Letters

Plethora of Phycology Journals

The progressive action and international spirit of astronomers, who in 1968 successfully merged five existing journals into one (see 30 Apr., p. 451), is to be highly commended. It suggests that, by similar consolidations in other fields, we may be able to combat the present deplorable trend toward the proliferation of journals. Phycology, the study of algae, would seem to be a field in which this would be quite practicable. Personal funds could be saved, as well as the organizational time and effort that is spent in the maintenance of subscription lists, costs of mailing, and so forth. Most phycologists now subscribe to two or more journals in their field (some American phycologists spend more than $50 a year on such journals). Moreover, unlike fields such as mammalogy, phycology involves the study of many species that are not confined by national or even continental boundaries; although seaweed distributions tend to be somewhat localized, the freshwater algal floras of all continents (except perhaps Antarctica) are very similar.

As a start, one might give serious consideration to consolidating *Phycologia* and *Botanica Marina* (both international) with the *Journal of Phycology* (American), the *British Phycological Journal, Revue Algologique* (French), *Phykos* (Indian), *Bulletin of the Japanese Society for Phycology*, and *Algological Studies* (Czechoslovakian, currently incorporated and issued with the German journal *Archiv für Hydrobiologie*). These are the main phycological journals, although papers on algae are published in many other journals, notably *Nova Hedwigia* and *Physiologia Plantarum*. I suggest that we could profitably and conveniently replace this plethora of publications by two, each with a separate international editorial board, dealing respectively with experimental phycology and with general phycology. They could be published as often as necessary under common auspices, with a standard format, a general editorial policy, and possibly a single editor-in-chief with a sufficient number of national or specialist subeditors to alleviate the work load.

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Stomach Trouble

To judge from the contents of the 25 June issue of *Science*, some members of the editorial staff have stomach trouble. One editor (or referee) doesn't know the difference between "stomach" and "abdomen" (figure 3, p. 1331) and another seems to believe that brains have stomachs (abstract, p. 1342). These lapses may be consequences of an endemic linguistic malnutrition or of indigestion occasioned by editorial overindulgence. In the legend of figure 2 on p. 1330, we also read about an "infarcted dog"; there are other unpalatable morsels in these and other reports.

The editors of *Science* set high scientific standards, but standards of style and precision of expression seem to be slipping.

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Sulfur Dioxide Pollution

In our report (29 Jan., p. 381) we were attempting to reduce the emotionalism that surrounds many environmental questions today. But MacKenzie (Letters, 21 May) seems to have missed the point of our report, which is that the "bogeyman theory" of pollution control is not tenable.

We were not absolving the power plants. Control of sulfur dioxide (SO_2) pollution is not a question of controlling the power plants *or* the smaller sources of SO_2, but rather a matter of controlling *both*. When the large "bogeyman" sources of air pollution are cleaned up, the considerable task of cleaning up the pollution resulting from small sources directly connected with the day-to-day activities of our rapidly growing population will remain. Space heating, an important source of SO_2 in eastern U.S. cities, is an example of these smaller sources.

We agree that national standards for SO_2 should include 1-hour standards, but we must comment on some of the other points raised by MacKenzie.

MacKenzie does not, in fact, disagree with us at all. We repeatedly stated that our arguments applied to long-term (1 year or more) averages only. Since it is widely known that an "emphasis on annual average concentrations from large power plants obviously fails to present the total impact of these sources," we expressly stated that "large point sources must be a prime target for control" precisely because of the high short-term pollutant concentrations these sources can produce at ground level.

Nobody knows which is more damaging to public health and welfare, chronic exposure to moderate levels of SO_2 or short exposures to higher levels of SO_2. Thus, it is not yet clear that statements about annual average dosage are misleading. Controls must seek to eliminate *both* kinds of exposure.

The damage to public health and welfare in those short-duration episodes in which a power plant plume fumigates an area would undoubtedly be reduced by lowering the sulfur content of a utility's fuel. But even if power plants were completely eliminated, high short-duration pollutant concentrations caused by smaller sources could be expected to occur. In the long run, *all* sources (including power plants) that can cause high SO_2 concentrations must be tightly controlled. In the short run, the important (and difficult) question is whether to direct the major control emphasis and available supplies of low-sulfur fuel toward large sources such as power plants or toward smaller sources located in the affected areas. Our work indicates that long-term average SO_2 concentrations might be reduced by directing considerable control effort and

low-sulfur fuel toward the smaller low-level sources. The best short-run strategy for reducing community exposure to episodic or localized occurrences of high SO_2 levels seems to be still an open question.

If our conclusions were misapplied by a utility or by anyone else, we are sorry. Facts can be misused. To their chagrin, scientists have had ample opportunity to learn this in the last few years.

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Alas

Hamlet spoke of a single skull. McMahon was referring to a single scull (see 23 July, p. 350, table 1).

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Climate Change

The report by Rasool and Schneider (9 July, p. 138) presents quantitative relationships between atmospheric carbon dioxide and aerosol concentrations which may be useful. However, two of their conclusions with respect to the effects of aerosols may be misleading.

Their statement that "the surface temperature falls precipitously with increasing opacity" is a consequence of the use of a logarithmic scale in presentation of the results. A replot of their figure 2b, using linear scales, indicates that the decline in surface temperature is linear with optical thickness and hence with aerosol concentration, at least to the accuracy with which I was able to read their curves.

In the projection of possible future events, they appear to neglect the effect of naturally produced aerosols. The authors of the SCEP report (*1*), which Rasool and Schneider cite as their first reference, concluded that, at present, the man-made tropospheric particulate component averaged over the globe amounts to about one part in five by weight and by number. Thus, the projected increase in the next 50