Methods of effecting these ends include: (1) using physical measurements of larger rock units than cores, e.g., velocity surveys; (2) figuring back in time to date the epochs of diagenesis, of folding, and of fluid migration, and (3) predicting pressure reduction effects on sediments, to preclude production losses and extra costs, such as at Wilmington, California, described last March by U. S. Grant.

This topic is a concrete phase of concurrent geologic-geophysic deductions, which seem to have been applied too meagerly in the past to development programs to assist cutting costs.

Similar applications are indicated for water production.

Oil Accumulation Related to Geologic History of Muenster Arch and Associated Basins in North Texas

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The chief geologic asset of the region is the thick sedimentary section of Ordovician and Pennsylvanian deposited on the flanks and adjacent to the Muenster arch in the Marietta and Fort Worth basins. These beds contain ample reservoir rocks and abundant source materials for petroleum and natural gas. The dominance of progressive onlap over the arch during the majority of Pennsylvanian time is the second most important feature.

A third important factor is the orogenic history. The extensive and complex faulting may be ascribed to four dominant periods of movement.

1. There was widespread block faulting of probable late Morrowan age, associated with the transformation of the Arbuckle sedimentary basin into partly separated troughs.

2. After erosion had truncated the Ordovician deeply on the Muenster arch and even on fault blocks now low in the adjacent basins, subsidence allowed the Dornick Hills (Bend) beds to overlap the fault blocks with subsequent and sometimes contemporary rejuvenation of some of the faults. (On the northeast flank and in the Gordonville trough area, normal sands were deposited on buried hills like the Sherman and Big Mineral highs and as updip pinch-outs like Sadler field. On the southwest side of the uplift in the Fort Worth basin, beds of this early transgression contained numerous lenses of conglomerate which are prospective for oil and gas in most any structural situation.)

3. Uplift of the Ouachitas, regional westward tilting, tremendous subsidence of the Marietta basin, Gordonville trough, and to less extent, the Fort Worth basin, produced foundering of grand proportions along the trough margins. The long period of progressive inundation of the Muenster arch and its final burial by detritus, chiefly derived from the Ouachita uplift on the east, was probably responsible for much of the oil accumulation in the abundant Pennsylvanian sands. Many stratigraphic traps were formed due to the lenticularity of the sands and updip porosity terminations, where structure may play only a minor role in accumulation. Some of these onlapping beds likewise seal the truncated edge of the Oil Creek (Simpson) sand on the north flank of the arch, where aided some by faulting, three commerical accumulations have been found.

4. A final period of folding and faulting took place during the late Pennsylvanian-Arbuckle compressional movement which resulted in overturning and thrusting in some places. Oil accumulation at Big Mineral and Sherman was aided considerably by this crustal movement.

Petroleum Geology of Anahuac and Frio Formations of Northeastern Mexico

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During the past 14 years, Petroleos Mexicanos has carried on an extensive drilling program. This has been principally concentrated along the Frio-Vicksburg trend. The Frio has been the most prolific producing formation in northeastern Mexico. Of its three facies, non-marine, brackish, and marine, the first named is the most productive.

Locally overlying the Frio, both on the surface and in the subsurface, is the Norma