Letters

Extraterrestrial "Geology": Finding the Right Words

In a recent report (23 Oct., p. 514), John A. O'Keefe described a conspicuous ridge on one of the Ranger 7 lunar photographs which he interpreted as resulting from volcanism. He proposed the name "arête" for such a curious feature.

Although "arête" refers to a knife-like ridge or rugged crest in mountainous topography, the term is usually restricted to glacial features; an arête is a serrate ridge between two cirques. Even if O'Keefe's choice of term can be justified, it is misleading, because it may be interpreted as implying that the ridge has been glaciated, which was not the author's intention.

This raises a general problem concerning the development of terminology for newly discovered features on bodies in space. The present confusion in terminology for earth features should not be further aggravated by applying similar terms to different features or different terms to the same features. When origin is unknown, a nongenetic term should be applied in keeping with present classification systems.

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American Research Vessel

In "Renewal of oceanography in Germany" (Report from Europe, 2 Oct. 1964, p. 45), Victor K. McElheny writes: "Unlike the recently constructed or adapted American oceanographic vessels, the *Meteor* will serve all branches of marine science instead of specializing in physical or biological studies." Apparently McElheny has overlooked the National Science Foundation's Antarctic research ship, the USNS *Eltanin*.

The *Eltanin* is equipped for studies in a multitude of scientific disciplines. She is a carefully planned floating mobile research station, capable of supporting these studies in frozen seas, and has been operating as such since 23 May 1962. Investigations being carried out aboard ship at present include work in meteorology, upper atmospheric physics, marine biology, entomology, oceanography, and geophysics. The scientific program is coordinated by the ship's sponsor, the National Science Foundation; the ship is manned and operated by the Military Sea Transportation Service.

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Testing: The Phrenological Approach

Scientists can frequently be observed discussing problems of human behavior without benefit of the rigorous scientific attitudes they customarily apply to nonhuman problems. We would not presume to discuss the molecular structures of wood, for example, simply because we have "been around trees all our lives." Humans can deal with human behavior in this way, but scientists, though human, have an additional commitment.

Barr's proposed "forum" on educational testing (Letters, 7 Aug., p. 533) might be a useful source of hypotheses concerning the nature, nurture, and measurement of the acquisition of knowledge. But it should not be expected to arrive at, or even attempt, the definitive conclusions implied by Hoffmann's "distinguished committee of inquiry" (Letters, 6 Mar., p. 997). One of the values of multiple-choice tests is that item functioning may be analyzed by means of established statistical procedures, may be evaluated against any of many criteria, and may subsequently be modified *on the basis of student performance*. One may argue with the choice of criterion but not directly with the items that meet it. Seldom are essay examinations so evaluated, although they could be. Incidentally, neither are textbooks; like essay questions, texts are evaluated largely through the subjective opinions of colleagues. The implicit assumption that the cognitive structures of teachers and students are comparable is absurd. One of the values of programmed instruction is that it requires the evaluation of instructional materials in terms of student performance. There should be little room for unsupported opinion with respect either to tests or to texts.

Do *all* multiple-choice items require only "superficial" memory? Do *all* essay questions require only "depth, subtlety, and creativity?" To cite an admittedly extreme example, a philosophy examination once consisted of the single, one-word question, "Why?" One student's answer was "Why not." Can the distinction between superficiality and depth of understanding be made in terms other than graders' perceptions of mystical characteristics like "theoretical-thinking ability and creativity" (LaFave, Letters, 9 Oct., p. 171) or such phrenological absurdities as "tapping the wells of thoughtfulness" (*ibid.*)? Aside from the ability question, evidence on relations between study habits and type of test is still inadequate [see J. Balch, *Am. Educ. Res. J.* **1**, 169 (1964)].

More intensive research is needed on this issue, and certainly free discussion should be encouraged while the evidence accumulates. But in these discussions there should be some recognition that we may not yet know what we are talking about.

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Massivity in Financing Research

In the account of the efforts of William Fox, the scientist-policeman (News and Comment, 30 Oct., p. 621), Greenberg has underscored the serious weaknesses of the "massive theory," according to which massive doses of federal money plus massive numbers of bureaucrats equal massive results. The lone researcher, such as Fox, simply can no longer compete with the streamlined laboratories and the mass production techniques. The individual is