

# SOME FACIES OF REGIONAL HISTORY<sup>1</sup>

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## ABSTRACT

Oil development on the Gulf Coastal plains has followed a cyclical pattern of rapid exploitation after each discovery of new productive habitats and new exploration techniques, with frequent intervening periods of frustration and pessimism. The gusher at Spindletop in 1901 opened the rich salt-dome province and altered the economics and corporate structure of the entire oil industry. More than 60 coastal and interior domes were recognized by surface indications by 1917, and were tested with varying degrees of success. Only one new dome was located by 675 wildcat wells during the next seven years, and the area seemed almost exhausted in 1924 when geophysical exploration began.

Large oil fields were developed on the Sabine uplift between 1905 and 1915, but the division geologist for a major oil company wrote in 1918, "It would appear from a careful study of Northern Louisiana and East Texas that the history of petroleum in this area has been written." A few months later the exploratory talent of an independent geologist, J. Y. Snyder, disclosed Homer, Bellevue, Haynesville and other fields with total reserves exceeding a quarter of a billion barrels. The petroleum history of Northern Louisiana and East Texas has been re-written annually since that time. In one well-remembered year a barrel of oil was worth less than a bowl of chili.

The United States was "running out of oil" in 1920. An official report by a leading engineering firm stated, "To infer that still other fields remain to be disclosed is almost as unreasonable as to assert that the country has not yet been fully pioneered." But in 1922 and 1923 ten new oil fields from California to Arkansas reached peak daily production exceeding 100,000 barrels each, compared with only six such fields in all previous history of the United States. Four of the new giants were in the Cretaceous rocks of the Gulf Coastal plain. Mexia, promoted aggressively by geologist F. Julius Fohs, on the basis of surface and shallow subsurface data, made 150,000 barrels per day and started a boom across thousands of square miles of virgin territory. Powell, a few miles away, peaked at 350,000 barrels per day. Haynesville, Louisiana, one of Snyder's prospects, produced 100,000 barrels daily. Smack-over dumped 125,000 barrels daily into earthen pits. Bellevue, Cotton Valley, Eldorado, Luling, Mirando City, and new pools on the old salt domes made somewhat smaller splashes in this flood of oil. This phenomenally productive era was the culmination of eight years of wide-spread mapping of surface structures, supplemented by some subsurface and core-drill information. Most of the geological work in the poorly exposed formations of the coastal plain was largely intuitive. Its effectiveness was multiplied by wildcatting along structural and stratigraphic trends, which was always bold and often sophisticated.

The torsion balance and refraction seismograph were promptly and sensationally successful in the salt-dome region after their introduction in 1924. Each improvement in instruments and methods initiated a new wave of exploration and led to new successes. Several profitable refraction campaigns were conducted without reference to other sources of geological information, but many of the most important discoveries involved the use of gravity, well-records and surface indications to supply initial leads or later confirmation. Refraction seismology had reached a stage of rapidly diminishing returns when it was superseded almost entirely by the reflection method.

The reflection seismograph and the gravity meter proved their usefulness in the field by 1930. They were technically effective and economically practical over a much wider area than the older instruments, and inaugurated a new period of geophysical exploration. Contemporaneous advances in well-logging techniques, subsurface geological sophistication, and drilling capabilities, multiplied the discovery potentialities of the geophysical methods. The rapid improvements in all of these fields have been intimately dependent on the degree of coordination between them. Cooperation between practitioners of the several specialties is still far short of optimum effectiveness, and no element of our inter-related technologies and sciences has come close to the ultimate limit of development.

The old rhythm of feast and famine gave way 40 years ago to a period in which oil and gas supplies have been adequate to support a magnificent industrial complex growing upon their base. The current rate of discovery is sufficient only to sustain that complex temporarily, not to provide for its greater growth or prevent its ultimate stagnation. The get-rich-quick days of boom and bust, which attracted and enthralled many of us, are gone. But the adventurous explorer and the creative petroleum geologist are not yet extinct in spite of the effete doctrine that because they were successful they were somehow evil. We have explored trend upon trend from the Jurassic to the Pleistocene, by one method of search after another. The structure and stratigraphy of our region are almost uniquely complex, hence almost uniquely endowed with unsolved problems. The vast extent of the ever-shifting shorelines and the broad expanse of the ancient continental shelves around the Gulf of Mexico require the use of regional concepts beyond the range of local vision and provincial thought. A continuing function of this Association has been the dissemination of knowledge which can improve the efficiency of exploration and development. The expressed purpose of this meeting is to look beyond local problems and ephemeral difficulties to the grand geologic pattern of the region and the exciting implications it holds for further discoveries.

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