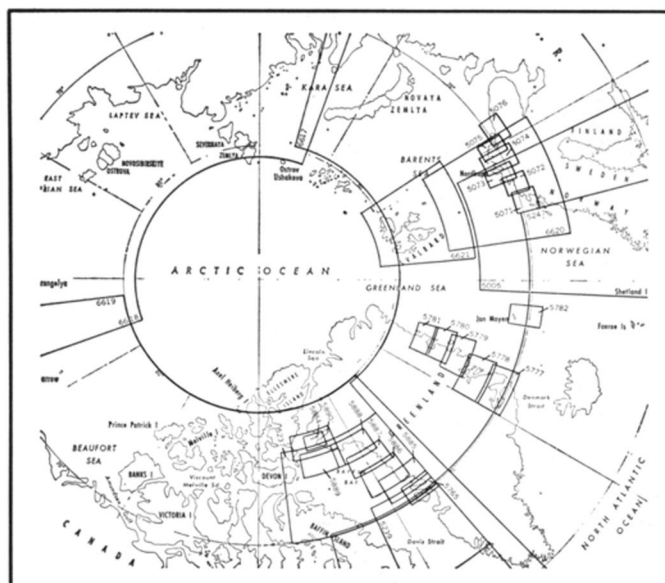


Getting together on Arctic research

A meeting of Canadian, U.S. scientists and a report on research needs mark efforts to stimulate Arctic studies



NAS

Over ocean and land: More Arctic research is needed.

Unlike the Antarctic, the Arctic is carpeted with green tundra and hardy forest. It is inhabited by men and a rich variety of animal life. Much of it has been largely unchanged for thousands of years. But that was before the present Arctic oil fever.

In the face of emerging development, scientists are beginning to appreciate how little understanding of the Arctic they have, and how much they will have to know as the basis for imminent economic, political and technological decisions.

"While accelerated development in the Far North is upon us and is desirable in many ways," a report of the United States National Academy of Sciences Committee on Polar Research said last week, "we have yet to uncover and explain many of the basic secrets of the Arctic environment, to relate them to their global counterparts and to weigh the interlocking consequences of any environmental modification we propose to undertake."

Much of the needed research is dependent on increased international scientific cooperation. And under the press of new interest in the Arctic, a group of some 50 scientists from United States and Canadian Government agencies will meet next week outside of Ottawa to seek ways in which the two countries could benefit from increased cooperation in Arctic research. The meeting had its origins late last year in discussions between Presidential Science Adviser Dr. Lee A. DuBridge and his Canadian counterpart, Dr. Robert Uffen, during a routine visit of Dr. DuBridge to Canada.

The expectation is that out of the meeting will come some better idea of research needs and priorities in the Arctic that could benefit from Cana-

dian-United States cooperation. No formal program is expected to be developed, but the meeting will produce a series of recommendations for later review.

There has been a certain degree of interaction on Arctic research in the past. But, says Martin Prochnik of the Interior Department, who helped plan the meeting, "In my own judgment there has been less cooperation than one might think."

Although the conference is strictly nonpolitical, it comes at a difficult time in Canadian-United States relations on the Arctic. The issue of Canadian sovereignty over Arctic waterways has raised political sensibilities in both countries (see page 420). American planners privately fear the suggestion—in newly nationalistic Canada—that the gathering represents an attempt to force the American foot into the door to Canadian resources; this, the American scientists carefully emphasize, is not true.

"This," says Dr. Norman P. Neureiter of the U.S. Office of Science and Technology, "is a meeting of people involved in Arctic research on Arctic problems." All fields of science related to the Arctic are represented in the United States delegation. The list includes, for instance, specialists on permafrost, water pollution, ecology, Indian affairs, fish and wildlife, atmospheric sciences and glaciology.

"We are hopeful of accomplishing quite a bit," says William Cass of the Department of Transportation. "Research in the north is so expensive, we think a little cooperative planning, such as with logistics, can help us all get more for our money."

The session might almost be a direct response to the array of unknowns

catalogued in the National Academy report.

Unsolved scientific problems and questions abound in the Arctic: The great depth of the edge of the continental shelf off the Canadian archipelago; the origin and history of Baffin Bay; the gravity, magnetics and heat flow of the sea floor; the climatic history of the oceans; the energy balance and dynamics of the sea ice; theoretical descriptions of snow accumulation and ablation over large areas; the life history and population ecology of much of the plant, animal and marine life.

The polar regions, the NAS polar research committee emphasizes, are integral parts of the total global environment. Polar atmospheric circulations strongly influence weather and climate at the lower latitudes. The cover of sea ice over the Arctic ocean plays a crucial role in determining the global heat balance. Should the Arctic ice cover ever be removed, naturally or intentionally, the effect on the earth's weather and climate would be profound.

There has been increasing interest in this problem in recent years because of conflicting views over the relative instability of the Arctic sea-ice cover and the realization that economic pressures could some day force serious proposals for engineering efforts to remove some of the ice. Ships passing through an ice-free Arctic Ocean and nearby waters, the NAS report observes, would reduce shipping distances between the Far East and Europe by about 6,000 miles. But too little is now known to predict all the possible adverse effects.

Ecological systems in the Arctic are relatively uncomplicated. For that reason, plus the additional urgency of the resource development, they are receiving increasing study. But progress is

slow because so little is known about the life history, population and ecology of most of the species.

As for the indigenous Eskimo populations of the Arctic, the NAS study stresses the need for more fundamental biomedical and biobehavioral research into such matters as circadian rhythms, sleep, responses to cold and group behavioral patterns.

Unlike the Antarctic, the Arctic is not protected by conservation provisions of a multinational treaty. The report sees a critical need for international accords governing the exploitation of biological resources in the polar seas and coastal regions. "We urge that

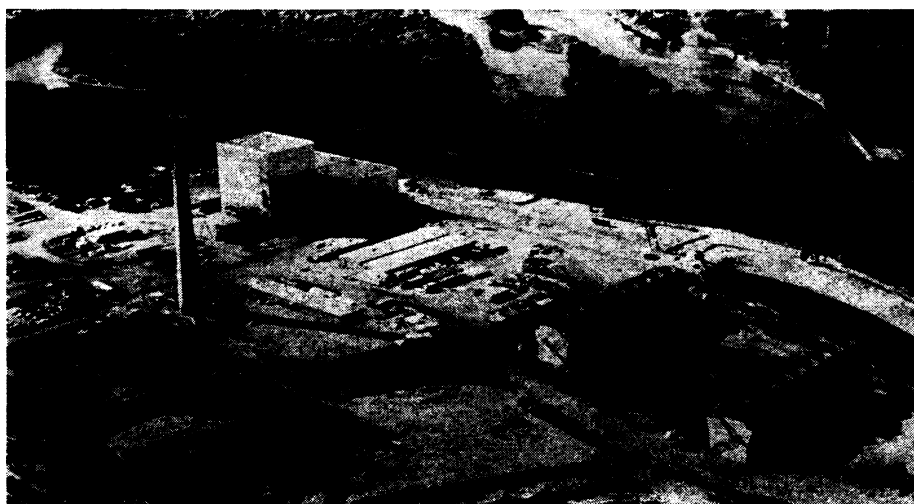
every effort be made toward this goal."

Also unlike the Antarctic, the Arctic has not benefited from the existence of any international scientific organization to help stimulate and coordinate research. The international Scientific Committee on Antarctic Research (SCAR) has served in this capacity for Antarctic investigators. Such a formal body for the Arctic would be an immense aid to research in the region, the NAS study concludes.

Although no formal recommendation is made, the group emphasizes that "the promotion of expanded international scientific cooperation in the Arctic is a critical need." □

RADIOACTIVITY

A question of jurisdiction



Earl Chambers/NSP

Monticello: Test case for Federal or state control of nuclear power plants.

Before a nuclear power plant can begin operation, it must run a gamut of regulations, applications, permits, licenses and hearings. By the time the plant is ready to receive its operating license, most of the hurdles have been cleared and the rest are mainly routine. Since hearings on applications for an operating license are not mandatory, the Atomic Energy Commission rarely holds them.

But next week in St. Paul, Minn., a preoperating license hearing will be held. The unusual step is being taken because of the controversy over the Monticello nuclear generating plant, now 98 percent complete three miles from the village of Monticello, Minn. The hearing will establish a full record behind the permit, but will not settle the larger question.

At stake is the issue of who holds jurisdiction over nuclear power plants: the Federal Government or the individual states.

The Minnesota Pollution Control Agency claims it has the right to set

limits for radioactive effluents. Northern States Power Co., the plant owner, maintains jurisdiction rests with the AEC, it cannot function under dual control, and has taken the issue to Federal court where the case is pending.

Barring any new information at next week's hearing, the AEC is not likely to deny the operating license, since any plant must comply with AEC limits to begin with. All the utility company has to do is show that it has adequately described the plant and that its operation is designed to provide protection to the public health and safety in accord with AEC guidelines.

Although both the company and the state agency will participate at the hearing, the Pollution Control Agency will be holding its fire until the court case comes up some time toward the end of May. The issue then will boil down to one of states rights. The state agency bases its authority on the state statutes that established it. According to state law, the agency has the right to regulate all wastes, industrial, sewage "and other

wastes." The PCA takes that key phrase to include nuclear effluents and, acting accordingly, has set much lower limits than those of the AEC.

Northern States Power contends that the authority to regulate radioactive wastes resides where Congress put it: with the Atomic Energy Commission. And so it will be up to a Federal court to settle the issue.

Depending on the outcome of the battle is a second case, also pending but in a state court. This time the argument is over the reasonableness of the limits set by the agency. However, this case is being delayed pending the outcome of the Federal court action since a decision there favorable to Northern States would make the state action unnecessary.

Specifically, that issue is over gaseous effluents. Both sides agree that radioactive liquid wastes (SN: 3/28, p. 312) are no great problem and that the utility can meet the limits set by the agency without too much trouble. But for gaseous effluents, Northern States contends the limits are too stringent.

"Technically speaking, we cannot be sure of meeting the limits," says Arthur Dienhart, assistant vice president of engineering for Northern States Power Company. "As pointed out in the presently drafted stipulations submitted to the PCA, we see no way of being technologically certain of meeting the limits in the PCA permit as written."

John Badalich, executive director of the PCA, sees it another way: "We feel that technically plants can operate at the levels we have set. We can prove it, and we certainly will."

AEC regulations call for stack emissions of 7.5 million curies per year. The state agency wants 315,000. But the power company protests that the state restriction would be much greater than the numbers indicate; the agency wants the measurements made at the stack instead of the site boundary, where atmospheric dilution and dispersion attenuate the levels.

Meeting the agency's limits would require the installation and construction of more filtration equipment and storage tanks to separate and hold up the contaminated gas so radioactive decay can go to work to cut down the levels (SN: 4/4, p. 341). Although there is no guarantee that the limits will be met, the agency and Northern States are negotiating the matter, and Badalich is optimistic about reaching an agreement.

"We've got them to a point where they might provide off-gas storage containment, enabling another 48 hours decay," he says. Although not as sanguine, Northern States officials concede that some sort of agreement can be reached. □