great majority of non-English-speaking nations recognize the value of the English language in international understanding, especially for scientific fields. Millions of people have spent years in learning English, and they do not regret it. Is it too much to ask the nations which have the advantage of learning English as their first language to spend a few hours to become familiar with the easily learned metric system?

Thanks again to the editors of *Science* for adopting it.

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A recent spate of letters advocating adoption of the metric system in *Science* and elsewhere led me to wonder how our colleagues in the engineering fields felt about the question. I was heartened to see, recently, the editorial in the May issue of the *Journal of the Water Pollution Control Federation*, in which it was announced that thereafter all papers in that journal would include metric units along with the customary English units. This is in line with an action taken in January by the American Society for Testing and Materials. The editor takes the enlightened position that, since the engineering profession is the principal group affected by such a change, the engineers are in an influential position to foster a progressive conversion.

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Pacific Science Center

I agree that the Pacific Science Center, which you describe in your editorial of 18 October [*Science* **142**, 345 (1963)], is worth supporting. However, your description of reactions to the Seattle Fair's United States Science Pavilion, which will now become the Pacific Science Center, is inaccurate. I base this assertion on a study, which I directed, of visitors at the Fair.

You quote a report that the Pavilion proved its popularity because "More than two out of three visitors (6,770,109 out of 9,609,969) sought out the exhibit. . . ." Statistics about attendance at fairs should be treated cautiously. Fair operators know only how many tickets they sell, not how many different people buy them; they do not know their "repeat rate." Pavilion managers get a rough idea of the size of their attendance by trying to count those entering their doorway, but they, too, have no idea what the repeat rate is. On the basis of our small-scale studies of repeat rates and of pavilion attendances, I would estimate total attendance at the Fair at between 4.5 and 5 million, and attendance at the Science Pavilion at between 60 and 80 percent of that total, with the higher value more likely. The fact that most of the Fair visitors came to the Science Pavilion did not in itself demonstrate that the exhibits within were successful. There were at least two reasons for the Science Pavilion's popularity which had nothing to do with value of the exhibits: the buildings were imposing, and there wasn't much competition.

We spent some time on the question of what fair-goers gained from a visit to Building Four of the Science Pavilion, which housed a great many extremely ambitious exhibits. Our conclusions were: (i) Most visitors were impressed, even awed, by the exhibits. (A frequent response on leaving the building was "It's all just wonderful.") (ii) Few people added appreciably to their knowledge of scientific facts or theories. (iii) Many visitors gained a sense of first-hand experience with scientific instruments and products. (A satellite-tracking station, a spark chamber, and a functioning biological laboratory were three of the more ambitious exhibits.) Science thereby became less foreign, though not more understandable.

I would guess that at least some visitors would have been disappointed —and properly so—if the exhibits had been more understandable, since this could have been accomplished only by watering down their content. The complex exhibits actually presented were respected because they were uncompromising in their aims. So long as a visitor felt he understood the general idea of what he was being shown, he was likely to believe the experience a valuable one. Along this line, it might have been better had working scientists, rather than college students, conducted the demonstrations. As it was, visitors did not have an opportunity to form an impression of that most important aspect of science—the scientists.

The statement in your editorial that "Imaginative exhibits on basic science hold the interest of a large public if technical jargon is avoided . . ." mistakes what it is that enables an exhibit to hold an audience. In Seattle both demonstrated exhibits and exhibits featuring live animals held the interest of visitors for quite a while, but otherwise the average length of stay at an exhibit was never more than 1½ minutes, and more often than not was 50 seconds or less.

There was one aspect of the Science Pavilion to which too little notice has been given. That was the Children's Pavilion, directed by Mike Butler and open only to children 16 and under. Some of the exhibits there had a surprising capacity to engage and instruct the young.

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Shortage of Medical Students

One must respect the long experience of G. H. Whipple in medical education. Much of what he says in his letter [*Science* **142**, 541 (1963)] is basic to understanding the problem facing the country.

In earlier years most of the medical graduates flowed in the direction of medical practice, that is, direct service to the public. This flow is now marked by many deviations. New fields have developed very fast and are attracting many. A mere listing will include the increase in full-time academic medicine (clinical, preclinical, and research), administration, public health, insurance, occupational medicine, athletics, and careers in the armed forces and the Veterans Administration. Of the more than 7000 annually completing their medical education, large numbers are not available to a burgeoning population. Innumerable communities are in dire need of medical service. Increased enrollment is therefore vital.

Whipple says that "Many good students . . . come from hard-working families with no financial reserves." I submit that with an annual requirement of approximately $3000, many can hardly manage. Scholarships at best are supplementary. The student's program is sufficiently time-consuming and stringent that to take on outside work is dangerous to his health and to his scholastic standing.

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