fields, (3) development of deeper sands and (4) the revival of old fields. (1) will yield much additional oil and hasten depletion of gas, (2) will add little oil but many small gas fields, (3) already well prospected except Oriskany and Medina sands, and (4) much new oil from Bradford and elsewhere.

PETROLIFEROUS FORMATIONS OF THE TAMPICO EMBAYMENT, MEXICO

By Douglas R. Semmes

Abstract

The prolific oil fields of Mexico are situated in northern Vera Cruz between the Panuco and the Tuxpan rivers and within 40 kilometers of the coast.

The Tamasopa limestone, the oldest formation represented, is both highly fossiliferous and extensively saturated with petroleum. The Papagallos shales though less fossiliferous show oil saturation and may have given rise to certain quantities of oil. The Alazan shales likewise show the characteristics of a petroliferous series and have undoubtedly given rise to some oil.

Two hypotheses have been brought forward to explain the source and method of concentration of the oil in the more important Mexican fields. It may have originated in the overlying Papagallos or Alazan shales and migrated downward into its present position in the Tamasopa limestone; or it may have originated in the Tamasopa limestone and become concentrated in the upper part of this formation by the agency of hydrostatic pressure. Evidence bearing on these hypotheses is discussed and the conditions leading to the formation of the large commercial deposits reviewed. It is concluded that at the end of Papagallos time movements took place along the major structural lines and the main anticline along which the southern fields occur became a land mass and was subjected to erosion, and as shale deposition (Alazan) took place along the flanks of this mountain range the Tamasopa was exposed along its crest and large caverns were developed in it, and the uppermost part, which was exposed to the atmosphere, was locally silicified. Finally the encroaching Alazan sea covered the entire area and deposited shales over this eroded surface, so that now the Alazan lies directly over the Tamasopa along the crest while on the flanks the uneroded Papagallos intervenes. Subsequently oil accumulated in the caverns along the axis of the fold and consequently a single well may now drain an enormous pool.

While the Tamasopa is regarded as the only source of commercial production in northern Vera Cruz other formations are known to be slightly petroliferous. The Alazan shales apparently produce an oil quite different in composition than that from the Tamasopa. Seepages and saturation in the shales of Miocene age along the coast indicate that this formation too may have produced small quantities of oil.