

## Argo's legacy: Batch of oily pancakes

If any good came out of the *Argo Merchant's* 7.7-million-gallon oil spill last December (SN: 1/1/77, p. 6), it was the additional knowledge made available to marine researchers about the behavior and movement of oil at sea. For more than two months, the biggest spill in history transformed the waters off Nantucket into a huge, aquatic laboratory for a National Oceanic and Atmospheric Administration (NOAA) study team.

In its preliminary report on the spill, NOAA concludes that *Argo's* No. 6 industrial fuel oil "apparently did not greatly contaminate the water or seafloor, but appeared to have had some impact on the marine ecosystem there."

The oil did not enter the water column. But instead of spreading out thinly and dispersing, the oil formed large, floating pancakes—50 to 90 feet in diameter and several inches thick—that shrunk in area and thickened over time. NASA's Nimbus 6 satellite tracked a buoy placed in one of the pancakes and relayed environmental information to the scientists. In addition, Navy divers swarmed around several of the slicks and obtained unique photographs and observations on the underside of globules, which they reported, "looked like burned carbon."

Small amounts of oil that were detected in the water column appeared to be a light-weight "cutter stock" used to dilute the heavier No. 6 oil. No oil contamination greater than 250 parts per billion was found, and that was diluted to background levels by turbulent mixing within a few days.

Although the full biological impact of the spill will take more than a year to assess, NOAA's fisheries biologists report substantial contamination of zooplankton in the slick area, with lower levels of oil contamination among near-surface sea life on the Nantucket Shoals. Comments one NOAA investigator, "I don't think we expected to find that much oil on the plankton." Nearly all the pollock eggs sampled near the site were contaminated, with a high proportion of dead, moribund or deformed embryos. Oil globules were found adhering to the surface membranes of most of the eggs. Of the 305 fish examined, however, only three had traces of oil-like material in their stomach.

The impact on seabirds and marine mammals apparently was slight. But a number of oiled birds washed ashore at Nantucket and Martha's Vineyard, and some as far away as Dartmouth, Nova Scotia—"suggesting," say the researchers, "that the oil affected some species, principally murre, well away from the spill site." Scientists speculate that the murre, which spend more time on the water than most other sea birds,



The *Argo Merchant* left this trail of heavy, No. 6 oil last December after breaking up some 54 kilometers off the Nantucket coast. The oil formed into large, thickening "pancakes" that eventually floated out to sea.

could have been hard hit by the spill. But because little baseline data is available on the area's bird population, the researchers conclude that the spill's full effect on the birds "will probably never be known for sure."

On March 10, large tar balls began coming ashore on Nantucket's southwest coast. The balls were reportedly as much as a foot in diameter, and one found on the island's eastern shore weighed 70 pounds. While scientists are guessing the tar is from the *Argo* spill, laboratory analysis is not advanced enough to determine whether the oil came from the Liberia-registered ship or from another source of No. 6 oil. Oil deposits on the Massachusetts island beaches are no-

torious in the spring, when well-traveled eddies spin their way around Cape Cod. Theoretically, says one researcher, the Nantucket tar balls "could have come from anywhere."

As for *Argo's* oily pancakes, most have been swept out to the Atlantic, destined to remain globular passengers of the Gulf Stream. Some will deposit satellite tar balls on distant shores, scientists say, and perhaps a few of the pancakes themselves may make landfall. One enterprising NOAA scientist suggests that pancakes in future spills might be easily cleaned up by a type of sea-going scooper, where a shovel device is attached to the front of a boat. Until now, most oil cleanups have been limited to spills that come ashore. □

## Human experimentation rules debated

A national commission is in the midst of proposing new rules governing use of human subjects in biomedical research. The recommendations for use of prisoners were published in the *FEDERAL REGISTER* in January. A draft of the report on research involving children was completed last month, and the group has yet to finish its proposal on research using mentally ill subjects.

Researchers working on drug development, as well as those exploring the physical bases of diseases, are concerned about the impact of new rules covering human experimentation. Members of the American Society for Pharmacology disagree on the effect they expect from the national commission proposal.

The impact will be favorable to research, Robert J. Levine of Yale University School of Medicine told a symposium at the meeting of the Federation of American Societies for Experimental Biology this week in Chicago. In contrast to a 1974 proposal by the Department of Health, Education and Welfare, the in-

volvement of any group in basic research has not been forbidden. "In addition, the bureaucracy recommended by the commission to safeguard the rights and welfare of 'special populations' is much less cumbersome than that proposed by HEW," Levine says. Levine also praised the commission for dropping the distinction between therapeutic and nontherapeutic research. Yet another decision that Levine feels should aid research is the favoring of no-fault compensation for any subject injured during an experiment.

Louis Lasagna of the University of Rochester School of Medicine has much less favorable feelings toward the Commission for the Protection of Human Subjects. "The pronouncements of the national commission on prison research illustrate beautifully how well-intentioned desires to reform prisons can lead otherwise intelligent people to destroy properly performed research that scrupulously involves informed consent and full explanation and avoids coercion to the satisfaction of all but the most tunnel-visioned doctri-