THE WEST COLUMBIA SALT DOME AND OIL FIELD

By Donald C. Barton

Abstract

Prospecting started at West Columbia shortly after the discovery of the Spindletop field. The early tests were shallow, but encountered small amounts of oil. The old or Southeast field was not brought in until 1918 and the late spring of 1920 was at the crest of its productivity. In the following July the new or North field was brought in by the Texas Co's. Abram No. 1.

West Columbia lies in the belt of Peistocene coastal prairie bordering the Gulf Coast. The surface mound is a faint one of the central depression type, somewhat obscured by erosion.

West Columbia is a characteristic salt dome with a steep sided, flat topped core of salt, a cap of gypsum, and sedimentary beds dipping quaquerversally away from the salt core. Fossils from one well and a study of the well logs shows that the deepest wells probably reach to the lower part of the Corrigan formation.

The productive sands at West Columbia are found only in the deep lateral sands on the flanks of the dome, probably in the upper part of the Corrigan formation. The oil is of 22° 2 Baume and around 110° F. Although this temperature is above the average for the Gulf Coast fields, the temperature gradient is extremely low. West Columbia is a very productive field. The per acre production of the field is over 125,000 bbls. and for the leases of one company is over 943,500 bbls.

Illustrated by a topographic map, a generalized structure section, graphs of production, of field as a whole and of Sun Co's. and Crown O. & R. Co's. leases, characteristic graphic logs, and composite graphic logs.

A SHORT SKETCH OF THE PALEOGEOGRAPHY AND HISTORICAL GEOLOGY OF THE MID-CONTINENT OIL DISTRICT, AND ITS IMPORTANCE TO THE PETROLEUM GEOLOGIST

By Alex W. McCoy

Abstract

The essential points in the stratigraphy of the Mid-Continent region with maps of outcrops, correlation of formations and a review of previous work are presented in introduction. Paleogeographic maps based on detailed stratigraphic studies are presented and their significance in relation to the occurrence of oil at various horizons considered. The probable orgin of the oil in shale, the most favorable basins from a paleogeographic standpoint, problems of accumulation of oil, production zones in relation to historical geology and the relation of production to structure are considered. The reasons for basin movement, the mechanics of mountain

making and of minor structures are treated with reference to their importance in the production of oil.

DIFFERENTIATION AND STRUCTURE OF THE GLENN FORMATION

By W. L. Goldston, Jr.

Abstract

The Glenn Formation is the only Pennsylvanian exposure in Oklahoma south of the Arbuckle Mountains. This exposure, which covers one hundred and sixty square miles more or less, is located in Carter and Love counties in the vicinity of Ardmore. The sediments of the Glenn are strongly folded and stand practically on edge over the greater part of the area. While in the employ of the Empire Gas and Fuel Company, the writer assisted by C. J. Wohlford, measured a number of sections across these sediments.

The sediments consist of shales, sandstones, limestones and conglomerates, and a total thickness of approximately nineteen thousand (19,000) feet.

In this paper an attempt is made to differentiate and classify this massive formation into its component members, and to correlate these rocks with those of the same age north of the Arbuckle Mountains, and with the Pennsylvanian rocks of Texas.

Considerable detail was made in the study of the structure of the Glenn Formation. Axes of anticlines and synclines were carefully located as most of the work was done with plane table.

A brief description of these folds, together with their relation to other buried Pennsylvanian folds in the region is given.

EXPERIMENTS ON ACCUMULATION OF OIL IN SANDS

By W. H. Emmons

Abstract

It has been observed in many places where oil and gas and water fill openings in porous beds enclosed in impervious ones, that gas rises above the oil and that the oil floats on water. Where the beds are arched to form a dome there is commonly a disc of gas surrounded by a circle of oil which is in turn surrounded by water. In some oil fields this gravitational arrangement is not clearly expressed, because the rocks are not fully saturated, or because the porous portions of the strata are spotted with impervious areas. The gravitational theory, because of the difficulties it has met in some fields, has appeared inadequate to many investigators, and elaborations and supporting theories have been proposed.

If, in a tube bent to represent an anticline, oil and water are charged with sand, the oil and water remain for months adhering tightly to the sand grains. There is no accumulation at the top of the tube and segrega-