ever, is weak, because there is not much China can offer to Cuba. Keeping the door open for reconciliation and American assistance could conceivably lead to Cuba's breaking away from Moscow's tutelage. Castro cannot have forgotten how Moscow left him in the lurch in October 1962 and can have little belief in Soviet protection—all the loud official pronouncements notwithstanding.

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Civil Defense: Bias in Congressional Hearings

The letter by Herbert A. Sawyer, Jr. (24 Apr., p. 366), places much weight on the pro-civil-defense testimony given before the Hébert subcommittee of the House Armed Services Committee [in hearings on a bill to provide federal financial assistance for incorporating fallout protection in future construction for schools, hospitals, and certain other public buildings]. The special nature of these hearings, however, casts considerable doubt on the objectivity of this testimony. Most of the witnesses were invited by the Department of Defense, and, in the words of Representative Hébert, "We proceeded with these hearings in a most unusual manner . . . by first having [the subcommittee counsel's] memorandum, then turning the whole field open to the Secretary and letting him bring in every witness he wanted to, to tell the whole story."

Under these circumstances it would be surprising to find much dissent from the official Department of Defense position. Let us hope that the Senate informs itself *not* "as well as did the House," but much better.

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Educational Testing

Discussions over the benefits and dangers of educational testing, as in the review by M. H. Trytten of two books on the subject (3 Apr., p. 44), seem to have confused the issue more than they have clarified it. Tests can be quite useful to the tester when used properly and at the same time be of no real value to the testee.

When cutting points are used, the tester can show that the occasional error (incorrectly labeling a capable person inept on the basis of a test score) is more than offset by the many instances in which the more able applicants are successfully distinguished from the less able. Though exceedingly rarely, an Einstein might fail to test up to his true potential, and (as indicated by Hillel Black in one of the books reviewed) a very few of the students with very high test scores turn out to be relatively uncreative and undercontributing members of society. A given testee's educational development and choice of career could therefore be adversely affected by test performance or, more properly, by any decision which he—erroneously—bases on his test score.

The general public (including many testers) should be continually reminded that to be screened in (or out) on the basis of a test score means nothing more than just that. Thus, universities and the like might well continue to find the tests useful for screening out the majority of unapt students, realizing that in dealing with large samples their successes will average well in excess of their errors. An individual student, on the other hand, can pretty much ignore his own test performance based, as it must always be, on an N of one, a highly unstable, small sample.

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Humanoids and Proteinoids

In "The nonprevalence of humanoids" (21 Feb., p. 769), Simpson makes several points with which I agree. Terms which presuppose the existence of extraterrestrial life are understatements of our ignorance. I am glad that Simpson said this emphatically. However, . . . we can be sure that organic chemicals will be found on Mars, and knowledge of the state of molecular evolution there may be fundamentally informative.

Part of Simpson's section on "The origin of life" might have been titled "The nonprevalence of proteinoids" in view of his statement that the "synthesis of the building blocks into macromolecules, especially nucleic acids and proteins, essential for life has not yet been accomplished under realistically primitive conditions." Two papers which appeared in *Nature* (*1*) too recently to have been cited in Simpson's article offer evidence of the existence of terrestrial thermal conditions under which proteinoids would form. Even at this stage in the history of Earth, the thermal ranges which exist in the regions of over 450 active volcanoes provide an extensive number of dry and moderately hot zones having conditions such as are employed in laboratory polymerization of amino acids.

Simpson says, "It is still a far cry from the essential preliminary formation of proteins . . . to their organization into a system alive in the full sense of the word. This is the step, or rather the great series of steps, about which we now know the least even by inference and extrapolation." Continued research with the organized units which form spontaneously from proteinoid in the presence of water (*2*) permits inferences through experiments simulating natural conditions, inferences which are consistent with the concept of the self-organizing properties of macromolecules as enunciated by George Wald in the *Scientific American* in 1954, and by others. The similarities to biocells of the structural details of the experimental units are best judged from pictures, which are to be found in a number of recent publications (*3*).

Whatever coefficient of validity one places upon such an experimental model, its present development makes at least one demonstration. This is the possibility of naturalistically and experimentally accounting for the nonbiological emergence of complex macromolecules and complex protocellular forms from simple systems by processes which are terrestrially realistic. This experimental model, as yet unique in its span of an evolutionary continuum, is also unique in having emerged from theoretical studies of (protein) systematics. This investigative history is consistent with Simpson's emphasis on the value of studying facts in terrestrial organisms.

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