

Perhaps the most hopeful of these chemical applications is the use of nuclear explosives in deposits of oil shale or tar sands. Near the Athabasca River in Alberta there are tar-sands deposits equal to the wealth of all the oil of Arabia. Similar or greater quantities of oil are available from shale near the Colorado-Utah-Wyoming boundaries in the Green River region. In the case of the tar sands, heating of the material by the nuclear explosion itself should suffice to transform the material into a liquid state that can be pumped to the surface.* In the case of the oil shale, much greater heat is needed and the main purpose of the nuclear explosion would be to shatter the material. The explosion would then have to be followed up by pumping air into the shattered region and to drive out the kerogen, i.e., the hydrocarbon contained in the rock, by burning a portion of the shale.** Similar fire-drive procedures have been successful in obtaining hydrocarbons from viscous oil deposits.***

The strange possibility of using the nuclear car to move the fossil horse is in the long run a promising one. At the present moment interest in this particular field is not high due to the present oversupply of oil. It would be easiest to exploit the Alberta tar sands, but due to the high sulfur content of these deposits and their remote location the economic usefulness of that particular project seems to lie in the indefinite future.

*M. L. Natland, Project OILSAND; presented to the Joint Technical Feasibility Committee; Ottawa, Ontario, Canada; July, 1959 - Richfield Oil Co.

**Application of Nuclear Explosions to Oil-Shale Utilization, Bureau of Mines; Laramie Petroleum Research Center, MISC-1959-150, Jan. 1959.

***In-Situ Combustion, McNeil & Moss, Oil & Gas Journal, 15 Sept. 1958.