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COVER: Fossil fuel depletion, rising costs and concern for the environment are forcing scientists to search for a more abundant, cheaper, cleaner power source. Many feel that hydrogen will fill the bill. See p. 46.

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COMMENT

The specter of meteorological warfare

The confirmation that American forces are using weather modification for military purposes in North and South Vietnam and Laos is cause for great sadness and concern by scientists and citizens everywhere.

For months reports have been circulating that rainmaking has been used as a weapon in Southeast Asia. In April, when our article on the subject appeared (SN: 4/15/72, p. 254), the reports still had to be considered unconfirmed. Defense Secretary Melvin Laird and Defense research director John S. Foster Jr. declined to answer Congressional queries, saying, as Foster did, "Certain aspects of our work in this area are classified." Last week the curtain of silence was broken. In an article in the New York Times, Seymour M. Hersh, the reporter who won a Pulitzer Prize for his disclosures on the massacre at Mylai, presented results of extensive interviews with Government sources that confirm without doubt that rainmaking is being used for military purposes in Vietnam. The most recent efforts have been aimed at hampering North Vietnamese troop movements. Most officials interviewed agreed that the program had been successful in muddying roads and flooding lines of communication. It was also revealed that a method had been developed to treat clouds chemically so that they produced an acidic rain that interfered with the operation of North Vietnamese radar units controlling anti-aircraft missiles. Weather modification has also been used to alter weather patterns to aid bombing missions and to provide cover for infiltration of South Vietnamese commando and intelligence teams into North Vietnam. It is, as Hersh notes, the first documented use of meteorological warfare.

So the fact is now upon us that man's fledgling capabilities of environmental manipulation are being put to use in the military arena. The genie has been unleashed. One does not have to be vociferously anti-war to regret that it has happened. As Sen. Claiborne Pell (D-R.I.) has said, "The use of rainmaking as a weapon of war can only lead to the development of vastly more dangerous environmental techniques whose consequences may be unknown and may cause irreparable damage to our human environment." The revelations add new importance and urgency to the draft treaty proposed by Pell and 13 other Senators to ban the use of environmental and geophysical modification as a weapon of war.

The science of weather modification is nearing the point where properly controlled and conducted programs can have vast social benefit. But atmospheric scientists do not yet have a full knowledge of the processes involved in increasing rainfall or snowfall or diminishing the size of hailstones or the intensity of a hurricane. There are many uncertainties. The best of the civilian scientists in this research have long cautioned against overzealous application of the partial knowledge gained so far and have called attention to the need for great wisdom in the use of weather modification (SN: 5/9/70, p. 461). Many of them will be saddened or angered by the use of the techniques for warfare. As Joanne Simpson, an atmospheric scientist whose work in Florida and elsewhere has shown a striking ability to stimulate the growth of cumulus clouds, said recently: "I would be grieved to see my work used for military purposes . . . I got involved in this kind of work to do useful things, not destructive things."

Beyond the specific moral issue, there is another problem for scientists and others concerned about public attitudes toward science. One of the reasons so many people, both young and old, have become disenchanted with science in recent years is that they have too often seen the fruits of science and technology distorted toward what they view as unwise or even inhumane ends. Much of the criticism for the misuse of science and technology has been directed toward scientists themselves, sometimes justifiably, sometimes not.

It would be tragic if in this case the achievements of civilian atmospheric scientists who conduct responsible research in weather modification with a hope of eventually bringing about some social benefits were tarnished by the irresponsible actions of the military in making use of weather modification as an instrument of warfare. Scientists concerned about the public image of science, and about the clarity of their own consciences, should condemn meteorological warfare. The specter it raises is too awesome for them to remain silent.

Kendrick Frazier