The regional tectonic framework is presented to show the complex geologic history that the North Yukon-Lower Mackenzie portion of the area has undergone. Early depositional history has been controlled by both the Cordilleran and Franklin geosynclines and the area has, since the Cambrian, witnessed at least two complete orogenic cycles. Each of these has resulted in a large variety of sediments and structures and the final orogenic pulse, associated with the Laramide deformation, gave rise to the Richardson, Barn, British, Keele, Ogilvie, and Mackenzie mountains, as well as adjacent plains and plateaus. Underlying these latter features are thick marine sedimentary sequences that contain numerous potential petroleum source and reservoir beds. Strata of every Paleozoic and Mesozoic system are present and the great thicknesses and varied lithologies in many areas justifies one in considering it a most promising oil and gas area.

Because of the remoteness of the area and the inaccessible terrain, geologic exploration encounters many operational problems that are new to most field geologists. Helicopters have been used successfully in geologic exploration in this region and helicopter operations are discussed to show method of data collecting and most efficient use of the helicopter in order to obtain optimum results.

March 18, 1963

Clyde G. Strachan, Tulsa University, Tulsa, Oklahoma

"Crustal Structure and Its Relation to Continental Drift"

Abstract

This complex subject has had no definite factor to which it might be tied. The author suggests that a structural concept expressed in previous papers in connection with exploration for oil may be such a tie. In this concept the occurrence of fundamental northeast-southwest and northwest-southeast trends of deformation are described, which are believed to be the results of zonal pressures parallel to the earth's equator which occurred at the time the first condensation of the crust took place and the continents were formed as segments in these zones. If so, continental drift, including particularly the rotational movement involved, could not have occurred except by rotations of 90°, 180°, or 360°, or by following zigzag courses with 90° turns and no rotation.

As geophysical data on the interior of the earth increase, their interpretation tends to bring out more clearly the highly irregular nature of the Mohorovicic discontinuity. It has been reported from Russia that structure on this surface has been found to reflect generally the regional and local structure at the surface, where it has a northwest-southwest trend. This indicates that the continental crust either extended through the M discontinuity at the time the fundamental trends were formed or that this deformation extended downward as the continental crust thickened. Both possibilities suggest a stable continent, although the mechanism suggested by Dietz probably could apply.

In connection with the occurrence of materials which are interpreted as being evidence of ancient glacial conditions associated with continental drift, it is suggested that these deposits may have been associated with high altitudes. For instance, the Ouachita Mountains of southeastern Oklahoma once probably formed high ranges; as others have pointed out, the erratics of the

region may have been derived from mountain glaciation on these ranges and have been ice rafted into the flysch of Johns Valley. Surely glaciation in the Himalayas and Andes is causing widespread deposition and markings that in time could be taken as evidence of continental glaciation.

To counteract the evidence of paleomagnetic data that continental drift has occurred requires showing that the geomagnetic and geographic axes need not approach coincidence. Evidence is increasing that the earth's core is liquid and that a mechanism exists associated with it which does not require this coincidence.

In connection with the origin of oil, it has recently been proposed that pre-Tertiary oil fields have paleolatitudes of less than 20° and that, therefore, drilling for Paleozoic and Mesozoic oil should be preceded by paleolatitude studies. This theory is further tied up with the concept of the continental origin of hydrocarbons which has been expressed as the official view of the Soviet Academy of Science.

April 1, 1963

John F. Grayson, Pan American Research Corp., Tulsa, Oklahoma

"Palynology - The New Frontier"

Abstract

After a brief sketch of the development of palynology and the amount of activity in this field at present, some of the basic principles of palynology are presented and examined in detail. While discussing these principles, their potential value to the field of geology will be illustrated. Among the important problems facing exploration geologists are the following:

1. Age dating of sediments.
2. Correlation of contemporaneously deposited sediments
3. Depositional environment of sediments.

Palynology can give information in all three of these areas. Emphasis is placed on some of the recent correlations established on the basis of palynological work. Because palynology is such a young field, some of the problems confronting palynologists are discussed as well as certain areas of this field that are relatively unexplored.

April 8, 1963

John Woncik, Apache Oil Company, Tulsa, Oklahoma

"Geology of the Kinta Gas Field"

Abstract

The Kinta gas field is located in the Arkoma Basin of Southeastern, Oklahoma. It comprises portions of Tw. 7 and 8N., and Rs. 19-20E in Haskell County. First gas production was established from the Hartshorne in 1916. The depth of Hartshorne is approximately 1600 feet. A large surface anticline is present. Detailed surface work was done by Oakes and Knechtel in 1948.

The first deep test drilled to the Ordovician was in 1937 by Conoco in Section. 33, T.8N., R.20E. This well tested 2 million cubic feet of gas from the Basal Atoka sand. The well was plugged as being non-commercial.

No drilling took place from the time of Conoco's plugging of their well un-