GEOLOGY

'Dry' Wells Yield Vast New Oil Supplies

➤ YESTERDAY'S DRY OIL well may be a vital part of tomorrow's petroleum output.

Science is developing new techniques to take over after both pressure flow and pumping have exhausted a well's oil. Known as "secondary recovery," these techniques vary but have in common the basic principle of squeezing the precious black juice out of the sand or rock that holds it.

So successful has the secondary recovery technique become that petroleum engineers maintain that by 1980 about half of the U.S. output will be obtained this way. This prediction is made by Noel de Nevers, assistant professor of chemical engineering, University of Utah, in Scientific American, 213:35, 1965.

So far, four basic possibilities have been developed to implement secondary recovery. They are mining, squeezing, pushing and sucking.

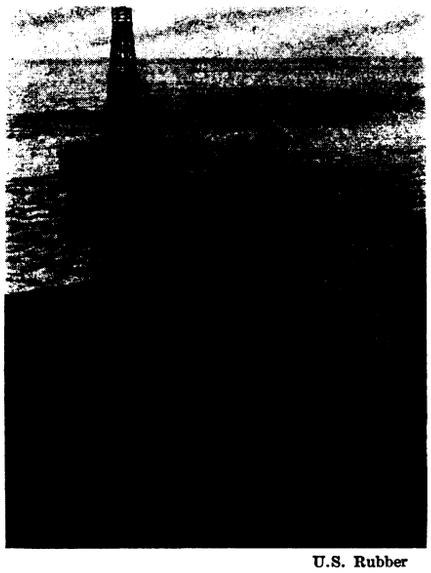
In most cases, mining—removing the oil-bearing rock from the earth—is impractical because of cost.

Squeezing means forcing the particles of rock closer together and thus pressing out the oil. The trouble here is that most rock is too strong for squeezing. One place where this technique could be utilized well is under Long Beach, Calif., where the oil is contained in highly compressible sand. The difficulty is that if the sand were squeezed, the city would sink below sea level. As a result, no squeezing under Long Beach. In fact, oil that is taken from under the city is replaced with salt water so that the city does not sink.

Pushing involves directly displacing the oil from the rock with some other fluid. So far, it has been the most successful method of secondary recovery. Figures for 1960, the latest available, show that pushing accounted for about 30% of the 2.4 billion barrels of oil produced in the U.S. that year.

The final method, sucking, is a variation of pushing. The air in the atmosphere is used to drive out the oil. This technique is generally recognized as ineffective, however.

• Science News Letter, 88:43 July 17, 1965



U.S. Rubber

SEARCH FOR OIL—An artist's rendering shows how this mammoth, $6 million self-elevating oil drilling rig designed by the Offshore Company, Houston, for oil exploration in the salt waters of the North Sea, would dwarf the company's 21-story office building.

OCEANOGRAPHY

Search for Undersea Oil Essential to Livelihood

➤ THE SEARCH for undersea oil as part of ocean research carries far greater impact on our lives today than programs of space research, according to Russell B. Thornburg, Global Marine Exploration Company, Los Angeles.

Drilling for oil beneath the ocean has created an entirely new and actively changing technology, he said. Its success depends on skills and dedicated efforts not only of oil engineers but also of naval architects, oceanographers and computer programs, Mr. Thornburg told members of the four-day Ocean Science and Ocean Engineering Conference in Washington, D.C.

Man's entry into the ocean to recover petroleum has had far less fanfare than his entry into space, partly because it has been sponsored by private industry. Yet both efforts demand a comparable interdependence between the arts, crafts and sciences.

This search has evolved new talents, methods and equipment such as the floating drilling rig which has to remain stable over a fixed point some 400 to 600 feet below on the sea floor, and a closed circuit underwater television for monitoring undersea equipment.

• Science News Letter, 88:43 July 17, 1965

TECHNOLOGY

Huge Oil Drilling Rig Developed for North Sea

➤ A MAMMOTH self-elevating oil drilling rig has been developed for offshore oil exploration in the water of the North Sea and is under construction in Clydebank, Scotland. It must withstand rugged weathering, freezing temperatures and the battering of 65-foot waves common to the United Kingdom's waters.

From the bottom of the 387-foot supporting legs to the uppermost derrick, the rig measures more than 500 feet. Electro-hydraulic jacking assemblies adjust the legs of the rig to operate in waters up to 275 feet deep. Twelve hydraulic jacks lift the rig's platform. Rubber shock absorbers are positioned at the top and bottom of each jack. They are engineered to take a work load of up to 300 tons with a minimum deflection of one and a half inches.

The $6 million mobile rig was designed by the Offshore Company for the Atlantic Refining Company. The rubber in the shock absorbers was developed by the U.S. Rubber Company and was selected for use in the rig because of its resistance to cracking in a marine environment.

• Science News Letter, 88:43 July 17, 1965