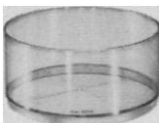


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tions which would support large fish populations introduced to fit the new environment. The introduction of Coho salmon into the Great Lakes has had amazing success and has been a tremendous boon to the local economy.

3) *Wintering for waterfowl.* Ice-free areas in a lake during winter months would concentrate the waterfowl of the entire lake, increase survival, and create tourist attractions.

4) *Deicing of waterways.* In the Great Lakes the harbors and their approaches are ice-covered long before ice extends into the deeper portions of the lakes. Keeping these critical areas free of ice by discharging heated water through perforated pipes on or near the lake bottom would prolong the navigation season.

5) *Water quality improvement.* One could envision the use of excess heat to purify water by processes similar to those used in desalinization.

6) *Industrial and domestic usage.* Almost unlimited applications could be considered, some from a theoretical, and others from a practical standpoint. Examples can be mentioned, such as hydronic heating of homes and offices, and systems for keeping streets and highways free of ice and snow.

The need for positive solution of problems related to nuclear power sources requires a national institution which would not only conduct research but would also build pilot installations and advise power companies on their specific problems. Such an institute could be supported by the power industry, if every licensee were required by law to contribute to it.

"Thermal pollution" is not the most desirable name for this subject because of the connotation attached to "pollution." "Thermal enrichment" was recently proposed as a substitute. However, if enrichment would imply only improvement of water quality, then "thermal change" might be more appropriate.

L. BAJORUNAS

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### Freedom To Breed

"The tragedy of the commons" by Garrett Hardin (13 Dec., p. 1243) neatly misses the mark, ironically exemplifying the contrasting view.

If each person in a collection of rational individuals is intelligently motivated to pursue a course leading to col-

lective tragedy, then human experience teaches that tragedy is prevented by the emergence of a social order requiring the submission of individual desires for the common good. This has been the fundamental motivation for the evolution of government.

Hardin calls for a party external to society to regulate individuals' activities. He is in fact playing the role of a rational member of the group by expressing a need for collective behavior.

JORDAN D. LEWIS

Battelle Development Corporation,  
505 King Avenue, Columbus, Ohio

Hardin's skill in the presentation of insidious arguments is awesome. Before reading this article, I would have admitted that a gunfight between cops and robbers illustrated the meaning of mutual coercion. Now I am convinced that the tribal immolation of a tribesman, however unwilling a victim he may be, is an instance of mutual coercion, mutually agreed upon by the majority of the people affected. By his very membership in the tribe, the victim has mutually agreed with his fellows in his coerced self-sacrifice. We may be close to solving the dilemma of dissent within our society. We need not actually forbid a citizen to dissent as long as he wants to; we need merely make it increasingly expensive for him to do so. We need not prohibit dissent, but only mutually agree upon what carefully biased options to offer dissenters. Dissenters could be licensed on payment of fee in money or blood, a truly new solution to a new problem.

ROBERT E. DRURY

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... Hardin, like most advocates of coercion or other negative sanctions, has a one-sided view of human history. Voluntary checks on natality are a universal culture trait, and are usually intensified when density becomes oppressive. The delay in the operation of these voluntary population balancing factors, which has led to our current population growth rates, may well be associated with political and economic colonialism.

"Technology" by itself will not solve our difficulties (and no one has said that it would), but the coitus-independent methods of birth control and new agricultural developments have vastly improved our chances to surmount them, if we would only make them

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available. A proper understanding of cultural evolution can point the way to policies which increase people's freedom to act rationally and do not involve dictating by the old and the affluent to the young and the poor.

STEVEN POLGAR

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Hardin's suggestion that "Freedom to breed is intolerable" is debatable. We have never really had "freedom to breed" in the sense that *not* breeding has so far not yet been freely allowed. In those countries in which abortion has been legalized, the birth rate has dropped sharply, alarmingly in some cases, even though abortion is an inefficient, distasteful, and time-consuming birth control measure. If, in addition, contraceptive methods of all sorts were available free to anyone, with free medical assistance if desired; and if the lost work time involved were compensated adequately, so that a poor person really lost nothing financially by getting involved in birth control; then it seems probable that the birth rate might drop low enough to stabilize the population for several generations. . . .

ROBERT H. GOOD

*California State College, Hayward*

## Moscow Meetings

Pener's letter (29 Nov.) regarding his exclusion from the 13th International Congress on Entomology in Moscow last August is most disturbing. I trust that explanations and assurances will be forthcoming from those concerned. I urge that, until adequate guarantees become available, individual scientists, organizations, and agencies reexamine their plans to meet or participate in meetings under such auspices. Last October I attended the Fifth International Symposium on the Chemistry of Cement in Tokyo and was pleased to hear that an invitation had been tendered to hold the Sixth Symposium in Moscow. If there is to be a significant likelihood that scientists from Israel will not be as free to participate there as they were in Tokyo or at the previous symposia in Washington or London, I trust that this planned activity will be rescheduled so as to avoid any such discrimination. . . .

BRYANT MATHER

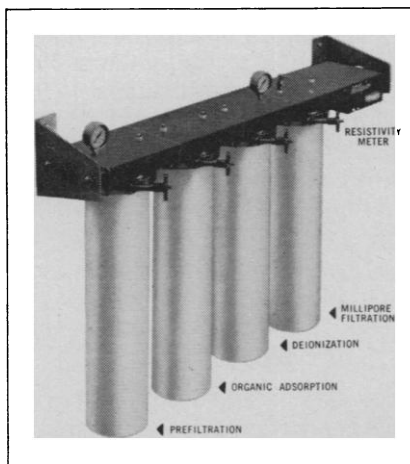
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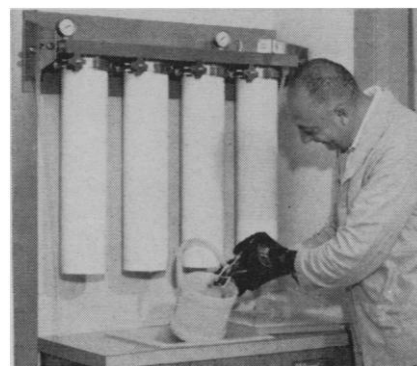
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