Letters

BSCS: Its Impractical Aspects

In a recent Biological Sciences Curriculum Study newsletter, the originators of the program imply that biological education in the United States is reaching a high level of success. However true this may be, some criticism is in order.

First, since the BSCS is intended to be a terminal science course, implementation should be concentrated in less privileged urban and rural areas. The Special Materials program does not improve bad teaching and help poorly motivated students. These groups have participated sparingly in developing BSCS, and at least one important urban area is hostile to it. The more affluent suburbs were using these ideas for many years and they are among the prime movers in the program.

Secondly, the scientific method of inquiry is expected to be the cornerstone of the program. But the laboratory materials sometimes spend far too much time on unnecessary details, and there appears to be more emphasis on content than on approach. For the average student, it is easy to "dry lab" as many of my students have done. As J. K. Brierly stated in his review of the BSCS publications [*Science* **143**, 668 (1964)], it is doubtful that average students of 15 or 16 are able to form the hypotheses and conclusions expected in the laboratory exercises. They usually cannot get the point.

Thirdly, I have found the audio-visual material impractical and I will not use the movies as teaching aids because they violate too many pedagogical rules.

A fourth criticism is that BSCS eliminated "all unnecessary vocabulary" and was overly selective in the choice of material. Why does one book discuss osmosis, while another version never mentions the term? I agree that there is an overemphasis on vocabulary in biology, but why is the "capillary network" in the "cup-shaped cavity at closed end of nephron" preferable to "glomerulus" and "capsule"? And why, in a terminal science course, are the sense organs completely omitted? (Yellow version).

Finally, teachers need, rather than a rhetoric of conclusions as a course of study, more flexible material like that in *Laboratory and Field Studies in Biology* by C. A. Lawson and R. E. Paulson (Holt, Rinehart and Winston, New York, 1960) as well as more teacher training in basic laboratory and discussion methods. Koppelman of the University of Chicago would like to set up regional centers where teachers could spend Saturdays and get the help they need most to solve their simple but important problems. These solutions would be far more effective than plans now contemplated by BSCS.

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Expedient Referral Service

D. A. Miller proposes a three-fold voluntary scheme of communication in order to enable scientists to know who is referring to their published work, (Letters, 22 July). This scheme should be compared with a simpler one already in existence. The *Science Citation Index*, issued quarterly by the Institute for Scientific Information, is a computer-organized listing of new papers which cite previous papers. A scientist, if he is interested, need merely look under his name to find, for each of his papers, a list of all the papers in which his paper is cited. . . .

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. . . Eugene Garfield, editor of the *Index,* has estimated that from one-fourth to one-half of the world's scientific literature is already used as source material for the *Index*. If faster coverage is required, ISI offers an ASCA (Automatic Subject Citation Alert) service which can provide a scientist with weekly records of all current citations of his own (or anyone else's) work at a cost proportional to the number of works to be monitored . . . The multiple uses of citation indexing for literature search and for assessing the impact of scientific journals have motivated the *Journal of Histochemistry and Cytochemistry* to begin a new service for its readers. Each issue will carry the ASCA reports covering the previous two years' contents of the journal. If most journals which cover fairly well-defined disciplines were to provide this kind of service, a good part of the communication problem outlined by Miller would be dissipated in an extremely convenient way and at very low cost.

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Further Observations on Eskimo Culture

Neff (Technical Comments, 27 May, p. 1283) missed the point, perhaps inadvertently, in his reply to my article, "The Anaktuvuk Mask and Cultural Innovation" (18 March, p. 1337). He says that the "*umialik* (chief) made and sold masks" as a result of which "almost the entire community" quickly followed the leader, because, the *umialik* symbolized the role of opinion leader. Hence the issue is who starts the innovation.

Actually, I stated: "The *umialik* sold the original masks which he did not make, and when he did make masks later, he did not sell them but gave them away as gifts. These key facts support the real issue: not who, but why and how certain phenomena occurred (even the *umialik* waited 4½ years to exert his role) in the "awareness-needs" problem of motivation and cultural innovation.

Unfortunately, Neff's re-worked hypothesis must miss the point because he says his "hypothesis gives greater weight to the role of the chief," but no hypothesis can support any facts. Rather, it is the other way around. For this reason, Neff's "hypothesis" is of doubtful value.

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