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produce profits demands that the geologist prepare a comprehensive economic assessment of his exploratory planning, efforts, and recommendations. Such appraisals will surely sharpen and upgrade the exploratory effort and will do much toward bringing about greater success in the explorer's search for petroleum to meet the demands of the future.

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November 8, 1965

A. A. MEYERHOFF, American Association of Petroleum Geologists, Tulsa

"A.A.P.G. Bulletin — Facts and Fancies"

The future of the A.A.P.G. *Bulletin* depends on the health of the petroleum industry, the willingness of geologists to submit papers to the *Bulletin*, the types of papers that are submitted and published, and the editorial policies of A.A.P.G. It is no longer enough for the *Bulletin* to publish what it gets; the *Bulletin* must recognize the needs of its members, and go out to get some of what is published. The *Bulletin's* reputation for "stuffiness" has, in some cases, been deserved, and this reputation, if it exists, must be put to rest.

Bulletin policies are general and flexible. The *Bulletin* publishes all types of articles that may be related to hydrocarbon exploration. Field studies are encouraged, provided that the lessons to be learned from the field in question have more than just local application. Case histories, including engineering data, are welcome.

Controversial articles, discussions, and book reviews will receive sympathetic consideration, provided that they are written constructively. The *Bulletin* also reprints articles that are highly recommended by local societies. Moreover, color reproduction is now a fact, provided the writer can pay the cost difference between black-and-white and color reproduction.

Members who know of good articles should encourage the authors of such papers to submit them to the *Bulletin*.

Manuscripts take time to process. After receival in Tulsa, they go to reviewers and then to the elected editor. They are next accepted, recommended for revision, or rejected. The speed at which an article is processed depends on the length of time the reviewer has the paper and on the author's willingness to revise promptly, where revisions are needed. The editor and managing editor's jobs are to work with and encourage the authors of the manuscripts. This task may not always be pleasant, but it is always rewarding, if for no other reason than the fact that it is *people* who are being helped.

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November 29, 1965

GORDON I. ATWATER, Atwater, Cowan & Assoc., New Orleans

"The Effect of Decrease in Porosity with Depth on Oil and Gas Reserves in Sandstone Reservoirs"

Geologists and engineers have frequently made the premise that the amount of gas in place per unit volume increases as greater depths are penetrated, because of the attendant higher reservoir pressures. In order to test the validity of this premise, a study was made of the effect of depth of burial upon the other variables in the standard formula used to calculate the amount of oil and gas in place.

Sandstone porosity data were obtained for more than 17,000 samples of conventional cores, including samples from 101 fields of South Louisiana. A curve constructed from these data demonstrates that the amount of void space per unit volume available for the accumulation of oil and gas decreases with increasing depth. This decrease in porosity, 1.285 per cent of total volume per 1,000 feet of burial, is the most important single factor controlling the amount of oil or gas in place per unit volume of sandstone reservoir rock. Exploration and development management should be conscious of the diminishing returns to be anticipated as greater depths are explored.

Porosities associated with abnormally pressured reservoirs were studied, as was the incidence of abnormally pressured reservoirs in South Louisiana as a function of depth burial. The porosities of the abnormally pressured reservoirs, averaged by 1,000 foot depth increments, fit a straight line plot of porosities from all reservoirs.

It appears to be a reasonable hypothesis that the observed decrease in sandstone porosities with depth provides the mechanism creating the abnormal pressures so frequently encountered in oil and gas reservoirs of South Louisiana.

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December 6, 1965

DONALD C. SWANSON, Humble Oil & Refining, Oklahoma City

"Major Controlling Factors in the Accumulation of Oil and Gas in the Anadarko Basin"

Twenty major fields in the Anadarko basin contain the equivalent of over 22 billion barrels of oil in place.

Basin configuration, tectonic activity, and processes of sedimentation have been the primary influences affecting the generation and accumulation of these hydrocarbons. Understanding the important elements of these phenomena and how they interact should lead to successful exploration.

A look back over the past indicates that a general knowledge of these basic elements and the use of exploration techniques which would focus on them would have located most major accumulations.

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December 13, 1965
RICHARD HESTER, Pauley Petroleum, Inc., Los Angeles
"Petroleum Geology of the Arabian-Persian Gulf Area"

The final products of negotiations for "areas of interest" in the Persian Gulf may have left little future value of lifted oil for successful bidders.

The Gulf, a regional low between the Arabian Shield and the Zagros Mountains of Iran, lies in the oil-tectonic province of Saudi Arabia.

Structures of the gulf belong to the generally north-south lineations of Saudi Arabia as opposed to the northwest-southeast anticlines and synclines of the youthful Zagros. Structural closure and complexity increases eastward of the Arabian Shield toward the Zagros folded belt of Iran. Emergent salt is present across the southern portion of the gulf.

A tectonic fracture zone of considerable magnitude occurs along the Iranian shoreline of the gulf. Thrust-faulting of as much as 10,000 feet magnitude may be present. Also, longitudinal rupture on the order of 60 miles has moved in a left lateral motion between the Oman neck and Bandar Abbas across the Hormuz Straits.

Stratigraphic correlation across the Arabian-Persian Gulf area is difficult; sediments are predominantly limestone, dolomites, anhydrites or shales, indicating general low relief of the area during deposition. The only sands of importance were deposited down-dip from the Arabian Shield during Bargan or Zubair time (Middle and Lower Cretaceous respectively). Neither sand is in the proper sequence or distribution pattern to react favorably to the tectonic growth of the salt domes in the area to form traps similar to types of the Gulf of Mexico oil province. Porous limestone or limestone-derived reservoirs will probably contribute most of the production to be recovered in the area.

Stratigraphic, structural and tectonic studies indicate the NIOC District I of the Persian Gulf area has some potential for oil and can be separated into three general areas.

The middle third can be excluded from competitive exploration because there are no structures present and lies in an area of deficient reservoir capabilities created by the Qatar arch.

The southern third is next best because of better reservoir potentials shown by Umm Shaif, Idd El Shargi, Maydom Mazam and Sassan field (Lavan Pet. "S" structure) but with considerable potential problems posed by nearby emergent salt conditions. There are many other structures in this area but most may have been breached by salt.

The northern third is comparatively better than the above because of possible Burgan production and other potential oil reservoirs similar to those found in Arabia, Iraq and Iran.

Because the onshore Asmari-Bangestan production of Iran is unique to that particular tectonic and sedimentary province, this type of oil may not be found in the offshore gulf agreement areas. Production in the southern portion will most likely be Thamama, Arab or Uwainat (Arej). Production in the northern portion will probably be Asmari (Ghar), Burgan and Ratawi-Khami with some production possible below the Hith (Jurassic).

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January 10 and 24, 1966
PANEL OF EXPERTS
The Oil & Gas Journal, Tulsa
"The Next Ten Years in Oil"

In the ten years from 1965 through 1975, the oil industry in the free world will be on the move in a decade of unrivaled expansion, unsurpassed consumption, and unprecedented technology.

It will be an age of superlatives, not only on the international scene but also in the United States. Domestically, shock waves resulting from the reappraisal of the late 1950's have run their course and an industry that is leaner, wiser, and more sophisticated stands poised for the challenges of a new era.

For the U.S., there will be no turning