LETTERS

Fire Ant: Whose Pest?

In presenting the rationale of the Agricultural Research Service toward pest control ("Agricultural pest control and the environment," 19 June, p. 1419), Irving states that "persistent pesticides should be released into the environment only when necessary—that is, when the need is immediate to protect human health or life-supporting food supplies and when no satisfactory alternative is available." I contend that the logic and good intentions of this statement are violated by the current fire ant eradication program. The ARS and cooperating state agencies plan to treat 120 million acres in nine southeastern states three times with 1¼ pounds of Mirex bait per acre per treatment.

How is this program justified in terms of protecting human health and food supplies? Imported fire ants have seldom been reported to be detrimental in their feeding. Insects, insect products, and other animals form the major portion of the fire ant diet (*1*). Mirex, however, is a very stable and persistent chlorinated hydrocarbon (*2*) and is known to induce tumors in mice (*3*). The Mrak Commission (*3*) has recommended that the exposure of human beings to such carcinogens be minimized and that the use of such compounds be restricted to those purposes for which they are judged to be advantageous to human health which outweigh the potential hazard of carcinogenicity.

If the ARS is really interested in the environment, they should stop this eradication program and recommend individual mound treatments which effectively control fire ants (*1*). Surely we can find a better way to spend $200 million.

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References

1. H. B. Green, *The Imported Fire Ant in the Southeastern United States*, Mississippi State Univ., Agricultural Experiment Station Bulletin 737 (1967).
2. C. C. Van Valin, A. K. Andrews, L. L. Eller, *Trans. Amer. Fish. Soc.* **97**, 185 (1968).
3. *Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health* (U.S. Government Printing Office, Washington, D.C., 1969).

The imported fire ant is less significant as an agricultural pest than it is as a "people pest." But the people who are affected by it regard the nuisance and the adverse effect upon their health and well-being of sufficient importance to demand relief from it.

As Ferguson knows, the fire ant eradication program is a program of the states in which the federal government is a participant. Federal participation was authorized by Congress in response to demands from the infested states—demands which continue at the local level and through state representatives in Congress. Objections to continuation of the program would have greater weight if they were expressed persuasively to the states concerned. Nevertheless, the federal government does significantly influence the operation of the program. Our 8-year field experience in using Mirex to control the fire ant has included consideration of the possible hazards of the chemical to man and his environment. This experience does not indicate that we should abandon Mirex. Ferguson notes that 1¼ pounds of Mirex bait is applied three times per acre. This 3¾ pounds of bait contains only 5.1 grams of the active chemical and represents an almost unbelievably low amount of toxicant to achieve the high level of effectiveness we have experienced. We believe the continued prudent and systematic use of this tool will eradicate the pest. It will be costly, but it is also costly to live indefinitely with the pest, which is the alternative course suggested by Ferguson.

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Computers as Chess Partners

The cover of the 10 July *Science* is timeless, but its caption, in the table of contents, is badly dated. The "future" to which it refers, in which "it may be possible to develop computer programs for chess play," began in 1957–58 when Alex Bernstein constructed the first complete chess-playing program for a computer. This and other early programs (including some hand-simulated predecessors) have been published (*1*).

No program yet plays expert, or even Class A, chess, but Greenblatt's program, perhaps the strongest in the field today, has won a Class C American Chess Federation rating on the basis of its performance in tournaments

(against humans). This would place it, I am confident, well above the median strength of *Science*-reading chess players.

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Reference

1. A. Newell, J. C. Shaw, H. A. Simon, *IBM J. Res. Develop.* **2**, 320 (October 1958); also reprinted in *Computers and Thought*, E. A. Feigenbaum and J. Feldman, Eds. (McGraw-Hill, New York, 1963), pp. 39–70.

Revising the Publication Process

Contrary to Woodford (Letters, 12 June), Brown *et al.* (*1*) did not propose putting scientific articles on microfilm and providing "hard copies" only on request. Instead we argued specifically against such an idea and proposed a change in the form of journal distribution.

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Reference

1. W. S. Brown, J. R. Pierce, J. F. Traub, *Science* **158**, 1153 (1967).

Woodford's basic points on "Inflexible page charges" are very well put. However, his remarks that editions of journals in microform or microfiche "remain cumbersome to read or consult" seem to be a personal opinion. Our experience here, confirmed by others in industrial-research laboratories, has demonstrated that editions of primary and secondary journals in the form of 16-mm microfilm in cartridges are easier to use than bound volumes of journals, save readers up to 50 percent of their time as against the use of bound journals (including making copies on microfilm reader-printers), and are popular with researchers who do their own information studies. Some hundreds of libraries have already replaced their bound volumes of *Chemical Abstracts* with the microfilm edition in cartridges, and the number of primary journals becoming available in this format is increasing rapidly. Woodford's experience must have been based on the use of 16-mm microfilm reels not in cartridges. For these, "cumbersome" is a mild term.

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