

## Mirex and the Fire Ant: Decline in Fortunes of "Perfect" Pesticide

During his 1968 presidential campaign, Richard M. Nixon issued a statement promising "effective . . . control" of the imported fire ant—a promise that sent some reporters scurrying to their files since few of them knew what the imported fire ant is, let alone why a presidential candidate would come out against it.

Mr. Nixon made the pledge because eradication of the ant and its wasplike sting is a popular regional cause in the South and has been so for almost two decades. Recently, however, environmentalists have charged that the pesticide Mirex, which is used against the ant, is dangerous and that the federal-state fire ant program is analogous to "dropping nuclear bombs on pickpockets."

But on 15 April, the environmentalists lost a round when their court motion to halt the federal-state program was denied. Federal Judge Oliver Gasch of the District Court of the District of Columbia denied the motion by the Environmental Defense Fund (EDF) and other groups for a preliminary injunction to halt spraying until the full case could be heard. Judge Gasch ruled that USDA had fulfilled its environmental responsibilities under the 1969 Environmental Policy Act and that there would be no "irreparable injury" if the program continues (see *Science*, 19 March 1971, p. 1131). Last week, also, final meetings were held in the states and spraying

has now begun. However, in many Southern states, this relatively low-priority program is dwindling; it requires 50-50 state-federal funding, and state money has been very tight.

Compared with other pesticides which have fallen into serious disrepute lately, Mirex, in the quantities used, so far appears to be less toxic. And compared with other insects that carry diseases and do crop damage, the fire ant is more like a nuisance. But, the Mirex-fire ant issue offers an interesting case of how the environmental movement has interacted with local interests, politics, and economics to shape our experience with pesticides.

The ant itself differs from native, American fire ant species. It is the oil-loving *Solenopsis saevissima*, whose home is Latin America. It arrived in the United States in 1918. The ant does not appear to have any natural enemies to check its growth; its population grew to significant nuisance proportions by the early 1950's and is now expected to increase further.

There is very little conclusive evidence that the ant actually harms other insects, plants, or birds and wildlife. But it inhabits open areas such as fields, where its large mounds inhibit use of farm equipment, and parks and pasturelands, where its wasplike sting—an individual may receive many at one time as a result of swarming—causes a great deal of pain and inconvenience to livestock, farmers, la-

borers, picnickers, and schoolchildren.

Hence this insect is regarded mainly as a nuisance to human activity: the worry of protecting children from the stings (there is one substantiated report of death due to shock from the stings), and the interference with farming. Thus fire ant elimination is a quick and sure local issue to stir emotions, and one easily converted into political currency.

Mirex, the pesticide used against the ants, was hailed on its introduction as "the perfect pesticide" because it is quite precise in killing its target organism. Mirex bait is made by Allied Chemical Corp. of Morristown, N.J. Although it has hazards, it appears less toxic than DDT or the other fire ant killers, heptachlor or dieldrin.

Mirex is a delayed-action bait. A first spraying is almost entirely picked up by worker ants who take it back to their nests, where it then kills the queens and ultimately destroys most of the colonies. Past technique has included two more sprayings aimed at killing off the remaining ants—but this carries the risk that the bait, left untouched by the now-sparse fire ant population, will be absorbed by other insects or birds or will flow into neighboring streams. This year the USDA has switched from a multiple-spray program of "eradication"—which was once planned to involve spraying of all 126 million infested acres over 12 years at a cost of \$200 million—to a one-spray program of "control," which during this year will cover 7 million acres at a cost of \$7 million.

Mirex has come under fire lately because, in some field tests, it has been toxic to shrimp, crabs, and other species of ants, such as the carpenter ants. In laboratory mice, Mirex in heavy doses proves a moderate carcinogen. A final question arises because, like DDT, mercury, and other solutions, Mirex is highly persistent in the natural environment, and could pass along the food chain to become concentrated in ever larger organisms. But current methods of Mirex bait application attempt to limit these hazards. Mirex is aerially sprayed at 1.7 grams of Mirex chemical and 1¼ pounds of corncob grits and soybean oil *per acre*, or about two thimblefuls of Mirex chemical *per acre*. This year these sprayings are planned for only one-eighteenth of the land area infested by the ants.

There is another invidious inference about Mirex, one involving the



Mounds of the imported fire ant in a heavily infested pasture.

company that processes the chemical with the corncob grits and oil to make bait—Allied Chemical Co. The Allied plant doing the processing is in Mississippi, and the congressional committees that appropriate fire ant money have strong Mississippi representation. A number of news accounts have mentioned these facts together to imply, apparently, that regional favoritism might be involved in the USDA-Allied contract.

Whatever the facts, the circumstantial evidence of this is not overwhelming. Allied's main offices are in New Jersey, not Mississippi, and Mirex is but a tiny fraction of its \$1.24 billion annual sales business. Allied sells about \$1 million of Mirex bait inside the United States annually, and obtained the bait patent in 1953, long before USDA "discovered" it. Moreover, Allied passes along some government Mirex money in buying the Mirex chemical itself from Hooker Chemical Co., which is located in Niagara Falls, N.Y. Finally, Allied's bait-making plant in Prairie, Mississippi, has a yearly maximum of 15 employees—hardly enough for a major political payoff.

#### Case History of a Pesticide

The fire ant program upheld by the court last week has had a long, tortured political history, which, in effect, reflects the pesticide experience generally.

The moving force behind the program all along has been the Southerners who live with fire ants; these include livestock and dairy organizations, farmers, who claim damage to their animals, truck farmers, who claim that migrant labor will not work in ant-infested fields, and local granges and farm bureaus. Add to these the blessing of local politicians eager for the farm vote—particularly state commissioners of agriculture—and the array is a formidable lineup of local interests.

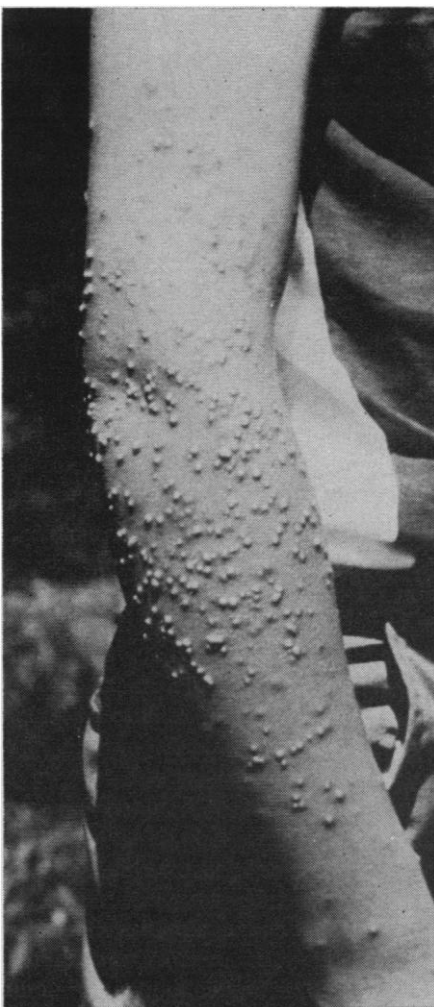
These interests first got the federal government involved and kept it that way. After 4 years of local programs, the states took their case to Washington in 1958, and got \$2.4 million for eradication.

The year 1958 was the height of the pesticide honeymoon. *Silent Spring* was 4 years unwritten, and farm productivity was a front-row national issue. Supermarkets were escalating their demands on the quality of fresh foods. If a bushel of apples had a few worm-

holes, the chain stores would reject the lot, and the farmers who had sent them. Thus, when Congress decided to kill the fire ant, it literally ordered USDA to spray immediately, with whatever would kill. The chemicals chosen were heptachlor and dieldrin, and the result was disaster. Wild turkeys, bobwhite quail, cattle, opossums, armadillos, raccoons and songbirds died.

In *Silent Spring*, written just when the first reports of this and similar disasters were surfacing, Rachel Carson called the program "ill conceived, badly executed, and thoroughly detrimental . . . in terms of public confidence . . . that it is incomprehensible that any funds should still be devoted to it."\*

But the original appropriation included only pennies for research, so USDA had to use some of the spray funds to set up, in 1958, a "methods improvement laboratory" in Gulfport, Mississippi. And in 1962, the year *Silent Spring* was published, the Gulf-



The imported fire ant has a wasplike sting. The stinging sensation lasts a few minutes, but the pustules last a week or more, presenting a risk of secondary infection.

port laboratory triumphantly announced the selection of the "perfect pesticide"—Mirex. According to testimony by Orville Freeman, then Secretary of Agriculture, "it has no harmful effect on people, domestic animals, fish, wildlife, or even bees, and it leaves no residue in milk, meat, or crops."†

But, since 1962, the Mirex program has been subjected to a continuous seesaw among political forces.

A main dilemma was a lack of coordination among the nine affected and contiguous states: Florida, Georgia, South Carolina, North Carolina, Alabama, Mississippi, Louisiana, Texas, and Arkansas, each of which must match federal appropriations dollar for dollar.

One Agriculture Department official recalls, "one year the states would come to us filthy rich with money for fire ants and the next minute they wouldn't have a dime." Or, he said, a state would announce funding, while its neighboring state would offer none. Congress would appropriate money, USDA would help to spray, but, by the next year, these areas would be reinfested with invading fire ants from neighboring, untreated states.

And throughout this parade, USDA could not take an independent line. *The Washington Post* reported that one year Jamie L. Whitten, Chairman of the House Subcommittee on Agriculture of the Appropriations Committee, which passed on the Agriculture budget, threatened to cut funds if USDA did not cooperate on fire ants. He said in a hearing: "If you are not going to do what Congress says to do, maybe we ought to cut down the money at your level . . . I am serious."

But committee reports show that Whitten's committee was harsh on the program compared with its Senate counterpart, the Subcommittee on Agriculture of the Senate Appropriations Committee, chaired for many years by Spessard L. Holland, Democrat, from Florida, whose panhandle district is said to have been "screaming for relief" from the fire ant. In 1968, for example, after Whitten recommended \$5 million for the program, the Holland committee reported that not enough attention was being paid to the fire ant and upped the recommendation to \$8 million!

A former staff worker for the Whit-

\* Rachel Carson, *Silent Spring* (Riverside Press, Cambridge, Mass., 1962), p. 162.

† Quoted in J. L. Whitten, *That We May Live* (Van Nostrand, Princeton, N.J., 1966), p. 115.

ten committee recalls that the state agriculture commissioners along with other locals, would appear en masse at the subcommittee hearings, replete with photos of fire ant stings and pledges of state support. Such a barrage made resistance almost impossible for the six Southern members of Holland's 15-member committee, and the three Southerners on Whitten's eight-member body.

Sometimes, however, the state legislatures would not come through with the promised matching funds. Annoyed, for example, by this in 1966, the Whitten committee included a reprimand in its report.

"The Committee is disappointed that local organizations and individuals in some areas have not cooperated more fully in the imported fire ant program. . . . The committee expects the fullest cooperation from local interests in the future."

Indeed, the political fortunes of the program may be changing partly because, with Senator Holland's retirement in 1970, Senator Gale McGee—from the uninfested state of Wyoming—has become chairman of the relevant Appropriations subcommittee.

#### The Opposition

Against this somewhat uncoordinated coalition of locals (including J. Phil Campbell, formerly agriculture commissioner of Mississippi and now Undersecretary of USDA) and congressional committees, a number of other groups, many federal—while curbing the more toxic chemicals like DDT—tried to throw cold water on Mirex.

An old opponent is the Department of the Interior's Fish and Wildlife Division. A scientist there recalls the division's opposition to USDA's heptachlor program as "one of the bloodiest battles we ever fought." Later, under Walter Hickel, Interior placed Mirex on its list of restricted pesticides and refused to use it in quantity on Interior lands.

In 1969, a panel on pesticides appointed by the Department of Health, Education, and Welfare and chaired by Emil M. Mrak, chancellor emeritus of UCLA at Davis, listed Mirex among "potential" carcinogens, and recommended limited use.

In August, 1970, the EDF filed its motion to halt the program. USDA started its fall applications anyway although the judge ruled on the case only last week.

On 18 March, the Environmental

Protection Agency (EPA), formed by President Nixon last December, issued notices of cancellation on Mirex, a preliminary move to suspending interstate shipments of the chemical. EPA had determined that Mirex did not pose an imminent hazard to health, but there were enough questions about it to warrant a full scientific review, which is now going ahead.

Finally, a second Nixon-appointed environmental body, the Council on Environmental Quality, reviewed USDA's plans for this year's fire ant program in March and asked—apparently despite the President's campaign pledge—that it be limited in scope or that alternate methods of control, other than Mirex, be found.

But despite these governmental and judicial contortions, the spraying bug is dying—mainly because the states can no longer afford to carry low-priority programs. At the moment, only Georgia and Mississippi have pledged matching funds for the 1971 program of any magnitude: Georgia will have 4.1 million acres sprayed, and Mississippi 2.6. South Carolina's program will be in the neighborhood of under 200,000 acres—\$500,000 was cut from the state share last fall.

Florida and Texas are both virtually out of the program—Texas' support has never been that strong, despite warnings of the ants' westward expansion, and Florida because of tight state money and a strong environmental movement. This year, Alabama, Louisiana, Arkansas, and North Carolina are having only 12,000 to 50,000 acres sprayed, although if the local interests lobby for more spray, these numbers could rise.

#### Press Treatment

Part of the recent history of the Mirex issue is the routine, reflex-action treatment it has received in the press.

A simple example is the fashion in which the Associated Press, and later the *New York Times*, picked up the colorful, but somewhat hysterical, description of the program as an atom bomb dropped on pickpockets. Another is the inferential statements about Allied's involvement in Mississippi politics. Even the recent, very-well-documented *Washington Post* exposé of Whitten's relationship with the pesticide industry left this question up to the reader's imagination. It said:

"The pesticide being used is Mirex, manufactured by the Allied Chemical Co., in its plant at Aberdeen, Missis-

issippi. Whitten's unit appropriated more for this pesticide use program than for total spending on pesticide safety research and regulation."

Meanwhile, although they lost in court, the environmentalists see this slowing of the Mirex program locally as a victory. Mirex has been accused, but not convicted. The ants persist, and the USDA is still, after 13 years, trying to get under way a long-term research effort that can operate independently of the appropriations gimmickry. As one official said, the environmental movement has been "no Sputnik" in persuading Congress to fund environmental research.—DEBORAH SHAPLEY

## RECENT DEATHS

**John S. Boyce**, 81; professor emeritus of forest pathology, Yale University; 20 March.

**Ralph R. Coleman**, 53; former associate clinical professor of internal medicine, Medical University of South Carolina; 20 February.

**William E. Milne**, 81; professor emeritus and former chairman, mathematics department, Oregon State University; 19 January.

**Robert E. Norris**, 66; professor of mathematics, University of Wisconsin, Milwaukee; 20 March.

**Daniel T. O'Connell**, 69; retired chairman, geology department, City College, City University of New York; 23 March.

**William E. Peterson**, 79; former professor of dairy science, University of Minnesota; 13 March.

**John E. Sass**, 73; professor of plant anatomy, Iowa State University; 17 March.

**Raymond E. Shafer**, 60; professor of industrial engineering, West Virginia University; 22 February.

**Harry A. Waisman**, 58; professor of pediatrics, University of Wisconsin Medical School; 19 March.

**John Walton**, 76; retired professor of botany, University of Glasgow; 13 February.

**Robert P. Walton**, 66; chairman, pharmacology department, Medical University of South Carolina; 27 March.

*Erratum:* The price of *Problems of the Logic of Scientific Knowledge* (P. V. Tavanec, Ed.), reviewed 19 February, page 662, is \$28.

*Erratum:* The publisher of *Women in the Field* (P. Golde, Ed.), reviewed 19 March, page 1135, is Aldine Publishing Company, Chicago.