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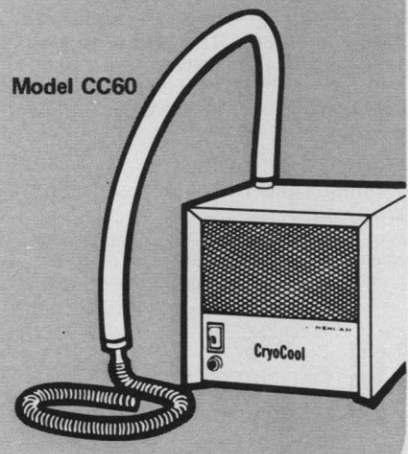

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cessive introductions of different sex chromosomes bearing genes at different loci producing similar effects, populations might be collapsed to levels at which supplemental means of maintaining control or effecting local exterminations might be feasible. In their review of genetic means of controlling insect populations, Smith and von Borstel (*4*) mention meiotic drive, but mainly in connection with the introduction of dominant lethal mutations. Perhaps the paradox of natural selection favoring the spread of an allele whose net effect is to reduce a population has hindered research on this apparently important phenomenon.

PAUL W. SHERMAN
RICHARD D. ALEXANDER
Department of Zoology and *Museum of Zoology, University of Michigan, Ann Arbor 48104*

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In our article we did not attempt to list all, or even many, methods of biological insect control. We cited some general leading references, but our main purpose was to illustrate the crucial policy questions associated with future insect control methods by selecting a few specific examples. Therefore, our omission of specific mention of sex ratio distortion should not at all be interpreted as denying its potential; we share Sherman and Alexander's view that this as well as many other biological methods merit more intensive work. However, as we pointed out in our article, the economic realities of research funding and of the market place as well as current government policy offer more lip service than real incentives for fundamentally novel approaches to insect control.

CARL DJERASSI
Department of Chemistry, Stanford University, Stanford, California 94305
CHRISTINA SHIH-COLEMAN
School of Medicine, Stanford University
JOHN DIEKMAN
Zoecon Corporation, Palo Alto, California 94304

Weather Modification: Possible Effects

Kellogg and Schneider (27 Dec. 1974, p. 1163) discuss the future and problems of climate stabilization and propose a type of "climate disaster insurance." I wish to point out an extremely important and quite neglected possible consequence of both climate stabilization and weather modification.

Engineering works for the storage and transmission of water within and between river basins are designed on the basis of streamflow records that can be statistically evaluated for reasonable design criteria. For example, flood control works are generally built to contain the "100-year flood" or that flood with a 1 percent probability of occurrence in a given year. If 100 years of streamflow records are available, the water stage and discharge statistics are highly reliable, but if only 50, 20 fewer years of records are available, then the statistics are less reliable. In such cases, flood control structures must be overdesigned, not because of the possibility of large floods, but because of the uncertainty of the design criteria.

Weather modification and climate stabilization have the potential of changing rainfall and runoff patterns to a largely unknown degree. If such programs are successful, the result could be the invalidation of previous streamflow records as a statistical basis for the design of new water engineering works. New structures would have to be overdesigned, and older engineering works might well need to be changed or supplemented with new works, all at a tremendous cost.

This potential effect of climate stabilization and weather modification should be considered in the planning and before implementation of any local, regional, or worldwide weather and climate modification program.

CHARLES J. ROBINOVE
EROS Program, U.S. Geological Survey, Reston, Virginia 22090

The article by Kellogg and Schneider poses questions, not of man's scientific ingenuity, which the authors demonstrate so well, but of man's political intelligence, which still lurks in the shadows of uncertainty.

However, what we call political "science" has wrestled with the solution of the types of problems to which the article refers. In regard to water rights, there are numerous precedents. In the

days of the League of Nations, the World Court decided a dispute between Belgium and the Netherlands on the diversion of water from the river Meuse. A notable recent case, decided by a specially appointed international tribunal, concerned a dispute between France and Spain about the alleged diversion of the waters of Lake Lanoux. Problems of the border waters between the United States and Canada are handled by a special body set up by treaty and called the International Joint Commission. Kellogg and Schneider mention our negotiations with Mexico; the problem of the salinity of the Colorado River has now been settled by agreement. Many other cases could be cited, most of them pointing to settlement by negotiation rather than by decision of an international court. The India-Pakistan agreement on the Indus River is a notable example. Barros and Johnston have recently published a documentary volume (*1*) on *The International Law of Pollution*.

There are fewer precedents for international litigation of atmospheric pollution, but on 20 December 1974, the International Court of Justice at The Hague (commonly called the World Court) handed down its decisions in the cases brought by Australia and New Zealand against France because of French nuclear tests in the atmosphere in the South Pacific area. The court did not hold that France was liable for actual or potential injury in the plaintiff countries because it found—by 9 votes to 6—that France has now bound itself to discontinue such atmospheric tests; the court therefore denied the plaintiffs an opportunity to prove that a state is liable if it deposits nuclear fallout on other states or on oceans where fisheries may be affected. Since I was counsel to Australia, it would not be seemly to comment on the court's judgment. The plaintiffs could invoke a much-cited decision of a special international tribunal set up by agreement of the United States and Canada, which found Canada liable for damages inflicted on livestock and forest on the U.S. side of the border by fumes emitted by the Trail Smelter located on the Canadian side. Had the Nuclear Test cases been argued on the merits, the World Court might have had its attention called to litigation in the courts of the United States, especially the case of the Reserve Mining Co., which is alleged to have discharged materials into the air and into the waters of Lake Superior, entailing risk of cancer and other health injuries. The case is still involved in procedural difficulties, but at a stage when it was before the Supreme Court, Mr. Justice Douglas, in a dissenting opinion, said:

> If, as the Court of Appeals indicates, there is doubt, it should be resolved in favor of humanity, lest in the end our judicial system be part and parcel of a regime that makes people, the sovereign power in this Nation, the victims of the great God Progress which is behind the stay permitting this vast pollution of Lake Superior and its environs.

International courts have fewer opportunities to decide such questions, since they can decide cases only where both parties consent. There is more hope for the success of international negotiation, as in the recent agreement of 16 coastal states to protect the Mediterranean against the growing threat of pollution. UNEP (United Nations Environment Program) with the aid of UNSCEAR (United Nations Scientific Committee on the Effects of Atomic Radiation), GEMS (Global Environmental Monitoring System), and other international organizations may provide the basis for the resolution of disputes, despite the reluctance of governments to allow their sovereignty to be questioned. Agreements already reached on outer space and on Antarctica are encouraging.

PHILIP C. JESSUP*
Pinefield off Windrow Road, Norfolk, Connecticut 06058

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* The author was a Judge of the International Court of Justice from 1961 to 1970.

Methanol-Gasoline Fuels

While E. E. Wigg (29 Nov. 1974, p. 785) presents much of interest relative to the use of methanol-gasoline fuels in various models of automobiles, his conclusions are flawed by the narrow interpretations he affords them.

Wigg's claim that the presence of methanol in gasoline would result in vehicle carburetion beyond the lean limit for satisfactory performance, since automobiles equipped with emission controls are in many instances at that limit, ignores the fact that a methanol-gasoline mixture produces fewer emissions than does gasoline alone. If the greater flammability limits of methanol and the lower carbon

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