

letters

by improved technology and by utilization of more nearly reversible—and hence more expensive—recovery processes. Although we can define *resources* in terms of the energy requirements for recovering fuels from mineral deposits, the situation is quite different for *reserves*. Reserves are created by the economically motivated activities of developing mineral deposits for profitable recovery, and they include only the deposits actually so developed.

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Wigner replies

I am very glad that Stephen Shafroth expressed, in the April issue (page 11), his disagreement with my (and many other people's) conception about a future role of physics. Only if both sides of an unquestionably debatable issue are voiced can one hope for a rational view to prevail in the end.

The first question on which we do disagree concerns the physical possibility, at least in the US, for everyone to have a materially carefree life. I maintain that this possibility is present in the sense in which the term "materially carefree" was used in my discussion, that is, to denote the absence of worry for food and shelter. And I do believe that if these are assured life can be, essentially, carefree. It may be of interest to recall that when Shafroth was contradicted by his African students, he referred, in rebuttal, to the famine in their land. It is true that we expect many other material comforts—I mentioned the availability of running hot water—the absence of which is now regarded as a sufficient condition for poverty, whereas many of our grandfathers had no running cold water either. The availability of electric and automotive power is a similar convenience, and Shafroth is entirely correct when drawing attention to it. I also agree that there was a danger of a real shortage of these—not only a threat conjured up by oil companies. However, I doubt that further research in physics is necessary to assure adequate supplies of these. One obvious solution would be to get along with a little less power than we now use—perhaps with only 75 percent more per person than Sweden, the second largest power consumer, uses. Or, we could build more nuclear reactors. Neither of these solutions requires fundamental extensions of our science, and the lack they would cure is not a cause of human unhappiness comparable with the lack of food and shelter.

To conclude, it is my conviction that our present technical skills could already provide, at least for the foreseeable future in our society, the basic material requirements for all. Hence, our natural sciences have accomplished the original objectives set for them by society. It is for this reason that I emphasized the significance of the more spiritual studies, in particular of psychology, and Shafroth apparently agrees with this. I also tried, however, to find new vocations for *our* science. These should integrate the various disciplines more thoroughly. But, and this is the controversial issue, I consider it the main future function of science in societies that have already the affluence of ours, to become for a larger number of people the challenge and the source of pleasure which they now are for us scientists. Even if the old objectives continue to play a greater role than I envisage, these new objectives appear to me highly desirable.

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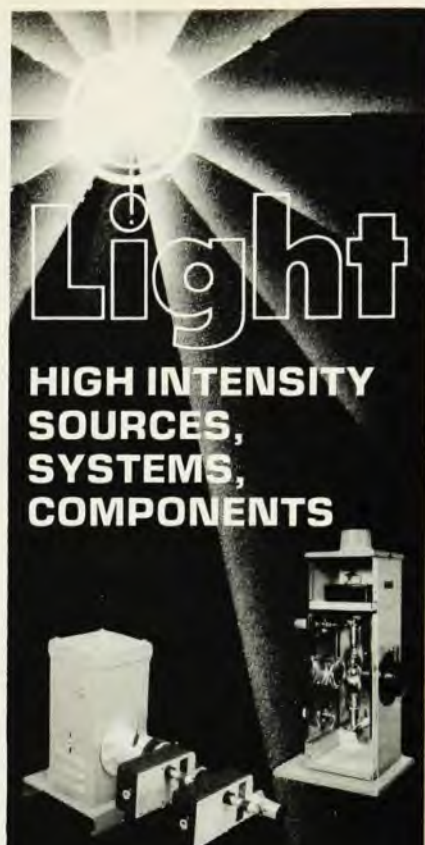
I would like to suggest a partial solution to some of the problems caused by the photocopying of AIP journals discussed in the recent article by H. William Koch (February, page 23).

My suggestion is that AIP should set up a fast, reliable, and *economic* reprint service for its members.

Most individual subscribers to AIP journals may find only a few articles in each issue of the journals they receive, and several in journals that they don't receive, which are of special interest. AIP should therefore provide a subscription service whereby individuals and small industrial labs with specific interests should be able to receive reprints of articles in all AIP journals that fall into their special-interest area as given in the CPT and SPIN classification scheme. Also, issues of CPT, CPAA, and receivers of SPIN profiles should be provided with "Reader Service" cards on which they can order reprints of articles that interest them.

Since more copies of articles in AIP journals would be printed it would result in a smaller "per-copy" publishing cost. If the cost and speed of receiving reprints can be made competitive with the cost and inconvenience of looking up individual articles and photocopying them or sending to authors for reprints, then the loss to AIP because of photocopying could be minimized or eliminated.

In addition, reciprocal arrangements with other physics and engineering so-



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