

This volume contains 71 articles on physical and biological factors, geomorphology, sediments and sedimentation, microbiota, ecology, evolution, fisheries, human influences and pollution.

Edited by George H. Lauff. 1967. 2nd printing, 1968. 776 pages. Illustrated. Bibliography. Indexes.

Agriculture and the Quality of Our Environment

This symposium is basically concerned with the problem of how environmental quality affects agriculture, and how agriculture affects the quality of the environment. It identifies the part which science must play in solving environmental pollution problems.

Edited by N. C. Brady. 1967. 476 pages. Bibliography. Author and subject indexes.

Air Conservation

This is a report of deliberations of the Air Conservation Commission of the AAAS over a 2-year period. It pulls together into a single reference a wealth of information presented by authorities in the fields of conservation, pollution control, pollutants and their effects, law, economics, meteorology, public health, public opinion and government.

The *Bulletin* of the American Meteorological Society calls this work "the most thoughtful, realistic and penetrating analysis of air pollution as a factor in the societies of today and tomorrow now available. It is a *must* for the serious student and professional, and can be highly recommended to the interested citizen."

Report of the AAAS Air Conservation Commission; James P. Dixon, Chairman. 1965. 2nd printing, 1968. 348 pages. Illustrated. Bibliography. Index.

Oceanography

A collection of 30 papers presented at the first International Oceanographic Congress by world-renowned authorities. An interdisciplinary reference that deals with some of mankind's most profound questions . . . the origin and history of living things, for example, and the history of our galaxy as recorded in marine sediments.

Edited by Mary Sears. 1961. 5th printing, 1969. 665 pages. 146 illustrations. Bibliography. Subject index. Author index.

Mail to AAAS, Dept. HN, 1515 Massachusetts Ave., NW, Washington, D.C. 20005
Please send the following:
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_____ *Air Conservation* (Retail price, $8; AAAS member price when payment enclosed, $7)
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COVER

"Arrival of the domestic goat on Hawaii Island, about 1779." A composite of tracings from the petroglyphs at Puako, South Kohala District. See review of *Mammals in Hawaii*, page 45. [Drawn by Marcia Tomich, Honokoa, Hawaii]

who evaluate and pass judgment on an individual's performance during his lifetime. If the study of personality has shown anything at all it is that people are more consistent than otherwise, and it is hardly surprising that the kind of success we display in coping with the problems we encounter during college tends to be characteristic of the success we have in other areas. There are many individual instances of uneven and inconsistent performance, of course, but they tend to attract notice because they are unusual. The general trend, however, is toward a general consistency in individual performance which is in turn reflected by consistencies in the way different judges, official and otherwise, evaluate the same individual's performance. This tends to be true irrespective of whether the judges are teachers, employers, workers, casual acquaintances, one's family, or even one's students. This basic consistency in behavior of both the evaluated and his evaluators shows up in positive correlations among measures of such variables as grades, leadership, social adjustment, and general problem-solving ability.

The fact that behavior tends to be consistent does not mean that it cannot be changed, but rather that changes do not occur very readily. It is a major function of education to bring about desirable changes, and our failures may be in a large part due to our reluctance to attain a more meaningful understanding of the phenomena we are trying to modify.

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References

1. E. Havemann and P. S. West, *They Went to College* (Harcourt Brace, New York, 1952), p. 160.
2. M. H. Oden, *Genet. Psychol. Monogr.* **77**, 3 (1968).

Langmuir's Seeding of Hurricanes

References to early attempts at modifying a hurricane by cloud seeding, such as those of Gentry ("Hurricane Debbie modification experiments, August 1969," 24 Apr., p. 473), are incomplete without mention of Irving Langmuir's seeding of a Florida hurricane on 13 October 1947, several hundred miles off the East Coast. In describing this experiment in 1948, he said, "The main thing that we learned

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Graduate Student Support

Anyone examining a curve showing the number of Ph.D. degrees conferred each year would have to conclude that the rate of increase must surely soon diminish; what now looks like an exponential curve will simply have to show a slower rate of increase in the future. Moreover, the widely publicized evidence that production has caught up with demand indicates that the inflection point must soon be reached. That production would catch up with requirements was projected 5 years ago by Allan Cartter and has since been pointed out by others. Yet, instead of an orderly adjustment to a foreseeable trend, universities and students are being confronted with drastic cuts in government programs of graduate student support.

That the universities can adapt to changes in the number of students has been amply demonstrated in the past. That universities and other employers can also adapt to changing numbers of available Ph.D.'s has also been demonstrated. Moreover, there is no reason to insist that student support programs should continue indefinitely on an ever-upward course. What should be insisted upon is that changes be substantially more gradual than the drastic reductions that are being made (*Science*, 26 June). Some government programs of support for graduate students are being reduced by half or more in a 3-year span, and it is proposed to eliminate entirely, at least for a year, the NSF program of graduate traineeships. As a specific example of what is happening, the total number of NDEA and NSF fellowships and traineeships for entering candidates for the Ph.D. in the mathematical sciences is expected to be only half as great in 1971–72 as it was in 1968–69. This overall reduction will result from an increase in the number of NSF graduate fellowships, a sharp reduction in the number of NDEA fellowships, and total elimination of new NSF traineeships. Whether or not an overall cut of 50 percent is justified, it is necessary to recognize that the reductions will be quite different in different universities. NSF graduate fellows can attend any university that will accept them. NDEA fellowships and NSF traineeships are awarded by the universities. As a consequence, the most prestigious universities will have minor reductions while universities of lesser quality will absorb most of the curtailment. A good argument can be made that most of the reductions should take place in institutions of lesser quality: if the total number of students is reduced, they should attend the universities that can give them the best education. Nevertheless, it will be hard to convince a university of average quality which this year has had funds to support, say, 50 new candidates for the doctorate that national planning which will cut that number to half or less for next year was wise. And it will not be easy to justify corresponding swings in the numbers of students receiving doctor's degrees several years from now.

Thus we have a situation in which a decline in the rate of growth is inevitable, in which a reduction in the rate of increase of graduate student support can be defended, and in which these reductions will concentrate a larger percentage of the graduate fellows in the best institutions. What cannot be justified is the speed with which some of the cuts are being made and what appears to be the basing of decisions on perturbations in the long-term trend instead of on the trend itself.

For the immediate future, there seems little hope of avoiding the impending difficulties. For the future, their recurrence could be avoided by planning on a longer time cycle. It would then be possible to plan graduate student support programs according to the trends of Ph.D. supply and requirements, to establish target numbers of fellowships and traineeships for several years ahead, and to adjust the numbers annually as we get closer to the years to which they apply. Such a sensible policy would benefit students, universities, and employers.—DAEL WOLFLE

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