It would seem to me that better research designs would be formulated, better information collected, and more use made of that information if all field research abroad, and probably much of the secondary research as well, were conducted in full partnership with the governments, institutions, or nationals of the countries that are the subject of the research. This should extend to defining the purposes, designing the methodology, collecting and analyzing the data, and interpreting the results. The further we move in this direction, the fewer fiascos like Camelot we will have, and the more valid and productive our research will be. Finally, the more partnership efforts of this sort we undertake, the more widely will other nations come to adopt scientific and engineering approaches to economic and social problems.

SAMUEL P. HAYES
Foreign Policy Association,
345 East 46 Street, New York 10017

Photocopying and the Journals

Parker's interesting observation (17 Sept., p. 1325) on the high percentage of foreign, compared with domestic, subscriptions to his journal does not entirely support the inference that "Americans do not, by and large, read publications," or sustain the suggestion that American scientists should "spend more time reading and less writing." In many, if not most, scientific disciplines, there are far more scientists outside the United States than there are inside the United States. Even so, it is possible that uninhibited and widespread photocopying by a significant minority of American scientists is already showing its effect on domestic subscriptions to scientific journals and on reprint sales. It is also just possible that our overseas colleagues recognize more clearly that the tempting rationale "Why buy it when we can photocopy it and nobody will know?" could wipe out many scientific journals and could make the publication of many books impossible. Is the time ripe for organized American science to formulate a code of ethics for all scientists to live by with respect to photocopying of scholarly publications?

LYLE LODWICK
644 Charles Street Avenue,
Towson, Maryland

Indian Ocean Expedition

McElheny's article "Effects of the Indian Ocean expedition" (27 Aug., p. 957) omitted two matters of interest concerning this impressive exercise in international collaboration.

First, with respect to the scientific justifications for the expedition, some mention should be made of the Indian Ocean as a model of the world ocean. It is generally accepted that the major circulation of the surface layers of the ocean is essentially wind-driven. Thus, a picture of systems of currents related to the prevailing winds, the location of boundaries, and the rotation of the earth has arisen—western boundary currents such as the Kuroshio and Gulf Stream, eastern boundary currents such as the California, Peru, and Benguela Currents, and the zonal currents of the West Wind drift and the equatorial current system (including the recently discovered equatorial undercurrents of the Atlantic and Pacific). The Indian Ocean is like the other oceans in having meridional boundaries and in being located on a rotating planet. It differs, however, in the seasonal reversal of the surface winds, the so-called monsoon system, and physical oceanographers recognized the importance of examining a system where their wind-driven models could be tested by observing conditions under opposite regimes of surface wind stress. This feature of the Indian Ocean was a powerful attraction to physical oceanographers, and several important results of their work can already be identified. They have found, for example, that an equatorial undercurrent is present despite the absence of a westward wind stress along the equator, but the current differs in several ways from those of other oceans; that a major but temporary western boundary current, the Somali Current, is developed along the Somali Coast during the southwest monsoon, with surface speeds in excess of 6 knots; that at the same season intense upwelling develops off northern Somalia, with the lowest surface temperatures occurring anywhere in the world in such proximity to the equator.

Second, with respect to the origin and operation of the expedition, mention should be made of the Scientific Committee on Oceanic Research (SCOR), and greater recognition given to the roles of UNESCO and of the Intergovernmental Oceanographic

Commission (IOC). The expedition was first proposed in August 1959, by SCOR, which subsequently enlisted the participating countries and organized the work. Until 1962 coordination was effected by the SCOR coordinator, Robert Snyder. In 1962 coordination was taken over by IOC, which has continued this activity and is now concerned with analysis and publication of the results. UNESCO carried out an extensive training program in connection with the expedition for scientists from countries bordering on the Indian Ocean, furnished scientific equipment for several of the participants, and not only appointed the curator for the Indian Ocean Biological Center but purchased most of its scientific equipment, and has appointed and financed an advisory committee which determines its policies.

WARREN S. WOOSTER
Scripps Institution of Oceanography, P.O. Box 109, La Jolla, California

Hoax Protested

I am surprised that *Science* should have printed Landauer's letter ("Aristogenics," 20 Aug., p. 816), "reporting" on a mythical British eugenic project. It is a bitter attack, cleverly disguised as a hoax, on the whole idea of eugenic improvement by germinal choice, as advocated by H. J. Muller, Herbert Brewer, and myself.

Landauer is known for his excellent work on breeding improved pure lines of poultry. However, he seems not to have grasped the distinction between the geneticist's aim of creating pure stocks and breeds of animals, and Muller's aim of raising the general eugenic level of man to achieve varied excellence, by encouraging a diversity of improvement in many desirable qualities.

JULIAN HUXLEY
31 Pond Street, London, N.W. 3

No Antineoplastic Effect

The statement in Szent-Györgyi's article "Cell division and cancer" (2 July, p. 34) that "hydroxymethylglyoxal bis(guanidylhydrazone), in certain concentrations [has been found] to be an inhibitor, in others a promoter" is unfortunately erroneous. Authentic hydroxymethylglyoxal bis(guanidylhydrazone) was first unequivocally synthesized in our laboratories and was shown to be devoid of antineoplastic activities in at least three mouse tumors [*J. Med. Chem.* **6**, 819 (1963)].

TI LI LOO
National Cancer Institute, Bethesda, Maryland 20014

Translation of Russian Journals

In his editorial "Translation of scientific literature" (27 Aug., p. 929), Abelson summarizes the services being rendered by the various organizations currently publishing English-language editions of Russian technical journals. I should like to add the information that the Instrument Society of America has provided four of these publications to the technical community since 1958. At present approximately 55 percent of their cost is met by the National Science Foundation. Our long-range plans call for self-supporting status for two of these journals.

The editorial mentions the translation by the Consultants Bureau Enterprises of 48 Russian scientific journals. It may be added that the interlanguage dictionaries and translated books published by that organization at reasonable cost are also significant.

JAMES E. FRENCH
Instrument Society of America, Penn-Sheraton Hotel, Pittsburgh, Pennsylvania 15219

Emotional Perils for All

Weidman's letter enumerating the "emotional perils of mathematics" (3 Sept., p. 1048) is a classic. It expresses most of the personal woes that each kind of scientist feels are particularly characteristic of the much misunderstood complexities of his own specialty. Surgeons (despite the educational offerings of Ben Casey), chemists, biologists, and other specialists are all acutely aware of the lack of appreciation of their efforts. Each has the most important specialty, and each is involved in the most frustrating, most tedious sort of research. For instance, the bacteriologist can analyze generations of cells in a few hours, while we poor biologists must wait for months or even years.

Most major discoveries in *all* branches of scientific endeavor are made by young scientists. Most geniuses in any field are identified early; thus the mathematician can join the rest of us who recognize our limitations so that we can feel free to provide the less-than-major contributions that make up perhaps 85 percent of all scientific achievement. We should also be better prepared to accept increasing responsibilities of teaching and administration, so that our younger colleagues can perform more research during their creative years.

Lastly, the scientist will note that formal educational programs are extending further and further into the age of creativity, and are thus reducing the chances for talented youngsters to impress their imaginations on science. It is to be hoped that our colleges will join other institutions and organizations in developing research opportunities for such youngsters while they are still in college, high school, and even grade school.

GEORGE E. MOORE
Roswell Park Memorial Institute, Buffalo, New York

Partnership

As an engineering educator who has occasionally deplored (usually silently) the seeming lack of attention to the roles of engineers in some of our more prominent national projects, space exploration and otherwise, I was pleased to see Abelson's forthright statement (10 Sept., p. 1179) that "the success of Mariner IV represents a superb engineering achievement. . . ."

In his efforts to find better (safer, more reliable, cheaper, swifter) ways of helping society achieve certain abiding needs and goals (communication, transportation, energy distribution, shelter, defense), the engineer is obviously dependent upon the discoveries of the scientist. In a complementary way, the scientist, who embodies man's insatiable curiosity and need for investigation, is assisted by the ingenious systems, devices, structures, and processes conceived by engineers. In partnership, science and engineering are mutually fructifying; in isolation, they would ultimately both prove sterile.

HAROLD A. FOECKE
School of Engineering, Gonzaga University, Spokane, Washington