

I note that Hubertus Strughold uses "astrobiology" in the way in which Lederberg [*Science* 132, 393 (1960)] uses "exobiology" (and as you and I use "xenobiology"). Try coining a designating adjective from either of these terms: "astral" and "exic" seem to be the obvious ones. "Astral" is not only tainted with occultism, but is off in the wrong direction to start with, as "astron" is a star—and stars are about the least likely places to find life, culture, etc.

"Exobiology" does not suffer from the innate self-contradiction found in "astrobiology" but the prefix "ex-" or "exo-" has its own great shortcomings; it is tired and means too many things. The Merriam unabridged lists some 200 "ex-" words, and among them are many of the commonest words in English. . . . But "xeno-" and "xen-" have only seventy entries *not one* of which is a common word.

I submit that it is more sensible to use this almost-virgin prefix in designating non-terrestrial things, concepts, and fields of study as it will minimize conflicts in meaning, since a neologism constructed with the prefix "xeno-" is extremely unlikely to resemble or duplicate any other word already in existence (I can find only two probables; "xeno-parasite" and "xenolith"—see p. 2963 of the big Merriam).

But the situation is quite different with "ex-" and "exo-"; there are hundreds of probable conflicts with common words; e.g., a major field in "exobiology" is necessarily "exogenetics"—but exogenetic already has an established meaning in biology. A scanning of pp. 887-904 of Merriam will disclose dozens to hundreds of such conflicts.

In my opinion, "xeno-" is the best choice from the standpoint of derivation. But, be that as it may, it is certainly the best of these three in the interest of clarity and exactness.

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I submit that Heinlein has set forth the arguments for "xenic," "xeno-," and "xen-"; let not xenophobia stand in the way of the prompt adoption of these useful, elegant, and unique prefixes for designating the extraterrestrial sciences.

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### Exporting Universities

In response to the editorial "Diploma diplomacy" [*Science* 133, 1557 (19 May 1961)], I wish to second the motion of Arthur F. Burns that universities be exported to those countries that ask for educational aid.

It has been my observation that edu-

cation in the United States of foreign students brings much dissatisfaction to the individual himself upon his return to his native land. This is due to the fact that facilities which he has become acquainted with in the United States are not available to him in his homeland, and therefore he has little opportunity to teach others what he has learned. With the exporting of a university, the facilities would be established in his own country and would always be available to him, even after graduation.

The exchange of graduate students from foreign countries is healthy and good at the level of the individual, but for real upgrading of a country's educa-

tion the educational facilities should be built on the students' own soil and the degrees given should include graduate degrees requiring research.

Having been an engineering adviser at Cheng Kung University in Taiwan for two years, I wish to put in a word of caution regarding foreign aid to education. Education does not adapt itself too well to crash programming. At least 10 years are needed, with a tapering-off period of 5 years during which both financial aid and advisory aid are gradually diminished to zero.

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1. Wood, F. C., Gurin, S., and Kuo, P. T.: Medical Correlation Clinic on Atherosclerosis and Coronary Artery Disease, *Am. Pract.-Dig. Treat.* 12:235 (April) 1961.

2. Heiskell, C. L., Fisk, R. T., Florsheim, W. H., Yachi, A., Goodman, J. R., and Carpenter, C. M.: A Simple Method for Quantitation of Serum Beta-Lipoproteins by Means of the Immunocrit, *Amer. J. Clin. Path.* 35:222 (March) 1961.

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