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**COVER:** Mars may be cold and it may be dry, but it is emphatically not without water. Here, vast fingers of water ice drape perhaps as far as 2 km down a vertical face in the Martian residual north polar cap — itself a vast water reservoir. For more on the wet Mars, see p. 108. (Photo: Viking orbiter 2/JPL)

<b>Publisher</b>	E. G. Sherburne Jr.
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<b>Advertising</b>	Fred W. Dieffenbach, Sales Director

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Editorial and Business Offices  
1719 N Street, N.W.  
Washington, D.C. 20036

Subscription Department  
231 West Center Street  
Marion, Ohio 43302

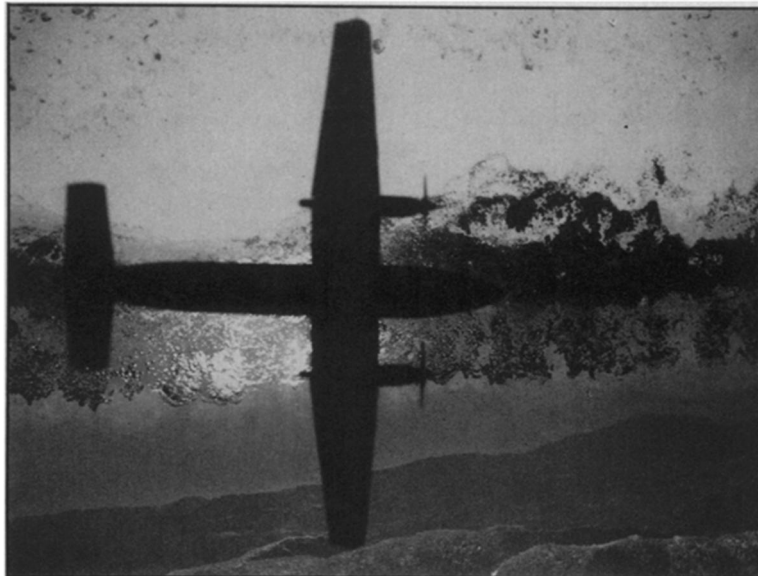
Subscription rate: 1 yr., \$15.50; 2 yrs., \$27.00; 3 yrs., \$37.50 (Add \$3 a year for Canada and Mexico, \$4 for all other countries.) Change of address: Four to six weeks' notice is required. Please state exactly how magazine is to be addressed. Include zip code.

Printed in U.S.A. Second class postage paid at Washington, D.C. Title registered as trademark U.S. and Canadian Patent Offices.

Published every Saturday by SCIENCE SERVICE, Inc. 1719 N St., N.W., Washington, D.C. 20036. (202-785-2255)  
TWX 710-822-9433 SCIENCE NEWS. ISSN 0036-8423

**SCIENCE NEWS OF THE WEEK**

**Mexican Spill Hits U.S.**



*U.S. surveillance plane casts shadow over swath of oil 60 miles south of Brownsville, Tex.*

NOAA

The leading edge of a 480-mile-long oil spill in the Gulf of Mexico reached U.S. waters this week, signaling a threat to ecologically sensitive Texas coastal regions from South Padre Island to Corpus Christi. The oil began flowing on June 3 from a runaway Mexican offshore-drilling rig at Ciudad del Carmen (in the Bay of Campeche). Mexican officials expect their gusher to continue unchecked for at least another month. The spill, termed "unique" by federal officials who have been monitoring its northern sojourn, presents a number of challenges to an interagency federal spill-response team that has been assembled to head it off.

Unlike the grounding of supertankers, in which huge volumes of oil are released in a single event, this oil will flow continuously for a three-month period producing thin, elongated ribbons of mousse (an oil-water emulsion), tar balls, flattened surface pancakes and streams of pure oil. Because the oil travels a long way before hitting shore, it will have weathered (chemically changed, in part due to the evaporation of volatile components). Not all will float, and U.S. officials are already concerned about patches of tar balls moving along 40 feet below the surface.

Rubberized skimmers and booms to block oil from estuaries and sensitive marine spawning grounds — such as Laguna Madre on the landward side of Padre Island — can only reach 32 inches below the surface. U.S. officials are contemplating the ecological costs and benefits of inserting underwater screens to trap more. University of South Carolina scientists are traveling the coastline to identify habitats most vulnerable to the oncoming oil, and toxicity studies by the University of Texas's Aransas Marine Laboratory are analyzing which creatures are most sus-

ceptible to the oil. Results are not yet in.

Also unknown are details of what precipitated the spill and how the Mexicans plan to stop it. The drilling manager for one of the United States' leading oil companies told SCIENCE NEWS that there appears to have been a failure around the blowout "preventer" — a hydraulically operated valve inside the well casing — attached to the drilling pipe at the sea floor. He said fluid circulating through the drilling machinery was weighted to compensate for the pressures of the oil reservoir, but that when occasional pressure spikes threaten to kick the apparatus out, "preventers" should close to seal the well shut. The technology is well established, he said, and has been used for years by U.S. firms drilling offshore. The oil man added that in more than 95 percent of the accidents of this type, operator error — not mechanical failure — is the cause.

The blowout sent oil gushing out on or beneath the mudline at a rate of 10,000 to 30,000 barrels per day (Mexican officials announced last week that the rate had dropped to between 10,000 and 20,000 barrels per day). Enormous pressures associated with young, successful wells such as this have hampered remedy measures.

A spokesman for the U.S. spill-response team said two pressure-relief wells are being drilled but that it would probably be mid to late September before they could halt the oil flow. Using directional (precisely angled) drilling, relief wells are aimed down through the mud and perhaps through a half mile or more of rock to intersect the runaway well. Once the relief wells hit the gusher, they will begin pumping heavy mud and cement into the main well to seal it, but because the drilling is difficult the well is not expected to be capped until September. □