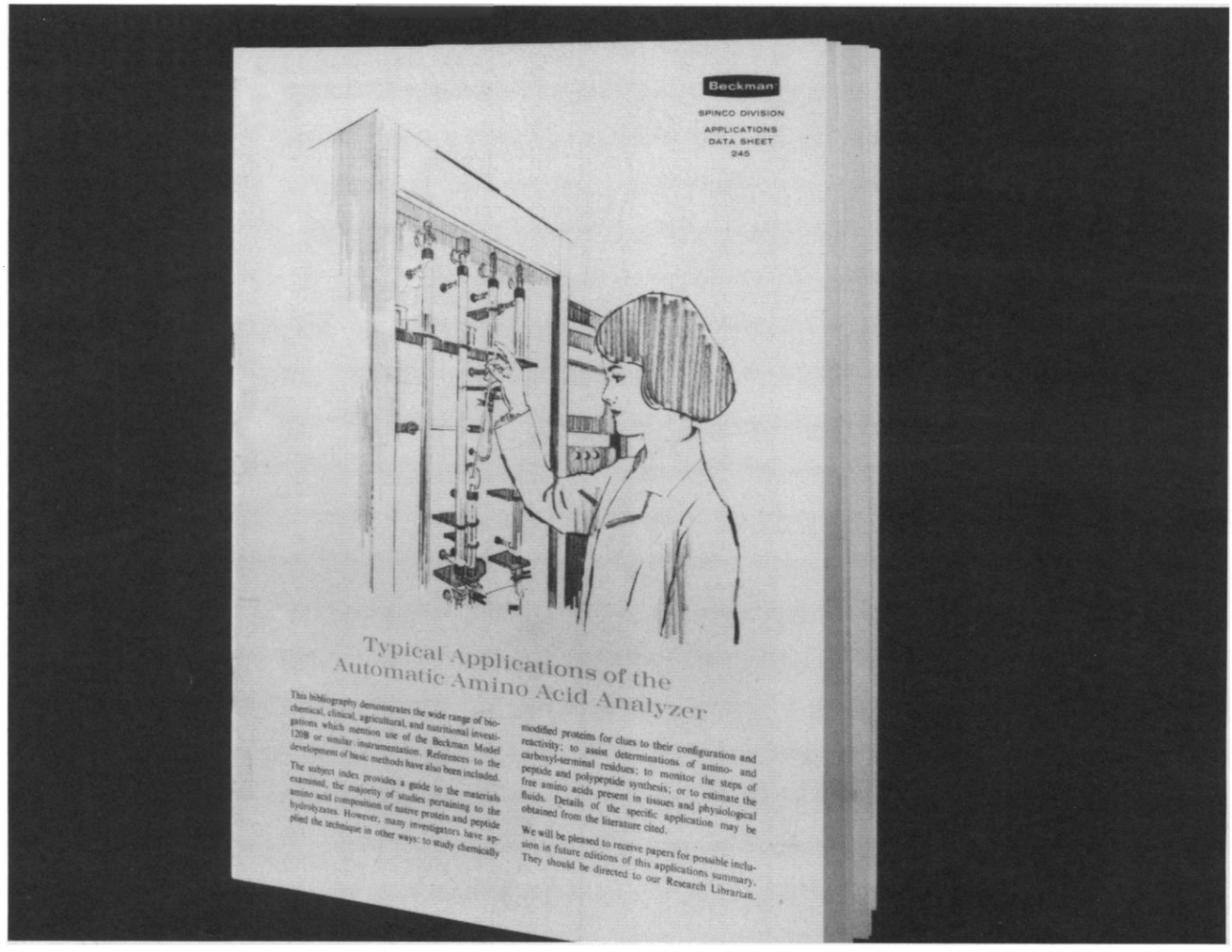
SCIENCE

28 May 1965
Vol. 148, No. 3674

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

LIGHTNING IN VOLCANO CLOUD



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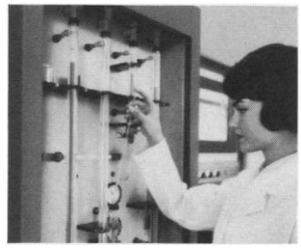

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28 May 1965
Vol. 148, No. 3674

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Lightning in the volcano cloud over Surtsey, Iceland, at 1925 to 1926:30 hours, Icelandic Mean Time on 1 December 1963 (90-second exposure). The altitude (top of the picture) over Surtsey is estimated to be about 8 kilometers. See page 1179. [S. Jónasson]

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REDUCED PRICES ON NENC HIGH SPECIFIC ACTIVITY THYMIDINE-METHYL-H^3

NUMBER	COMPOUND	SPECIFIC ACTIVITY mc/mM	PRICES – EFFECTIVE: MAY 9, 1965 250μc †	1mc †	5mc	10mc*	25mc**
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NET-027A	**Thymidine-methyl-H^3**	**2 curies/mM** Sterile aqueous solution in multidose vial.	**15**	**35**	**100**	**180**	**400**
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†**Discount Schedule:** List less 20% for 2 or more 0.25 or 1 millicurie packages

FURTHER INFORMATION ON THYMIDINE-METHYL-H^3

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NEN LABELED CHEMICALS

(1.) Sonia Apelgot et Bernard Ekert, Autodecomposition de Thymidine Tritiee en Solution Aqueuse, J. Chim. Phy. 60, 505 (1963).

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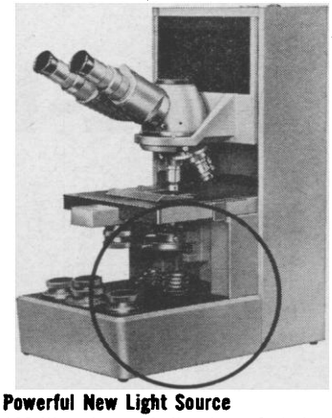

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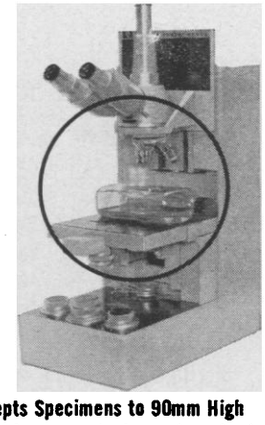

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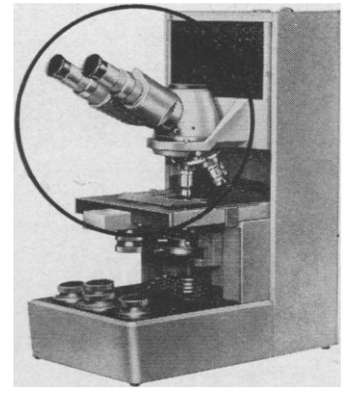

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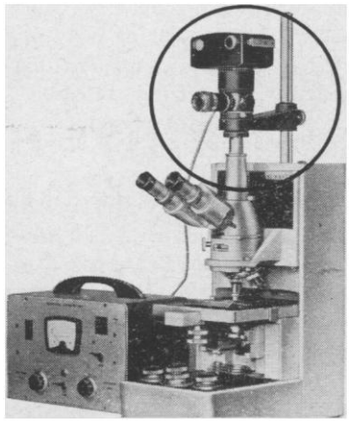

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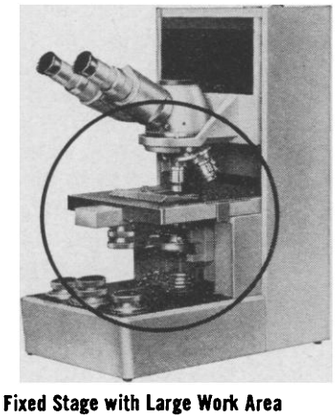

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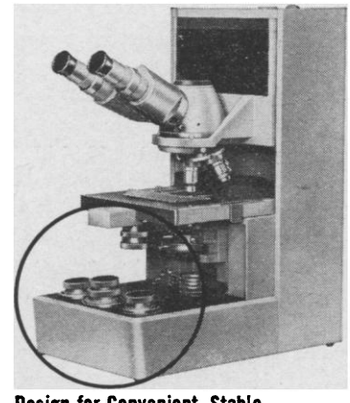

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rhesus (*M. mulatta*) in the laboratory. Other laboratory lore and a half dozen recent field studies of various primate species (*2*) suggest that each of them possesses fixed traits of temperament, especially of irritability and aggression. Bernstein and Guilloud's recent letter (*3*), however, indicates that not all stumptails are as gentle as those encountered by Kling and Orbach, and they warn that some may be troublesome in the laboratory. Apart from the use of these characteristics as criteria for the choice of animals, these apparently species-fixed variations of simian temperament should be studied in their own right. While this has been done to some extent, little use has been made of the powerful method of cross-fostering, which would help to determine whether (to oversimplify) the surliness of the rhesus and the tolerant friendliness of the stumptail (or free-living gorilla) are genetically built-in or are determined by the experience of being reared by a surly or a friendly monkey mother, in a particular animal "culture." Kuo (*4*), who has, in effect, made the lion and the lamb to lie down together, is one of a number of investigators who have modified presumed species-specific traits by manipulating early experience. Others (*5*) have ingeniously extended the use of cross-fostering to cross-species fostering—abolishing the combativeness of mice by rearing them with rats. It would be most desirable, in the interests of clarifying our understanding of the effects of early experience and of providing some crucial controls in the field of behavior genetics, to go up the phyletic scale to the stumptail, the rhesus, the pigtail, and other monkeys.

Such studies would be feasible only in major primate research facilities; private correspondence has revealed difficulties in allocating such facilities for the purpose; hence this appeal to investigators who can do so to establish breeding colonies of several different species under conditions permitting cross-fostering along with other manipulations of genetic strains and of aspects of early experience (size of "family," competition among adults, parents' mothering experience, artificial mothering, presence of monkey sibs, and so on) which Harlow and others have taught us to look for.

L. JOSEPH STONE
Department of Child Study,
Vassar College, Poughkeepsie,
New York

References

1. A. Kling and J. Orbach, *Science* **139**, 45 (1963).
2. For example, G. B. Schaller, *The Mountain Gorilla: Ecology and Behavior* (Univ. of Chicago Press, Chicago, 1963).
3. I. S. Bernstein and N. B. Guilloud, *Science* **147**, 824 (1965).
4. Z. Y. Kuo, *J. Genet. Psychol.* **97**, 211 (1960).
5. V. H. Denenberg, G. A. Hudgens, M. X. Zarrow, *Science* **143**, 380 (1964).

Referees: Credits and Demerits

Page (Letters, 12 Mar., p. 1241) is right! Referees should be compensated. The compensation should be in the form of public acknowledgment, in a footnote to each published paper, of the referee who assisted in preparing the paper for publication. This system works well in the reviewing of book manuscripts. It would have many advantages for the publication of scientific papers also.

SAMUEL RAYMOND
Papper Laboratory of Clinical Medicine, University of Pennsylvania, Philadelphia 4

It is most unfortunate that the reviewers who are selected by editors of many scientific journals—*Science* being an exception, in my experience—make no distinction between dissemination of current scientific information and the publication of items of historical scientific interest. Current material becomes historical as manuscripts accumulate dust on the reviewers' desks.

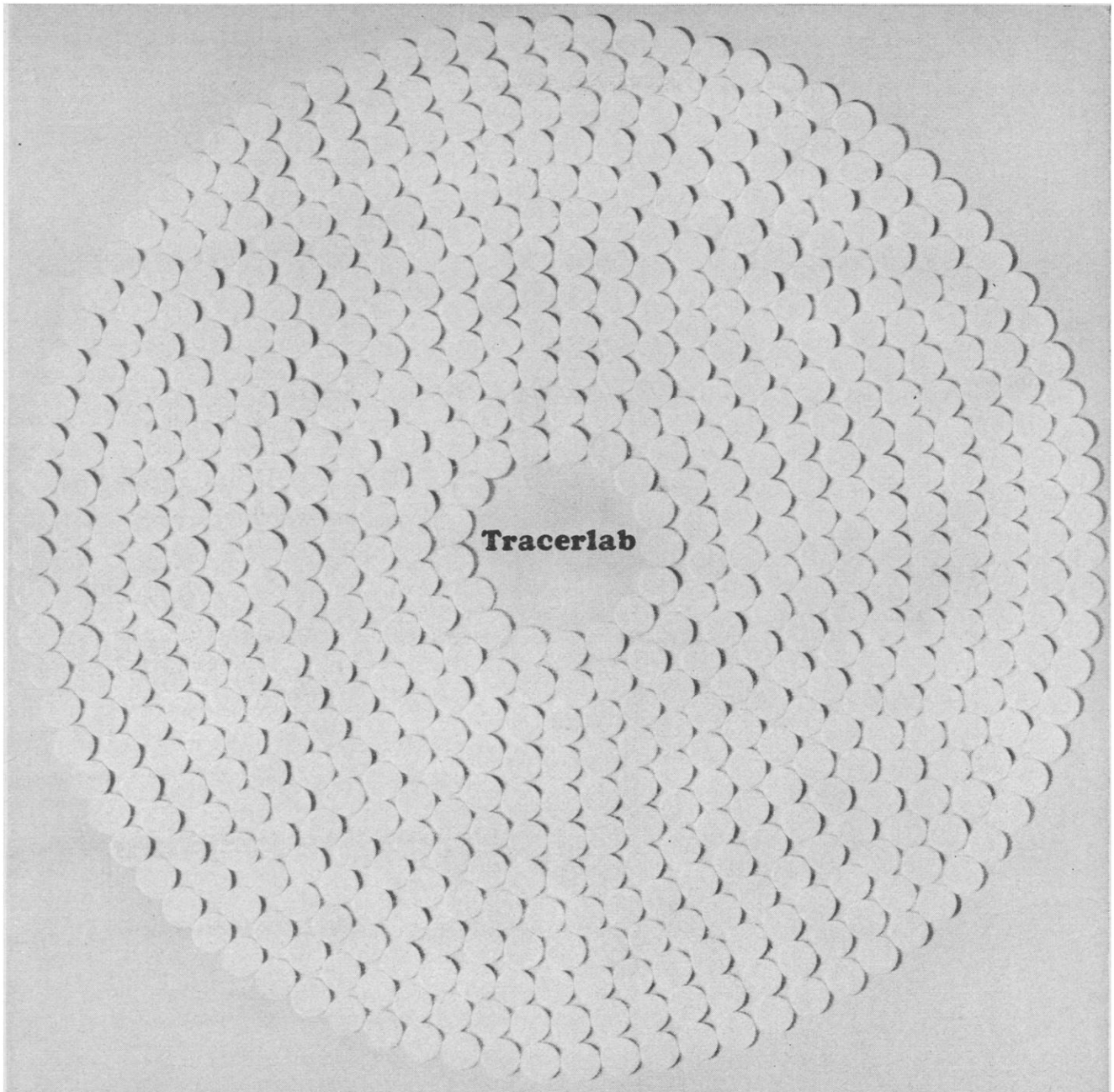
I propose to editors the following equation for evaluating referees:

$$T_t = 14d + 1.4d\,(P_t - 5),$$

where T_t is the total time (in days) that an editor should tolerate stalling, d is a period of 24 hours, and P_t is the total number of typed, double-spaced pages (excluding references). (For referees who are not adept at algebra, the evaluation of T_t for a 20-page manuscript is 5 weeks; for 5 pages or less, 2 weeks.)

Scientists should retaliate against editors and their lethargic reviewers. When submitting manuscripts they should require that the editor adhere to this formula or return the manuscript immediately. Otherwise, ethical practice should permit the scientist to submit his manuscript to several journals simultaneously and then withdraw it from editorial consideration by others after one journal has accepted it.

DUNCAN MCCONNELL
Ohio State University,
Columbus 43210



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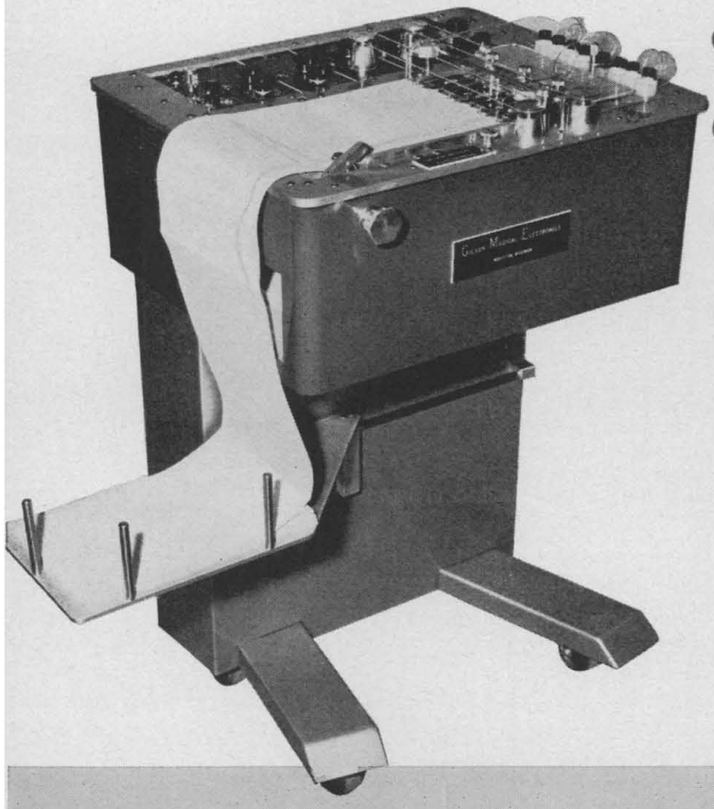

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One-Sided Criticism of University Research

The conduct of scientific research in universities is facing increased tensions. Congress seems disposed to emphasize geographical factors in the distribution of support, while holding down the growth of overall budgets. More serious is a widespread chorus whose theme is that federal support of research has drastically weakened the teaching function of the universities. This viewpoint has been advanced for some years, but the criticism has become more intense. Recently major news media have repeatedly carried items on the subject. Indicative of the tone of some of the material is a front-page article in the *Wall Street Journal* of 28 December 1964, which begins:

> Professor B, a noted biologist, spends only three hours a week teaching a graduate-level course at a major Eastern university. The big majority of his working hours is devoted to three separate research projects supported by Government grants that together total more than $300,000. . . . He "rarely" sees an undergraduate student.
>
> "Personally, I'm not averse to teaching," he explains. "But the university thinks it's getting a better bargain—more prestige and publicity—by keeping me in the laboratory. . . ."

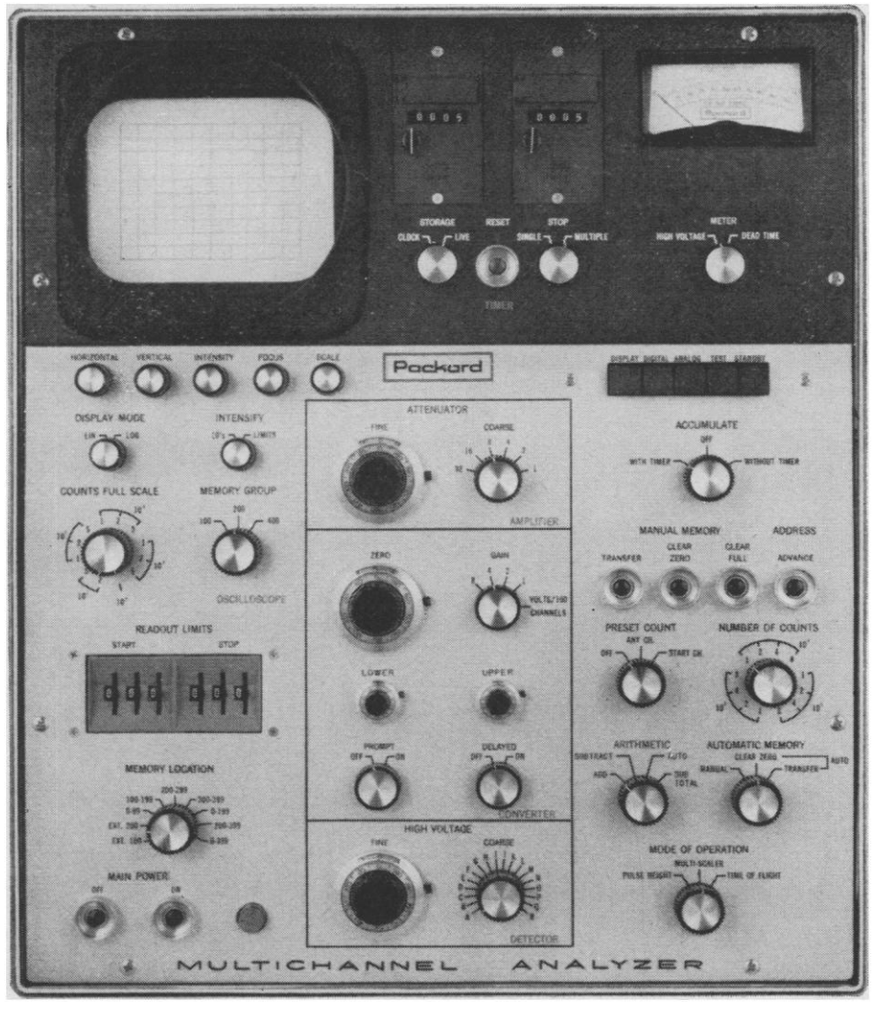
In a speech given 9 May, Senator Ribicoff added his influential voice to the chorus. He stated that government support of research had undermined the prestige of the teacher and contributed to a decay in the quality of education. He implied that student unrest was chargeable to emphasis on research.

One-sided criticism of research is potentially destructive at any time, but facets of the present circumstances make the situation even more dangerous. The universities have experienced a tremendous increase in student population. Enrollments of 20,000 to 40,000 are now common. At the same time, the public has become much concerned with developments in education. Two recent opinion polls have found that education is considered to be our most important problem. Conversation with parents who have children in secondary school or in college leaves one with the feeling that quality of teaching is something about which people feel strongly. Parents want the best for their children and are reluctant to settle for less.

Under these circumstances some of Senator Ribicoff's remarks take on added significance. He attributes the disappearance of professors from the classroom to federal support of research. He asks:

> And where has this left the student? In many cases, the student is left in the middle of hundreds of his fellows listening to an aloof figure on the lecture platform—distinguished for his works, but unknown to his students. So the student of today has become more and more anonymous—a seat in a lecture hall, a number on a card in the administration office, a statistic in the university records.

Many factors contribute to the situation Senator Ribicoff outlines, including the explosive growth in student population. However, when humans look for a sacrificial goat, they are not very analytical or fair. This, then, is a hazard that science faces. The menace is not yet fully developed, but prudence dictates moves to meet the problem before it develops further. Scientists must cheerfully meet their responsibilities as teachers. University administrators must make it clear that their institutions value good instruction. Federal agencies must align their policies so that support of research in universities contributes to, and does not compete with, the educational function.—PHILIP H. ABELSON



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of serological findings as they are related to population identification. Bigeye tuna were chosen as the initial object of the studies because blood-grouping and other basic information is available; moreover, this is one of the largest pelagic fisheries in the world. It was agreed that cooperation must take the form of frequent exchange of reagents, erythrocytes, and information. The principals are to meet when practicable in Hawaii and Japan to standardize reagents and techniques of testing.

Group No. 6, composed of Fujino, Suzuki, and Vrooman, proposed further efforts toward cooperative studies of the erythrocyte antigens of U.S. and Japanese sardines.

The meeting as a whole recommended that a symposium on immunogenetic and serological methods be held at the 11th Pacific Science Congress (Tokyo, 1966). The meeting noted that exchange of scientists and students between the two countries is essential for the promotion of a cooperative program; asked that such materials as blood, serum, and other tissues be exchanged: recommended the training of young scientists in the fields of fish hematology, immunogenetics, and serology in Japanese and U.S. universities; and sought to encourage active participation of workers in these fields in meetings of national and international societies. Documents relating to current research in both countries were distributed and briefly discussed.

Participants not members of the working groups were Heihachiro Miyayama (Japanese Ministry of Education), N. P. Neureiter (National Science Foundation), and Ichiro Nishimura (U.S. Department of State).

LUCIAN M. SPRAGUE
U.S. Bureau of Commercial Fisheries, Honolulu, Hawaii

Forthcoming Events

June

3–5. Canadian Soc. of **Plant Physiologists**, 6th annual, Univ. of New Brunswick, Fredericton. (R. G. S. Bidwell, Dept. of Botany, Univ. of Toronto, Toronto. Ont.)

3–5. **Manufacturing Chemists'** Assoc., 93rd annual. White Sulphur Springs, W.Va. (MCA, 1825 Connecticut Ave., NW, Washington 20009)

3–5. Advances in **Biomedical Computer Applications**, New York, N.Y. (T. D. Sterling, Dept. of Preventive Medicine and Industrial Health, Univ. of Cincinnati, Cincinnati, Ohio 45219)

4–7. American Soc. of **Lubrication Engineers**, annual, Detroit, Mich. (R. L. Hammill, ASLE, 838 Busse Highway, Park Ridge, Ill. 60068)

5–7. Society for **Experimental Stress Analysis**, Denver, Colo. (D. H. Fietz, 730 Kalamath Sq., Denver)

5–10. American Soc. of **Radiologic Technologists**, intern., Chicago, Ill. (G. J. Eilert, 537 S. Main St., Fond du Lac, Wis.)

5–13. **Medical-Surgical** Meetings, 5th intern., Turin, Italy. (Segretaria Generale Riunioni Medico-Chirurgiche Internazionali, c/o Minerva Medica, Corso Bramante 83-85)

6–10. **Special Libraries** Assoc., 56th annual conv., Philadelphia, Pa. (J. G. Hopper, Free Library of Philadelphia, Logan Square, Philadelphia 19103)

7–8. **Environment-Sensitive Mechanical Behavior of Materials**, Relay, Md. (A. R. C. Westwood, RIAS, Martin Co., 7212 Bellona Ave., Baltimore, Md. 21212)

7–9. **Communications**, annual, Inst. of Electrical and Electronics Engineers, communication technology group, Boulder, Colo. (W. F. Utlaut, Natl. Bureau of Standards, Boulder)

7–9. **Fluids Engineering and Applied Mechanics**, conf., Washington, D.C. (American Soc. of Mechanical Engineers, United Engineering center, 345 E. 47 St., New York 10017)

7–9. Society for **Industrial and Applied Mathematics**, natl., New York, N.Y. (D. L. Thomsen, Jr., Soc. for Industrial and Applied Mathematics, 33 S. 17 St., Philadelphia, Pa. 19103)

7–9. **Rheology**, symp., Washington, D.C. (A. W. Marris, School of Engineering Mechanics, Georgia Inst. of Technology, Atlanta 30332)

7–9. Genetic Control of **Differentiation**, symp., Brookhaven Natl. Laboratory, Upton, L.I., N.Y. (H. H. Smith, Dept. of Biology, Brookhaven Natl. Laboratory, Upton 11973)

7–11. **Hyperbaric Medicine**, conf., Buffalo, N.Y. (School of Medicine, State Univ. of New York at Buffalo, Buffalo 14214)

7–11. Statistical **Quality Control** for the Graphic Industries, Rochester, N.Y. (A. DeWinter, Rochester Inst. of Technology, Rochester 14608)

7–11. **Carbon-14 and Tritium Dating**, intern. conf., Washington State Univ., Pullman. (R. M. Chatters, Washington State Univ., Pullman 99168)

7–18. Communication Sciences, **Psycholinguistics**, seminar, Univ. of Florida, Gainesville. (P. J. Jensen, Communication Sciences Laboratory, Bldg. L, Univ. of Florida, Gainesville)

8–9. **System Safety**, symp., Seattle, Wash. (H. E. Wessman, College of Engineering, Univ. of Washington, Seattle)

8–11. European Organization for Research on **Fluorine and Dental Caries Prevention**, 12th annual congr., Utrecht, Netherlands (H. R. Held, 18, passage du Terraillet, Geneva, Switzerland)

8–12. **Electron and Photon Interactions** at High Temperatures, Hamburg, Germany. (E. D. W. Steel, Scientific Conf. Secretariat, European Organization for Nuclear Research, 1211 Geneva 23, Switzerland)