

Prof Says Oil Can Be Tapped More Easily

A key factor in improving oil recovery techniques is better understanding of effects of natural and man-made forces in petroleum reservoirs, states Professor Robert L. Whiting, head of Texas A&M University's Petroleum Engineering Department.

Professor Whiting and other A&M researchers are studying such aspects as the significance of expanding gas and oil and the effects of gravity and moving underground water. They are also investigating thermal recovery methods and the injection of heated fluids into a formation to force out oil and gas.

To assist in these and other vital research programs, A&M recently obtained a new potentiometric analyzer, a complex machine which simulates water-flooding patterns in petroleum reservoirs. The analyzer gives researchers the capability of studying not only flow patterns, but also the length of time of the flow.

THIS EQUIPMENT complements A&M's "centrifugal reservoir model" which allows University researchers to measure in minutes gravitational effects which normally occur over periods of many months or years in actual oil reservoirs.

Information derived from these devices, Professor Whiting explained, is translated into formulas and equations and "fed" into computers for interpretation. The resulting data is necessary in determining efficiency of the "sweep" and in indicating where additional wells might be required and in what pattern they should be drilled.

"If, as some people think, oil occurred in underground lakes, production would be a simple matter," Professor Whiting noted. "You would either drill a hole down to it and let the trapped underground pressure push it out, or lower a pipe into the pool and pump it out."

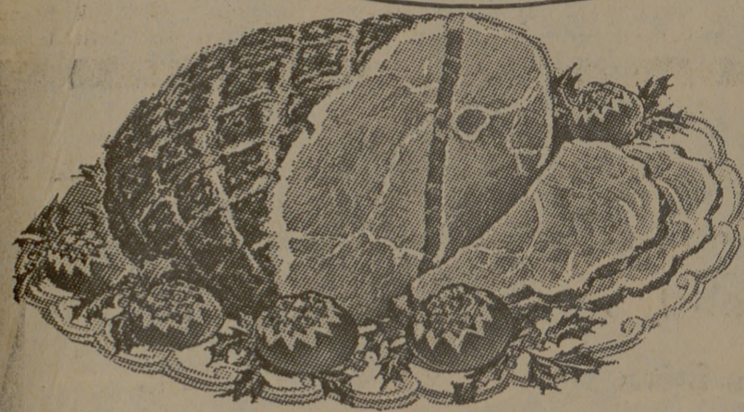
"AN OIL FIELD, however, consists of permeable rock impregnated with oil, gas and water, all confined under the surface of the earth," the A&M professor explained. Samples of oil-bearing sands actually look like pieces of discolored and slightly greasy rock.

Great pressures, he continued, bear on these formations, which are usually surrounded by impermeable material. Once a well is penetrated into them, everything that is liquid or gas tries to escape out the hole and will continue escaping as long as there is pressure to move it.

"But," Professor Whiting added, "there are other forces which complicate the picture: the permeability of the formation; the way water, oil and gas happen to be present or mixed at a given time, and gas pressures, as well as the forces of gravity on all these."

"The advent of scientific conservation practices, which seek to operate wells at peak efficiency, and the development of various techniques of secondary and tertiary recovery, which try to revive partially depleted formations, make it necessary for the petroleum engineer to understand as fully as possible the many forces at work in order not to lose these valuable commodities," Professor Whiting concluded.

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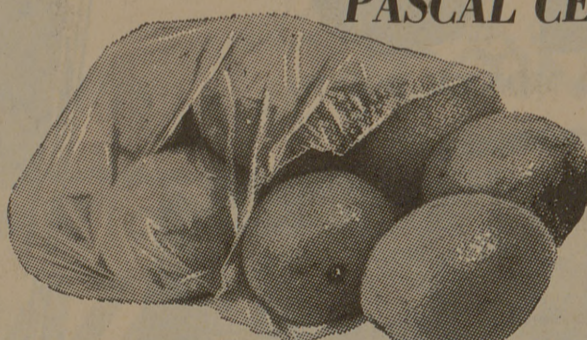
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