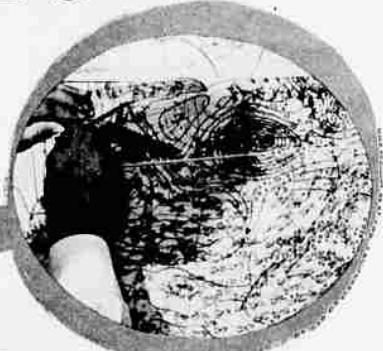


Weather Control—



DEADLY
WEAPON
OR
MAGIC
WAND?

Man's attempt to harness the forces of nature poses grave dangers as well as many predictable blessings.

Meteorologists foresee day when the dreaded tornado becomes a thing of the past.



by James C. G. Conniff
Art by Jim Teason

While you sleep, faces in the green glow of instruments are watching through long arctic nights for answers. Some are American faces. Some are Russian faces. The answers they find may determine the kind of sleep you get for a long time to come. What is done with those answers may in the near future either fulfill a dream as old as Noah—or put an end to things a lot more precious than jokes like "Everybody talks about the weather, but nobody does anything about it."

These are the task forces of an incredible assignment: nothing less than human control of the world's weather. The Reds, backed by unlimited funds, have been at it for 20 years. But on a starvation budget we have just gotten started with a number of "small research projects."

What are we after up there? The same thing the Russians are. By artificial manipulation of the arctic wastes, we hope to warm things up back home and put the weather on a predictable basis. That means guaranteeing next week's weather, next month's, and next year's.

The responsibility we shoulder in the process is staggering. It is a pretty snug planet, after all, once you start tampering with the weather. There's more to controlling climate than assured vacation weather in Florida, palm trees and lower heating bills in Chicago, bikinis and orange blossoms for Duluth in December, less humid Summers coast-to-coast, and Spring arriving two months earlier in New England.

In undertaking the gigantic projects

required to bring about all these changes, any conscientious scientist must ask himself: but what about the neighbors?

From 1946 on, we Americans have had part of the answer to that question. That year Dr. Vincent Schaefer of General Electric, with Dr. Irving Langmuir, inaugurated scientific weather control by seeding rainclouds, first with dry ice, then with silver iodide crystals to make them precipitate. It worked fine and still does. But our courts continue to wrestle with lawsuits that result when one valley's needed rain becomes another's drought or deluge.

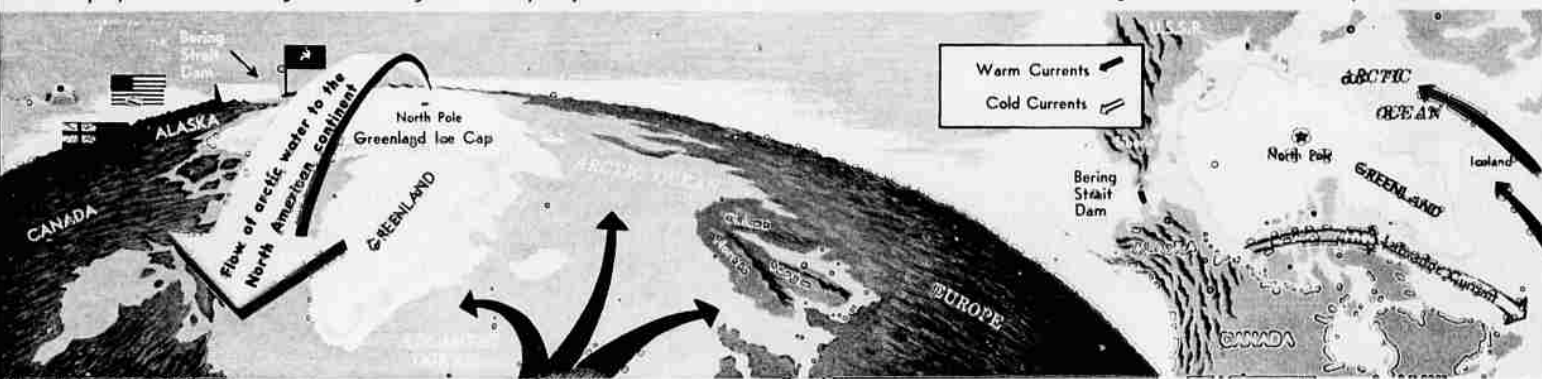
Will that kind of grief, only magnified many times, complicate early tries at global weather control? Almost inevitably. We saw it two years ago. Russia's proposal to dam Bering Strait. At first it looked good to everybody. The Reds counted on the project to warm Siberia for farming that would ease consumer shortages. They also looked for year-round ports on the Pacific, which got our hopes up. Improved trade opportunities might soothe the Soviet itch for world domination.

But on closer study, the plan revealed a number of adverse "side effects." A Arctic Ocean dam across Bering Strait would be an awesome engineering feat of undeniable benefit to Siberia, meteorologists agreed, but it would also invite long-range disaster for certain neighbors by boosting the flow of arctic water across the top of the North American continent. This would so intensify the bitterly cold Labrador Current that the Canadian maritime provinces' already short growing season would be cut sharply, with serious crop loss. A further effect would probably



Will science provide perpetual weather like this for the entire temperate zone?

A Soviet proposal to dam Bering Strait looked good to everybody at first. While of undeniable benefit to Siberia, it would bring disaster to the maritime provinces of Canada.



be the complete finish of Halifax, Nova Scotia, as a winter port.

Did this put the Bering Strait dam on ice? Not in the Reds' opinion. One straight-faced suggestion they made was that we remedy the situation by building enormous atomic heating stations on Hudson Bay. No doubt such nuclear reactors could have turned the Labrador Current into another Gulf Stream. Mangoes might grow in the Gaspé; January skindivers might frolic at Halifax. But there was a hitch: one effect of atomic heaters would be to melt the Greenland ice cap.

This great white monster covers 721,000 square miles to a depth of 1,000 feet. Melting it, the scientists estimated, would raise Atlantic Ocean levels five feet to flood London, the Low Countries, New York, and other cities as far south as the equator.

But even disturbing the neighbors that much didn't entirely discourage the Russians. They wondered if maybe we mightn't counter this disastrous chain reaction to their Bering Strait dam by using atomic energy to air-condition Greenland!

Should we ever undertake such a colossal chore, it will not be just to accommodate the Reds—though it could become a crash defense measure at any time. For now, a spirit of mutual concern seems to govern in an atmosphere of guarded consultation. How long this will last is hard to say.

ON THE BASIS of past Russian performance, it's sure that this situation will not last forever. Recognizing that, President Eisenhower formed an advisory committee on weather control more than four years ago to find out

what directions we ought to be moving in, and how fast. The committee did a thorough job. Last January its chief, Capt. Howard T. Orville, ex-naval officer, turned in a 31-page report. Its work over, the committee disbanded.

Those 31 pages on weather control may well shape the future for us and the rest of the world. They urgently recommend immediate U. S. research in four areas:

1. The sun's effects on the weather.
2. The circulation of air currents around the earth.
3. The dynamics of cloud motion.
4. The origin and movement of large-scale storms.

One thing the Orville committee emphasized was its conviction that the importance of U. S. leadership in weather control "can hardly be overestimated." The four-year study had been an eye opener even for the veteran meteorologists among its members. Relentless inquiry lighted up the far-reaching military and economic consequences of weather control. They wanted to leave no doubt with the President and their fellow citizens that here was, if not the "ultimate weapon," at least a geopolitical instrument outranking H-bombs and earth satellites.

The committee therefore made unmistakably clear its belief that if we were to get into a weather-control race with the U.S.S.R. and lose it, "the results could be more disastrous than nuclear war."

Like it or not, we are in such a race right now. To win it will take a lot of money. In July, only a few days before the Middle East crisis, President Eisenhower signed into law a bill authorizing the National Science Foundation to

launch a research program in weather modification. But this long-delayed legislation to implement the Orville committee's recommendations doesn't provide a nickel's worth of appropriations, and budgetary aspects will have to be handled separately.

By contrast, Russian polar meteorologists tell our Weather Bureau's research director, Dr. Harry Wexler, that all they have to do is say how much cash they need for arctic weather-control work and they get it at once.

There is no question that they are telling the truth. Among meteorologists the world over, Soviet polar scientists are head and shoulders above those of any other nation, including our own. This is largely because the Stalin regime and its successors long ago saw that the key to world weather is in the arctic. To find it the Kremlin supplied money lavishly, and will continue to.

Since 1937, Russia's top weather men have plowed these appropriations into frequent major expeditions to the arctic. They have acquired a detailed knowledge of the entire arctic basin to within 100 miles of the North American continent.

Wexler and other leading U. S. meteorologists urge that we must lose no time in catching up. Wexler especially regards as "breath-taking" the number of landings the Reds have made in the arctic to conduct their elaborate research programs. His scientific admiration for Russian work in climatology and cloud physics is profound. His envy of their unlimited facilities for weather study is acute. But as an American, he is secretly uneasy about what it could all add up to on the wrong side of the ledger.

Well, what could it add up to? The Russians are admittedly unable to answer for the full consequences of even their Bering Strait dam idea. How then could they direct a weather disaster against others with any assurance that it wouldn't boomerang?

For that matter, how could the Reds or ourselves keep any degree of control over so monumental a feat as "merely" warming up cities in our respective homelands? Doesn't that make discussion of the next step—control of artificial climate as a military device—slightly academic?

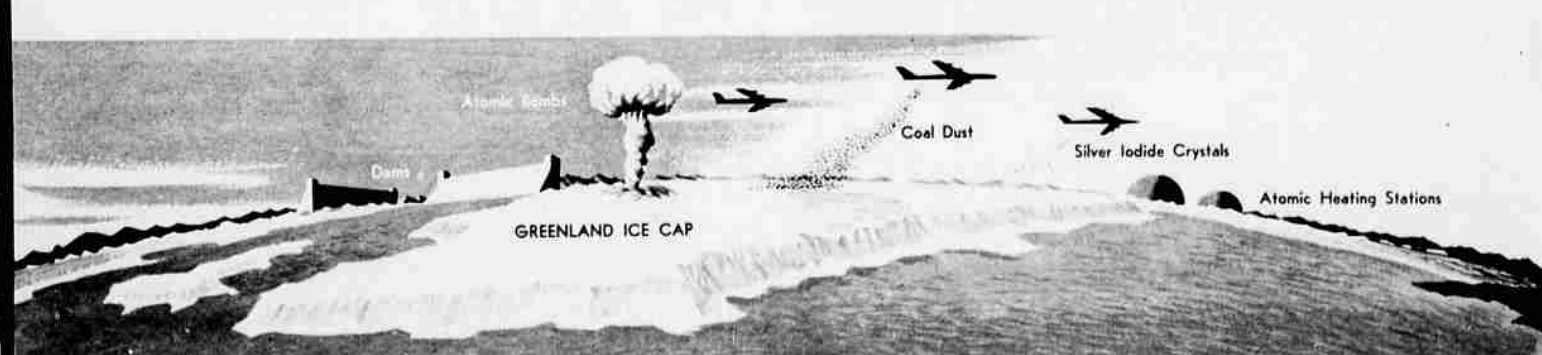
These are big, world-shadowing questions. Those who know most about them don't think they're academic. In part, because they know how real and how near the answers may be.

Learning as much as possible about the approach to those answers is a leading objective of the 18-month International Geophysical Year which ends in December. Earth satellites—the Russian Sputniks and our own Explorers and Vanguard—have played a prominent part. Less dramatic observation techniques are also being used. When it's over, humanity will pool its new information to try to learn more about controlling the world's weather.

From what we know now, U. S. meteorological experts in the arctic have discovered one way to warm up our cities without harming our neighbors. It is an adaptation of "the greenhouse effect."

This is a term used by weathermen to account for a two-degree rise in the mean temperature of the North Atlantic subarctic regions and the eastern and central United States during the

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By careful control of the various artificial methods suggested to harness the forces of nature, there is practically no limit to the wonders that man-made weather could work.