asked a foolish question, it does not collapse; it goes on to answer a fool according to his folly. And the questioner being a fool will go on to act on the reply (*1*, p. 91).

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Reference

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Pressures at St. John's

Sarno's comments (Letters, 17 Feb.) on Luther Carter's references (News and Comment, 16 Dec., p. 1428) to the captive AAUP chapter [American Association of University Professors] at St. John's University, Jamaica, New York appear to be an uncritical attempt to preserve a veneer of apparent respectability for a sorry educational spectacle. The indications are that St. John's University tolerates professors and professors' organizations on its campus that do not offer critical opposition to its administrators, and banishes individuals and organizations which fail to swear unquestioning fealty. Observers of the struggle for academic freedom at St. John's must agree with Carter that the AAUP chapter at St. John's is now "under the domination of administration sympathizers." Otherwise, would St. John's permit its continued existence?

In December 1965, the violations of academic freedom occurred with the firing of many faculty members. In January 1966, the dues of 32 members of the Vincentian religious order were paid by a single cashier's check (presumably purchased by the St. John's administration) in order to enroll them as new members of the AAUP chapter. (Prior to that, only one Vincentian had belonged to the chapter.) In February 1966, the "election" to which Sarno refers was held. Certainly Carter's conclusions seem justified. An "election" of new officers following the forcible elimination of dissenters and the packing of the electorate might conceivably be described as conforming to certain formal elective procedures, but it assuredly lacks the essential substance of the free democratic process.

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Safe Use of Propylene Oxide

Kulik's warning (Letters, 27 Jan.) regarding the haphazard use of propylene and ethylene oxides as nondestructive sterilizing agents should be heeded, but needs qualification. These materials are explosive when mixed with air, as is ether, but it is my experience that when used correctly, under vacuum, no risk is involved. I have successfully and safely used ethylene oxide (70 percent by volume) under vacuum for many years to cold-sterilize wood samples to be used for studies of fungal decay. Providing a water pump is used for evacuation, no risk is involved with this closed system. After the sterilizing period, excess ethylene oxide can be removed without hazard through the water pump. I have also used propylene oxide under vacuum as a sterilizing agent; however, this gas is less than half as efficient as ethylene oxide on a comparative volume basis. Also, rate of diffusion of ethylene oxide into biological samples is much less than that of propylene oxide.

Kulik's suggested use of "quenched" mixtures of ethylene oxide and either freon or carbon dioxide is, in my experience, not always successful for complete sterilization. Such mixtures generally contain only 10 to 12 percent ethylene oxide, a concentration minimal for absolute sterilization, or even ineffective against resistant spores.

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Pollution and Self-Purification

Abelson's editorial, "Toward cleaner streams" (16 Dec., p. 1401) is helpful in calling attention to improvement in water quality as the result of managing the biodegradation of domestic wastes from municipalities. The naturally occurring aquatic biota of most streams are known for their ability to degrade common domestic organic substances, which have been with us as long as life on earth. These aquatic organisms play a most important role in stream self-purification because their communities shift the kinds and numbers of their members to accommodate changes in the amount and chemical characteristics of the domestic wastes.

However, his editorial omits discussion of the large quantities of toxic (to stream self-purification organisms) inorganic wastes and of newer synthetic chemicals that do not undergo biodegradation or which interfere with the metabolism of many beneficial stream biota, thus promoting large standing crops of nuisance planktonic algae. These undesirable algae become a part of pollution because they are unsightly, often impart taste and odor, and have been known to kill fish and other "good" aquatic organisms by producing toxins or by consuming the necessary dissolved oxygen supply.

Most pollution is an ecological phenomenon and has more subtle factors than generally realized. In our big industrial rivers the solution to pollution is not dilution, as generally practiced, but the use of influence to eliminate or reduce industrial effluents, which prevent or interfere with the stream self-purification capacity.

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Science in Non-Western Cultures

Dart and Pradhan have come to grips with a serious problem for agents of cross-cultural change ("Cross-cultural teaching of science," 10 Feb., p. 649). The problem is especially acute in the teaching of science and in science curriculum design, since there is no currently acceptable alternative to the rational system we call science in modern Western culture, whereas there are very acceptable alternatives in history, social studies, languages, home economics, and others. Teachers with some background in anthropology are increasingly aware that vast indigenous cultures in foreign countries may be endangered. Yet, as representatives of American culture, we have a strong tendency to employ our own dogmatic either-or teaching methods and solutions.

A point which may have been lost is the critical nature of the time period we commonly consider grades 1 through 3, or ages 5 through 9. There is evidence in the research of Piaget (*1*) and others that unless we are able to shape scientific thinking within this period, when the child is setting up perceptual and logical filters that he will carry with him the rest of his

life, we may be working against tremendous odds in trying to change his thinking later on.

At least two major curriculum projects are now operating with this possibility in mind. One, based on the work of Gagné (*2*), is organized around a sequence of processes; the other is based on the work of Piaget, and stresses developmental levels. If we can reach the child early enough, this type of approach may be of great use in developing scientific thinking in non-Western cultures.

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2. R. M. Gagné, "Contributions of Learning to Human Development," address given at the AAAS annual meeting, 30 Dec. 1966, Washington, D.C. A ➡ *Science* **151**, 49 (1966) and *Amer. Psychologist* **17**, 83 (1962).

Pesticides: Overstated Dangers

The plague of Rachel Carson's *Silent Spring* continues to infest the minds of scientists, despite the cures offered by more sophisticated investigations.

Wolff, in his review of Kihlman's new book, *The Actions of Chemicals on Dividing Cells* (27 Jan., p. 443), states that geneticists should be warned against the indiscriminate use of radiation, which presents a clear-cut genetic hazard. He writes, "Any arguments about whether or not geneticists should heed this advice have become academic since the publication of Rachel Carson's *Silent Spring*. The lay public is now acutely aware of the hazards attendant on the indiscriminate use of chemical agents."

Many articles, papers, and books have become available to both lay people and scientists which refute the general theme of *Silent Spring* and Carson's interpretation of "indiscriminate." The most notable are the findings of the Ribicoff Committee (*1*). After 3 years of intensive study of the use of pesticides the committee reached several conclusions on the benefit-risk equation. Senator Ribicoff (Connecticut) summed up the findings with the statement, "The committee concluded that no significant human health hazard exists today when the great benefits of disease control and food production are weighed against known hazards." Senator Pearson (Kansas) added, "The exhaustive investigations of the Subcommittee conclusively establish that the present use of chemical pesticides do not constitute an environmental health hazard." These conclusions were reached despite Carson's personal testimony to the committee.

A concurrent investigation was conducted by the House Appropriations Subcommittee on Agriculture, chaired by Congressman Jamie L. Whitten (Mississippi). Over 185 outstanding scientists and 23 physicians were interviewed, as well as officials of the American Medical Association and university medical school faculties. Also included were biologists, chemists, entomologists, nutritionists, pharmacologists, plant pathologists, toxicologists, zoologists (including a geneticist), as well as experts in agriculture, conservation, and public health. Whitten's book, *That We May Live*, is a result of the remarkable investigation (*2*). Those who would use *Silent Spring* as a reference should force themselves to read the opposite conclusions in *That We May Live*. . . .

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References

1. *Pesticides and Public Policy*, report of the Subcommittee on Reorganization of the Senate Committee on Government Operations, No. 1379 (Government Printing Office, Washington, D.C., 1966).
2. J. L. Whitten, *That We May Live* (Van Nostrand, Princeton, N.J., 1966).

Are There Inoffensive Weapons?

I note that the American Anthropological Association condemned four weapons of warfare, including napalm and chemical defoliants, as "offending human nature." I presume they also passed an antithetical resolution recommending a series of weapons, such as battle-axes, swords, guns, artillery, and others as being pleasing to human nature. Why such selectivity in serving the instincts of Cain?

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