LETTERS

Fusion Program

The article "Hard times in magnetic fusion" by Mark Crawford (News and Comment, 31 May, p. 1069) states that I am " . . . gone." This letter is to observe that my "goneness" (to paraphrase Mark Twain) has been somewhat exaggerated. In particular, my interest in the magnetic fusion program remains strong, and I have attempted, as a private citizen, to contribute to it.

This year I suggested to congressional committees that the Department of Energy (DOE) be requested to study the concept of a magnetic fusion research facility at a DOE site with remoteness, security, Nuclear Regulatory Commission and DOE supervision, tritium handling capability, available hot labs, waste disposal facilities, low-cost electric power, and scientific and engineering support.

The rationale for this suggestion is based partially on the now generally accepted realization that the future of the magnetic fusion program probably lies in any of several machines which are much smaller than today's large mainline experimental devices and which could be tested much more cheaply and quickly.

Because some small machine concepts may evolve into competitive devices for the production of electricity, it is my opinion that private industry could be drawn into R&D programs for them, if there were a facility where they could be tested with deuterium-tritium burns. (The production of 14 mev neutrons and the resultant induced radioactivity precludes such testing at a university campus or at a conventional industrial laboratory.)

A DOE fusion research facility, which could be on-line 5 to 7 years after commitment, would be easily affordable, even with a reduced fusion budget. It could give life and meaning to a program that may otherwise be in great danger.

The United States will need all the electric generating capacity it can get, starting before the year 2000 and for an indefinite period thereafter. With luck and prudent leadership now, fusion power could enter the generation market early in the 21st century. Citizen involvement from within the scientific community could help make that possible.

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Trichinosis Test

I am pleased that the ELISA (enzyme-linked immunosorbent assay) test developed for swine trichinosis by the U.S. Department of Agriculture received attention in *Science* (News and Comment, 8 Feb., p. 621). Because the eventual application of this important control strategy by private industry will depend upon a realistic understanding of its capabilities and its potential cost-benefit features, several points mentioned in Gina Kolata's article should be clarified.

It is implied in the article that the "window of vulnerability" of the ELISA, that is, the discrepancy in time between development of infective muscle larvae and detection of antibody, is insignificant. However, there is evidence that the muscle larvae may reach the infective stage as early as 16 to 17 days after initial infection, rather than 24 days (*1*, p. 42). In contrast to heavily infected hogs, many with light infections (one larvae per gram of muscle or less) may not produce antibody levels detectable by the ELISA until 4 to 5 weeks or longer after infection; this provides an interval of 2 weeks or more in which infectious hogs may go undetected (*2*). Epidemiological investigations reveal that the majority of naturally infected hogs have such light infections (*3, 4*). How frequently this situation may arise under natural conditions is at present conjectural, and many authorities in this field feel that such lightly infected hogs are not an important public health hazard. Still, it is not clear that serological tests can provide complete detection.

Because ELISA testing of market hogs is not the only potential inspection procedure now being given serious consideration in the United States, the statement in the article that the pooled digestion test has the disadvantage of not allowing convenient tracking of individual muscle samples should be clarified. The procedure as developed in Denmark (and now officially sanctioned by the European Economic Community) easily allows testing of individuals in a positive pool. Given the very low prevalence of infected swine in the United States (about 1 hog in 1000), the probability of finding a positive pool requiring individual testing is only 1 in 50. Recent epidemiological investigations show that most infected hogs are marketed through smaller slaughterhouses (*5*), many of which will require relatively unsophisticated inspection techniques. Therefore the pooled digestion test could prove to be a successful alternative.

Several other points require comment. The number of deaths from trichinosis