COMMENTARY

AFTER THE FFTF, THEN WHAT?

In his commentary on these pages [*Nucl. Appl.*, 1, 395 (1965)], Edward Teller noted that "at least 90% of the support for instruction in the physical sciences [in universities] is given over to pure science" in contrast to applied science or technology. He went on to make an interesting plea for improving education in applied science. We think his suggestion makes a great deal of sense and hope to see the day when it will be adopted.

Nevertheless, we submit that so novel a proposal will require a long time before it is put into practice, however meritorious it may be. It involves too much of a change in our present way of life to be rapidly adopted, human nature being what it is.

Meanwhile, we are faced not only with the problem, noted by Dr. Teller, of how to ensure that we will continue to have enough properly trained people who are interested in a career in applied science, but we are also faced with the more immediate problem of utilizing present personnel in a way that advances our general basic reactor and materials technology at a rate sufficiently rapid to meet the demands that will inevitably be placed on it in the future.

We refer in particular to the zealous single-minded manner with which the AEC is presently pursuing the development of a particular fast breeder reactor to the nearly complete exclusion of all reactor development work that is not directly connected with this main goal. Such dedicated unswerving pursuit of a clearly defined and carefully circumscribed objective would be highly laud[illegible]e in an emergency situation if the defense of the free world depended on it, although, even so, we seem to remember that 25 years ago, when the defense of the free world was a minute-by-minute concern and when a great many people thought that the triumph of right depended on the success of the Manhattan Project, a considerable amount of basic technology and fundamental science was nevertheless pursued simultaneously with the work that was more directly related to the production of the bomb. However, we are not in a declared state of emergency nor can we see how the success of our efforts to reason with the disturbers of the international peace depends on demonstrating that one particular reactor system will work.

Our concern is that while we are pursuing so limited an objective with such peerless preoccupation we will necessarily be seriously neglecting the more general reactor and materials technology that should be developed *now* to provide the basis for other advanced concepts that will inevitably be required in the future. History is replete with examples of ideas and concepts that were forced to languish because the technology of the time was inadequate or nonexistent. The principles underlying the digital computer were conceived many decades ago, but it has only been within the last two decades that the development of transistors and printed circuits had advanced to the point where computers could become so commonplace. Superconductivity was discovered three generations ago, but it is only now being considered seriously as a practical means of achieving intense magnetic fields because the prior cryogenics technology was not sufficiently developed. The telephone was invented in 1876, but it has been only since World War II that the development of microwave transmission has permitted telephone service to become really good, and not until the Syncom satellite was launched could we begin to consider around-the-world television. There have already been proposed interesting reactor concepts for which our present materials technology is inadequate.

We have heard some argue against the Fast Flux Test Facility (FFTF) on technical grounds. However, we are quite willing to assume that it will succeed simply on the grounds that anything (short of war) into which enough money and effort is poured is bound to succeed. We simply say, "Let's not concentrate so hard developing a better fish lure that we forget to stock the lake. After the FFTF, then what?"

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