Letters

Basic Science in Underdeveloped Countries

A foreign aid program to support basic science in India cannot be compared (Editorial, 25 March, p. 1485) with the obstacles that face a similar effort in smaller underdeveloped countries. India, the world's second largest country, has a population of nearly one-half billion, whereas the majority of underdeveloped countries have near to or less than 10 million. The 10 million figure is in fact equalled by the sum of the populations of Calcutta and Bombay. If only 5 percent of India's population were professionals, that would provide a cadre of 25 million, a group roughly equal to the population of some underdeveloped countries such as Turkey or South Korea.

We must not forget the educational traditions brought to India by the British two centuries ago. Today there are more than two thousand colleges in India and a tradition of scholarly activity. This educational legacy has a strong bias towards classical erudition. In addition, Hindu philosophy is extremely abstract and other-worldly. It is not simply the caprice of recent foreign meddlers which today results in India's having a strong atomic research program, but no " . . . capacity to design and build new steel plants." India was ripe for modern physics research in terms of numbers of scholars and inclination.

This is not to say that underdeveloped countries should abjure scientific research. It is certainly valuable in fields relating to indigenous agricultural, industrial, and health problems. Active research programs provide a firm basis for the scholarly character of fledgling educational institutions. What is unreasonable is to expect science to be the basis of a modern technological society in developing countries with limited financial and manpower resources.

Here in Afghanistan, a healthy vigorous people are making rapid strides toward development, but they can only hope to have a few thousand high school graduates per year in the near future, from a population of over 12 million. Here, as in other underdeveloped countries, the entire output of the nation's educational system is needed to fill positions in the government organization, the expanding school system, the replacement of expensive foreign technicians, programs for health and rural development, and the expansion of an industrial base.

Even with generous outside help, most underdeveloped countries cannot afford the manpower for a science program which could put them in competition with the developed countries. However, we have many precedents for cooperative efforts in science. American universities have pooled their talent in the national laboratories; the European nations have banded together in the Euratom program. On a larger scale, we have witnessed the success of the International Geophysical Year. The U.S. might profitably consider supporting regional scientific centers. A good model is the SEATO graduate school of engineering in Bangkok which conducts excellent research in civil engineering for the benefit of Southeast Asia. The U.S. could sponsor something like an Alliance for Progress University or research center in Puerto Rico, where Latin American scientists could join forces. The American University of Beirut already provides the basis for a much larger American contribution to science development in the Middle East.

EDWARD A. FRIEDMAN
Department of Physics,
Stevens Institute of Technology,
Assigned to: Faculty of Engineering,
Kabul University, Afghanistan

LSD: Requiescat in Pace!

While I agree with Lowinger's reference (Letters, 8 July) to the existence of a "state of hysteria" in regard to the so-called psychedelic drugs, his identification of Sandoz with the "Cowardly Lion of Oz" hardly fits the facts. For more than 20 years Sandoz has supplied LSD-25 to bona fide investigators in psychiatry and the life sciences without charge or profit. It has supplemented this with extensive and up-to-date bibliographies (there are in excess of 3000 references), laboratory data, and other services. In other words, Sandoz has for years assumed alone the role of "Dorothy" with not inconsiderable sacrifice in time and money with a uniformly acknowledged sense of responsibility because it recognized that this drug represented a worthwhile instrument of research rather than a pharmaco-therapeutic agent of agreed merit. However, with the entry into the ring of fringe operators, black marketeers, and misguided idealists assisted by an irresponsible sector of the press, the problems of preserving its reputation, policing of supplies, servicing law enforcement agencies, and keeping track of legitimate projects became too heavy a burden to carry. The drug was therefore withdrawn and a stand-in for the role of "Dorothy" was sought. The transfer of supplies and responsibility to the NIMH seemed the best compromise short of completely removing access to the compound. Lowinger can be assured that cancellation and recall of supplies was decided upon with regret in recognition of the legitimate place which LSD-25 has earned in psychobiological research.

CARLO HENZE
Sandoz Foundation, 608 Fifth Avenue, New York 10020

Mathematical Illusions

The scatter-shot attack made on a number of mathematical and computer disciplines by I. D. J. Bross (Letters, 3 June) seems to be somewhat unjustified. Because one area of study has not yielded tangible achievement, should all related areas (some of which have been demonstrably productive) also be condemned? It would seem more rational, instead of casting aspersions on "a whole series of mathematically oriented new 'sciences'," to look at them individually, with at least as careful a treatment as E. N. Gilbert has given to information theory (15 April, p. 320).

Even more disturbing is that Bross has grouped in "the rest of the new math" fields which are as different as night and day. Game theory and information theory are just what the name implies: highly theoretical and abstract constructs. Computer simulation, on the