

tion of clinical drug evaluation is beyond the capacity of the investigator, the university, the government, and the pharmaceutical industry. A National Institute of Pharmacology with legal and scientific responsibility is essential. This would be a federally sponsored institute which would stimulate and supervise basic and clinical drug research with an emphasis on new drug investigation. The primary involvement of the FDA with food, cosmetics, manufacturing, and advertising indicates that new drug investigation should be in a separate program patterned on the National Institutes of Health. The work of such an Institute of Pharmacology should be conducted by universities and research facilities which conform to the highest standards of personnel, equipment, and research design. The pharmaceutical industry would not be relieved of its obligation to demonstrate the effectiveness and safety of its products and to underwrite the cost of this work but there would be a federal capability which would set standards and enforce them. Such a program would insure the badly needed financial support of new drug research. It would also require complete and prompt reports of new drugs which would be available to the investigators as well as to the government.

PAUL LOWINGER

*School of Medicine,
Wayne State University, 951 East
Lafayette, Detroit, Michigan 48207*

Reference

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Overhead Costs during Austerity

The austerity program for scientific research is requiring some adaptations. For example, in our department the cost of publication page charges for a 12-man faculty was \$15,000 last year. This means that page charges cost as much as an additional faculty member. We have been wondering whether the actual scientific communication achieved by the present method is worth the cost. Because we are skeptical, we are trying the following method. Work which is supplementary to an existing key publication will not be published per se but will be written up with no regard to saving space, then will be multilithed, and made available as a numbered "Supplemental Publication"

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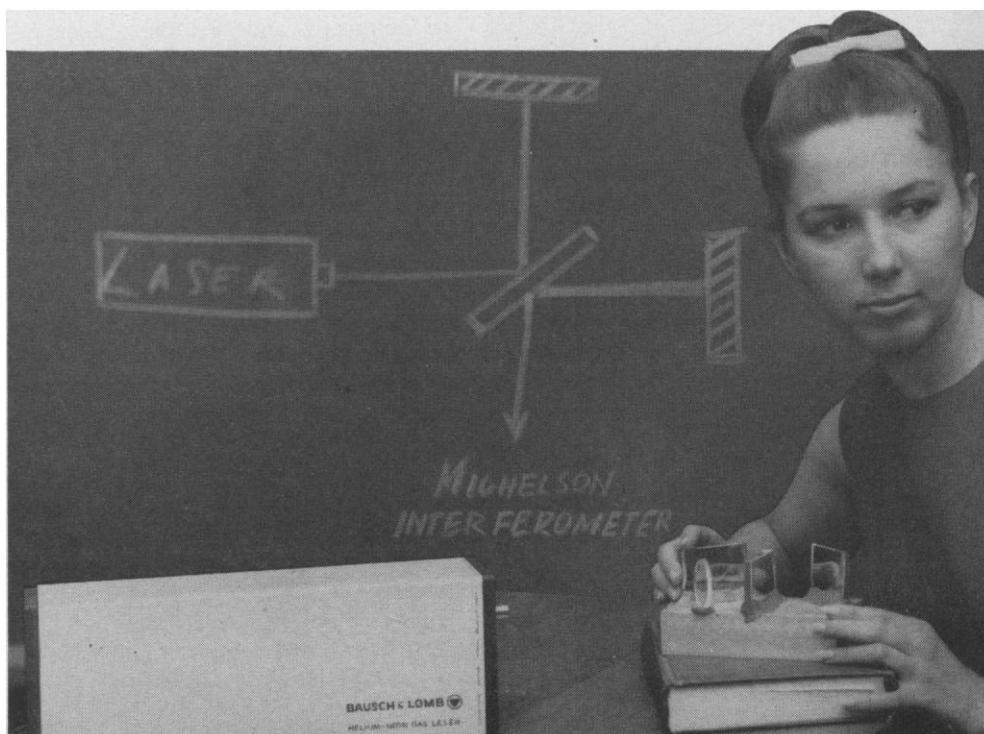
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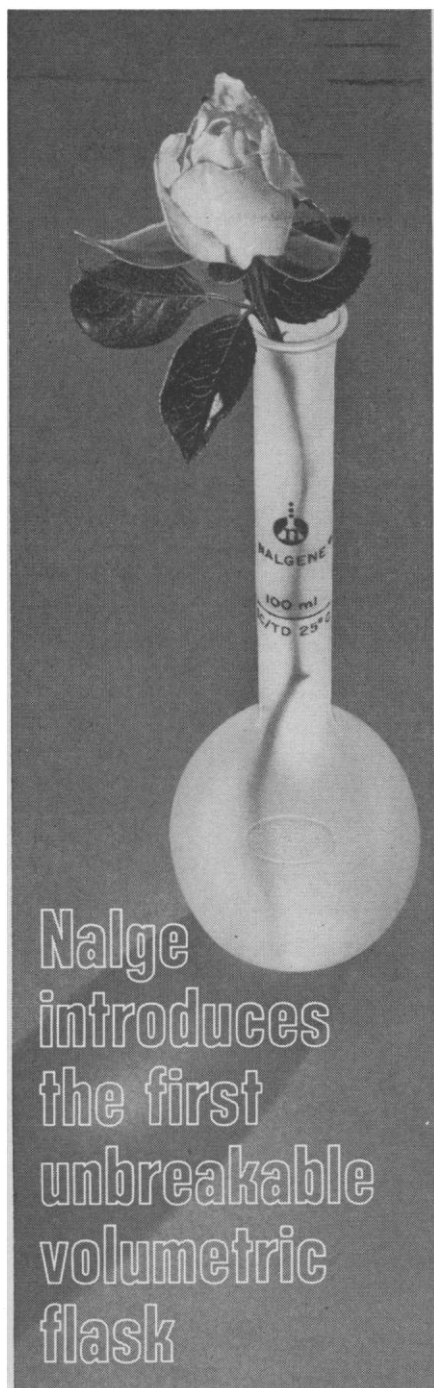
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of our department. We intend to deposit two bound volumes of these in the university library each year so that Xerox copies can be sent to anyone for the normal cost. In this way we can provide the information whenever it is needed and we can publish the key parts of the research with more brevity. We would also welcome two new avenues of publication: 1000-word summaries and current reviews covering about 10 to 15 papers in one area. We feel this latter exercise would serve to advance the faculty, rather than produce an inchoate mass of publications whose usefulness is in question. This threefold method of publication would save costs, reduce the mass of literature on the shelves, and appreciably increase scientific communication.

Our second area of adaptation causes more concern. It has been our practice to employ undergraduates and high school students in the laboratory. Many of these have become first-rate scientists: all have benefited in increased maturity and responsibility. Now we have to cut them off. If funds from an appropriate agency, such as the Office of Education, could be added to each research grant for this purpose, a real human value would be retained.

In the atmosphere of austerity the overhead which is incurred becomes of real importance and forms a strong point of division between scientists in the laboratory and administrators. Fairman's recent remarks (Letters, 27 Dec., 1968) are pertinent. I suggest that granting agencies require that the use of overhead be explained by the institution to the principal investigators, that discussion of the manner of its use be permitted, and that the agency be aware of what takes place in such discussion.

ERNEST C. POLLARD

Department of Biophysics,
Pennsylvania State University,
University Park 16802

What Makes Oysters Grow?

A letter from Adler (29 Nov.) comments on Bardach's article "Aquaculture" (13 Sept., p. 1098). It is Adler's opinion that Bardach created a wrong impression in a statement to the effect that oyster larvae need flagellate algae for food. Adler says further that "Good larval growth has even been achieved with some nonliving substitute food like corn flour." We are not familiar with

any success at rearing larvae with non-living foods. Either Adler has created a wrong impression of the state of marine animal husbandry, or he knows of a very important breakthrough not generally known to practitioners and scientists in aquaculture. . . .

RICHARD J. BENOIT

EDWARD A. ZURAW

DONALD E. LEONE

Marine Sciences Research and
Development, General Dynamics,
Groton, Connecticut 06340

The search for artificial foods for marine bivalves and their larvae began in the early 1930's (1). In 1940 Bruce *et al.* (2) showed that live, naked flagellates were superior to some other algae for rearing larvae and spat. These studies have been confirmed many times during the past 28 years and laid the foundations for present-day hatchery techniques. Investigators have continued to search for other algae or substances which would give better results. Walne (3), evaluating the food value of seven algal species for oyster larvae, found that the diatom *Phaeodactylum tricornutum* promoted growth comparable to that of flagellates, while Imaya (4) indicated that both *Cyclotella nana* and *Chaetoceros* spp. are well utilized. Somewhat questionable results were obtained by Loosanoff and his co-workers (5) by feeding dried powdered *Ulva* and *Laminaria* to larvae, but when freeze-dried *Schedesmas obliquus* was used, Hidu and Ukeles (6) reported excellent results. Corn starch and corn meal or both were employed in oyster feeding experiments by Haven and an enthusiastic evaluation of its successful application was published by Ingle (7). Benoit and his co-workers might discover additional references by consulting the literature or the researchers mentioned above.

CYRUS ADLER

Offshore/Sea Development
Corporation, 99 Nassau Street,
New York 10038

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