Letters

Saving Library Space

In a very large number of scientific and technical journals, especially American ones, the distribution of text proper and advertisements is such that a great part if not all of the advertising must be included when the journal is bound. For many journals this means that the bound volumes which for many years will occupy valuable library space will necessarily contain advertisements filling up to, say, a third of their total page area.

European scientists and technologists, who appreciate the practical sense of the Americans, and not the least the rational way in which editing and printing are generally handled by them, have often wondered at this custom. Putting an end to it would mean a step towards the reduction in the tremendous rate of expansion of the libraries. This step could be taken so easily. Simply distribute the advertisements so that they can be completely removed when the journal is bound. The advertisement pages should have a separate pagination, and should not include any material that needs to be preserved.

GUNNAR HÄGG
University of Uppsala, Sweden

Women in Science: Why the Shortage?

In a recent editorial ("Women in science and engineering," 25 Sept. 1964, p. 1389), Dael Wolfle posed the question why more women do not prepare themselves for careers in science. As a woman who is trying to do just that, I would like to give a few reasons for the state of affairs.

That women marry at an earlier age than men is one factor. Apparently there are few Pierre Curies around—men who actively encourage their wives to become proficient in scientific work while also raising families and caring for their homes. Such encouragement would entail their either actively helping their wives in the home and with the children or hiring help to do so. On top of this, a man's ego must be able to tolerate the prospect of his wife's succeeding in a career which requires strenuous schedules and rigorous training and which has always been associated with male rather than female intelligence.

A second factor is the attitudes of graduate school administrations and departmental chairmen. Most of them regard a woman candidate who is married and of an age to bear children or who already has children as something bizarre. Even an unmarried woman, if she is to be admitted, must have undergraduate grades, recommendations, and graduate record exams far superior to those of males applying to the same school and department. I am fortunate in attending Boston University, which has a tradition of giving women a break in its medical school and its graduate schools, but many of my friends, including those who live in the New York area, can attest to the validity of these statements. Graduate schools in general are too small, too select, and do not give women an equal chance. Consequently many women who would like to attend graduate school do not even try to enter.

A third factor has to do with the scheduling of graduate studies. When a male adviser plans a schedule for a woman who is starry-eyed at her good fortune in having been admitted (and numb with amazement if she has been given a fellowship or any other type of assistance), he is not likely to take into account the demands that domestic obligations will make on her time and energy; and she is likely to accept any schedule at all as a gift. I well remember the schedule of my first year in graduate school—a full program of courses complete with labs five afternoons a week, and the care of a husband and one child. The only reason I didn't quit was pride—and the feeling that I might ruin the chances of some other married woman who might come along after me. Once I caught on to the fact that my schedule had to allow for the kind of life I led, Boston University allowed me some flexibility in planning my total graduate school career. A woman should be discouraged from thinking that she is a mental and physical amazon and should be allowed to take, for example, two-thirds of a normal course load.

Because of the speed with which knowledge is increasing, a woman who hopes for a career in science cannot afford to take even 5 years "off." But to compel her to choose between marriage and a career involving advanced education is unnecessary and unrealistic. She must be encouraged to stay in school or to come back to it after a short interval. Otherwise a large part of women's brain power will continue to be lost to the academic community. Women can easily combine university teaching and motherhood. The very universities which will (or already do) need more teachers are denying educational opportunities to the segment of the population that is best qualified to fill this need. Graduate schools need to expand, and women should be actively encouraged to take part in the expansion.

ALLYN RULE
57 Grove Hill Avenue, Newton, Massachusetts

Vector Analysis of Geologic Data

I am surprised to read in Edward S. Deevey's excellent review (5 Feb., p. 592) of Imbrie and Newell's *Approaches to Paleoecology* that "the factor-analytic model he [Imbrie] has chosen for exposition is excessively empirical and cumbersome and will probably not gain many adherents." In my view the method of factor analysis is elegant and its objectivity is an asset. Here and elsewhere Imbrie has performed a valuable service by drawing the attention of geologists to it.

Now that a petrologist can have hundreds of chemical analyses at his disposal (9 Oct. 1964, p. 258), vector analysis is proving to be an invaluable tool for objective classification. The results obtained for the rocks of the southern California batholith are con-

sistent with the known geology, the trend surfaces for individual elements and normative minerals, and with specific gravity. The combination with discriminant analysis is especially interesting.

The method originated in psychology, and it is obviously flexible. For instance, I have obtained meaningful zoning of an oil well in Alaska by applying factor analysis to palynological data that had resisted interpretation by standard techniques.

It will be of interest to some that I have adapted the Manson-Imbrie program to the system at Western Data Processing Center, where computing time is free to academic users from the 13 western states.

DONALD B. MCINTYRE
Department of Geology, Pomona College, Claremont, California

Congress and Science

In the News and Comment section of 15 January, John Walsh makes the following comment:

> While it should not be exaggerated, the current split on weather modification falls into the area of the problem of science advice for Congress. It represents, not a breakdown, but, rather, evidence that no adequate conduit between Congress and the community represented by the Academy and NSF has ever been soundly established.

This comment, made by an excellent reporter, concludes a discussion of the problems inherent in the government-sponsored weather modification program. In my view, however, it should not be allowed to stand unaltered. The article itself shows that the split referred to is alleged to exist in the Senate. I do not feel competent to say whether or not the statement is an accurate one with regard to the Senate. But Congress consists of two coordinate branches, and I certainly regard the statement as inaccurate so far as the House is concerned. The committee which I have the honor to chair has been working very hard for the past two years to develop a sound and useful relationship between the Academy, NSF, the Office of Science and Technology, and the scientific community generally. We believe that a good deal has been accomplished along these lines, and if the entities just mentioned were sounded out I believe that they would confirm this. Certainly much remains to be accomplished in this area, but the relationships which have now been begun rest on a solid basis and are, in our judgment, a significant step forward so far as technological advice for Congress is concerned.

GEORGE P. MILLER
Committee on Science and Astronautics, House of Representatives, Washington, D.C.

Title VI

Langer's analysis (29 Jan., p. 488) of Title VI of the 1964 Civil Rights Act, appearing shortly after the controversy precipitated by Ingle's article, raises several points of interest. One is her use of the term "tokenism" in close juxtaposition to the number of Negro students at some southern universities. What percentage of Negro students constitutes a token? Fixing a minimum fraction that must be exceeded would set up a quota system, an admission practice specifically labeled as discriminatory in the Department of Health, Education, and Welfare question-and-answer sheet. Clearly, the term *token* implies group-based thinking and has primarily emotional content when applied to the Civil Rights Act, where the goal is to guarantee to each *individual* treatment which does not discriminate "on the basis of race, color, or national origin."

While I suscribe to the opinion that Title VI will have an immense impact on southern life, it appears that there is a third alternative to the two potential fates Langer envisions for the bill—forceful administration or governmental hypocrisy—namely, enforcement as a result of individual or group prosecution in the courts. This alternative is not only "good politics," but also avoids involving the Public Health Service, National Science Foundation, Atomic Energy Commission, National Aeronautics and Space Administration, and certain other divisions of the federal government in activities of a primarily police type. In addition, while such an approach may not result in quite so rapid a "social revolution many people expect to be witnessing," it would certainly not permit the indefinite preservation of the Southern Way of Life.

MICHAEL D. GARRICK
32 University Circle, Charlottesville, Virginia