his research papers are referenced by others.

This approach was tried experimentally some 20 years ago by John A. Hinckley, a chemical engineer then on the staff of the Office of Naval Research in its Chicago branch office under Harry Kelly, as chief scientist. Hinckley's study covered a period of 5 years or so in the field of chemistry. We in ONR were interested in several aspects of it: as a simple device to find who were currently in the forefront of research, or currently known; as a possible simple way of bringing quality as well as quantity into evaluation of research productivity; and as a start in ascertaining how and to what extent active and successful scientists were receiving support for their research, that is, from private or public sources, from within or without their institutions.

To the best of my recollection the major results were somewhat as follows: quotations of recent data or papers strongly predominated, with a rapid falling off of references to papers published more than a few years previously. There was not a particularly high correlation between the most prolific research contributors and those most quoted, and there were wide variations in several fields, with maxima of quotations in currently active or controversial fields, as might be expected. At the time, many of those whose work was most quoted were receiving sole support from their own institutions.

Anyone interested in evaluative studies of research productivity might also find it profitable to consult chapter 3 of *America's Psychologists*, K. E. Clark, Ed. (American Psychological Assoc., Washington, D.C., 1957), pp. 26–61.

ALAN T. WATERMAN
National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C.

Propylene Oxide and Air

Liquid propylene oxide and ethylene oxide are sometimes used for non-destructive sterilization of culture media, biological materials and plastics.

The labels on bottles of propylene oxide caution the user that it is flammable and should be kept from sparks or flame. However, I believe that it is not commonly realized by biologists that propylene oxide and air can form explosive mixtures which present a potential hazard in the laboratory. Perhaps the use of liquid propylene oxide or ethylene oxide for sterilization should be discontinued. Instead, commercially available nonflammable mixtures of ethylene oxide plus carbon dioxide or freon could be used. However, manufacturers warn that these mixtures, although nonexplosive, can act as asphyxiants and vesicants.

MARTIN M. KULIK
Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Maryland 20705

On Procuring Russian Literature

As a self-styled specialist in and translator of Russian scientific literature, I was most interested in Manheim's review "Soviet books in oceanography" (25 Nov., p. 995). It might be worthwhile to add some information on how to obtain Russian books for those interested in keeping abreast of Soviet developments in some particular discipline.

Books should be ordered well in advance of the publication date and from an authorized dealer in the United States such as the Four Continent Book Corp., 156 Fifth Ave., New York 10010, or the Victor Kamkin Bookshop, 1410 Columbia Rd., Washington, D.C. 20009. (Znanie Bookstore, 5237 Geary Blvd., San Francisco, Calif. 94109 is an outlet for Victor Kamkin imports.) From my experience, V/O Mezhdunarodnaya Kniga deals only with the aforementioned *authorized* book dealers and not with individuals or institutions. Sometimes the latter succeed in entering into exchange arrangements with their Soviet Union counterparts, or with Soviet libraries.

It is important to acquire the weekly publication *Novye Knigi SSSR* (New Books USSR) for a listing, by disciplines, of books to be published according to the plan of the editorial board of particular publishing houses for that year. This listing includes author, title, publisher, approximate size, and approximate date of publication (in Russian, to be sure). Books may be ordered by forwarding the catalog number, that is, the number of the weekly issue and the item number of the book, to the aforementioned dealers, who can then purchase the desired quantity of any item from Mezhdunarodnaya Kniga. This method of purchasing Russian publications, including the nonperiodicals, is nearly infallible.

The Soviet bibliographic works such as the *Knizhnaya Letopis* and the abstract journal *Referativnyi Zhurnal* are extraordinarily useful, but not for the purchase of books since the books listed have already been published and are customarily out-of-print upon publication (a planned economy, you know). However, they could very well prove useful to individuals and institutions engaged in exchanging publications. It is often possible to find bibliographic listings of local publications in the *Knizhnaya Letopis*, which would not appear in the *Novye Knigi*, and may therefore only be acquired via exchange.

MORRIS D. FRIEDMAN
7553 Waterford Drive, San Jose, California 95129

A Critical Size for Research?

Marshak's interesting article ("Basic research in the university and industrial laboratory," 23 Dec., p. 1521) refers to a "research director" as though such a person exists and is commonly found at universities in the United States. Maybe I've been visiting the wrong universities, but I have yet to meet anyone who has the authority to do all the things Marshak attributes to this sterling fellow. Possibly this director is in a state of resonance and may appear sometimes as the president, graduate dean, department chairman, or a professor. But often the little man isn't there at all. Planning at the level of the entire institution is still uncommon, and growth, or at least change, occurs too often as a result of chance. Many good things come by chance, but when opportunities arise by way of new federal programs, and a university responds directly to the jangle of money, the university often finds itself on a road it would have avoided, on looking backward, if it had had a plan.

Unlike Marshak, I don't think there is any need for critical size in order to do first-class research in general: what was the critical size of the group working with Darwin or Gibbs, or more recently, Bridgman? Is it possible that critical size is needed today where it wasn't before World War II? Is critical size important for big science but not for little science? Is it really necessary to have critical size by field,