

and laboratory courses, is still the most important background for which industry looks in the selection of professional geologists.

Employment demand for geologists will exceed the supply of graduates from universities over the next three years. Already major oil companies are exceeding their normal search for geologists with five or six years of experience. It can be expected that competent, experienced geologists, who have swelled the ranks of the unemployed during the past five years, will again find their professional services needed in the near future.

October 8, 1962

Don Franks, Mid-Continent Map Company, Tulsa, Oklahoma

"How to Obtain the Maximum Information From Your Abstract Map

October 15, 1962

Frank B. Counselman, Consultant, Abilene, Texas

"Migration and Accumulation of Natural Gas"

Abstract

Natural gas is now being sought independently of petroleum because of current market conditions. It is therefore appropriate to review our exploration methods to determine whether gas may not deserve its own specialized techniques.

Associated gas reserves will continue to share in the results of oil and gas exploration and development. However, non-associated reserves, which either have never been associated with oil or have dissociated themselves from oil, appear to justify specific study.

Natural gas may originate entirely apart from oil. Significant data on methane, the principal constituent of gas, are available from coal mines, and from metal mines cutting carboniferous sediments, as regards both origin and behavior.

Gases originating concurrently with crude oil may separate by virtue of important physical and chemical differences between the two fluids. Migration need not always be over long distances; there are many examples of commercial gas fields caused by short-range segregation.

New field discoveries in unlikely reservoirs, re-study of the old carbon-ratio idea, and information obtained from the formation of artificial gas caps by underground storage, suggest that gas-finding may involve more than normal oil-finding criteria. We may need to develop new definitions of what is a source rock and what is a reservoir. Our ideas of prospective territory and our methods of prospecting can stand review. Techniques for detection and recognition of gas reserves when drilled can stand improvement. There is adequate gas still in the ground awaiting discovery to take care of our needs for the near future, if the political and economic situation gives us an incentive to find it.

October 22, 1962

B. W. Beebe, Consultant, Boulder, Colorado

"Let's Take A Good Long Look At Ourselves"

November 7, 1962

Robert S. Dietz, U. S. Navy Electronics Laboratory, San Diego, California

"Continent and Ocean Basin Evolution by Sea Floor Spreading"

Abstract

Sea floor spreading is envisioned as the fundamental process creating continents and ocean basins. Accordingly, the sea floor moves out in opposite directions from the mid-ocean rises. The gap is filled by new strips of sea floor created from the ultra-basic mantle. By this giant conveyor-belt action proto-continental rock is eventually piled up as rafts of sial; continental islands in the world encircling sima. Thermal convection cells in the mantle provide the fundamental driving force and the mid-ocean rises mark their divergence while the continents tend to lie over the convergences. The principle novelty of this concept is that no fixed layer separates the sea floor from the convection process; rather the ocean bottom is the exposed and outcropping limbs of this convection. Accordingly, it is useful to consider the supra-mantle substance beneath the ocean (serpentine and spilite plus sediment) as only a "rind". In contrast the bouyant sialic continents ride above this convection and are not invaded by it so that they alone are the true crust.

Although perhaps alarming at first thought, sea floor spreading is an orderly, evolutionary and actualistic process consonant with geologic history. Continents grow in area and thickness with time, and the volume of the ocean basins increase as well to accommodate juvenile water. The continents are domains of compression and the ocean basins domains of tension; but the earth as a whole neither contracts or expands. Continental drift occurs with the continents tending to move to convergence zones. The apparent youth of the sea floor is explained by the destruction of the old floor and replacement by new sea floor. A new rationale is offered for the development of geosynclines, to explain continental slopes, etc.

November 12, 1962

J. C. Sproule, Consultant, Calgary, Alberta, Canada and President, American Association of Petroleum Geologists
"Geology and Oil Prospects Of The Canadian Arctic Islands"

Abstract

The main presentation consists of a showing of colour slides taken in the Canadian Arctic Islands. The subject material in these slides bears on the geology itself and also on an understanding of the terrain and access and other operational problems, which is basic to any consideration of the geology and related oil prospects.

The sedimentary basin described is over 1,100 miles long in a northeast-southwest direction by about 450 miles wide. The land area that is potentially oil-bearing amounts to one hundred million acres or more. The geology is exceptionally well exposed, as a result of which, by studying the geology, it should be possible to carry the preliminary phases of an exploration program far beyond the state at which drilling for oil normally commences. It is, therefore, hoped that Industry will be able to take advantage of the excellent rock exposures by selecting drilling sites that are more promising than is normal to areas that are covered with glacial drift, alluvium and other superficial material.

The present situation is that numerous oil indications are known and that structures capable of reservoiring oil are widespread, numerous and varied. The prospects of these basins are, therefore, promising, assuming transportation facilities and satisfactory markets for the oil.