



NEW AAPG TREASURER

FRED A. DIX, JR., of Corpus Christi, Texas, has been named treasurer of The American Association of Petroleum Geologists, by JAMES E. WILSON, president.

Dix, 40, assumed the post left vacant by the air-crash death of H. B. RENFRO, 57, of Dallas, who died June 23.

He has been a geologist with Mobil Oil Corp. since 1965, first in Jackson, Miss., and then as associate exploration geologist in Corpus Christi since 1966. It is anticipated he will move to Houston later this year with Mobil.

A member of AAPG since 1957, Dix has been chairman of the Committee on Statistics of Drilling and was also the AAPG representative on several API committees.

He started his career with Standard of California in Salt Lake City and Denver after receiving a B.S. degree and in 1957 an M.S. degree in geology from Rutgers University. He was in the U.S. Air Force from 1953 to 1955, reaching the rank of 1st lieutenant.

Dix is a member of the Corpus Christi Geological Society and the Coastal Bend Geophysical Society.

He was born in Connellsville, Pa., is married and father of 3 children.

EASTERN SECTION, FIRST ANNUAL MEETING, MAY 24-27, 1972, COLUMBUS, OHIO

ABSTRACTS OF PAPERS

BEARDS, R. J., Ontario Department of Mines, Ottawa, Ont., Canada

SILURIAN GEOLOGY OF LAKE ERIE AND ASSOCIATED GAS PRODUCTION
No abstract available.

BULMER, E. G., Ont-Hio Gas and Oil, Inc., Islington, Ont., Canada, and W. E. BULMER, Petroleum Consultant, Chatham, Ont., Canada

ECONOMIC POTENTIAL OF OFFSHORE OIL AND GAS EXPLORATION IN UNITED STATES PORTION OF LAKE ERIE

The writers have investigated the volumes of crude oil and natural gas reserves which are economically recoverable from the areas underlying the United States portion of Lake Erie—not only those reserves which are economically significant at present market prices, but also those which will become profita-

ble as the price paid for both crude oil and natural gas in the eastern United States moves upward to levels comparable to those for supplies available from alternative sources.

The availability of present and future markets for oil and gas produced locally, the history of exploration, development, and production in the Lake Erie area, and costs and problems related to offshore operations and production in Lake Erie have been examined. The reserves of crude oil and natural gas recoverable from each potentially productive formation were estimated and allocated by formation to the offshore area occupied by each state which owns mineral rights underlying Lake Erie.

From this study recommendations can be made relevant to the present and/or future need to develop the anticipated offshore oil and gas reserves which underlie Lake Erie and relevant to the need to reevaluate the status of offshore drilling and exploration in the United States portion of the Great Lakes.

CHEN, PING-FAN, and L. D. WOODFORK, West Virginia Geol. Survey, Morgantown, W. Va.

LITHOFACIES OF CHAZY AND CHAMBERSBURG GROUPS IN CENTRAL APPALACHIANS

The post-Beekmantown and pre-Martinsburg rocks of the central Appalachians comprise numerous formations. For the purpose of regional stratigraphic analysis, these rocks can be subdivided into two major units, the Chazy Group at the bottom and the Chambersburg Group above.

The major depocenter during Chazy deposition was located in central Pennsylvania. A medial high divided it into a shallower western part and a more deeply subsiding eastern part. Another broad depocenter existed in central West Virginia. Areas surrounding that depocenter received irregularly varying amounts of sediments. With few exceptions the limestone facies of the Chazy covers the area southeast of the broad depocenter in central West Virginia. Northwestward, dolomite and clastic facies are present, but limestone remains the most important lithology. Areas with higher clastic and dolomite ratios appear to be rather limited.

During the Chambersburg deposition, a depocenter existed along the Appalachian Valley. Along that axis two separate depocenters existed in western Virginia. Maximum deposition occurred toward the southwest. An axis of thinning (the Adirondack axis) bordered the Appalachian Valley depocenter on the west along its northern part. However, this positive area died out toward the south, and, therefore, the "Tazewell axis" of thinning appears to have been nonexistent. A large broad depocenter (Allegheny synclinorium) also extended from central West Virginia into eastern Kentucky. Carbonates (almost all limestone) are the most important Chambersburg facies, but facies with higher clastic ratios occur in parts of the Appalachian Valley of Virginia, an isolated area in West Virginia, and a narrow belt in Ohio.

The Trenton Limestone has produced oil in the Rose Hill and Ben Hur fields in Lee County, Virginia. The Trenton-Black River limestone section has produced gas in numerous old fields in west-central New York. Gas shows have been reported from Middle Ordovician carbonates in West Virginia. Additional hydrocarbon reserves should be found in the Middle Ordovician carbonates of the central Appalachians. Areas of local dolomitization and fracture porosity related to structure are considered to be the most promising prospective areas.

CLIFFORD, M. J., Ohio Div. Geol. Survey, Columbus, Ohio

ROLE OF SILURIAN SALT IN DISCORDANCE BETWEEN DEEP AND SHALLOW STRUCTURE IN OHIO

Interpretations of deep (pre-Cayugan) structure from either shallow structure or seismic information should include an evaluation of the different roles played by the Silurian Cayugan salt beds underlying the central Appalachian basin. Four distinct types of salt involvement are identified in Ohio: thin-skinned thrusting along salt beds (southern Ohio), salt-flowage

structure (Columbiana County), solution-collapse structure (Ashtabula County), and drape over preexisting structure (Summit and Stark Counties). Explorationists should be aware of these effects to prospect profitably for deep pays in the Appalachian area.

ENGLUND, K. J., U.S. Geol. Survey, Washington, D.C.

CENTRAL APPALACHIAN TECTONICS AS INDICATED BY STRUCTURAL FEATURES IN CARBONIFEROUS ROCKS

Regional structural features, including the hinge line on the west flank of the Appalachian basin, are reinterpreted on the basis of data assembled from recent geologic mapping and subsurface studies of Carboniferous rocks in eastern Kentucky and adjacent areas of West Virginia, Virginia, and Tennessee. The easterly trending Irvine-Paint Creek fault system has been recognized as a major feature affecting late Paleozoic sedimentation in this part of the basin. Except for slight stratigraphic thinning across a few of the associated anticlines, there is little evidence of hinge-line thickening at or near the fault system, or of growth-fault development during the deposition of Carboniferous strata. Structural and stratigraphic features suggest that the Irvine-Paint Creek fault system is largely postdepositional and that hinge-line development actually occurred along the intersecting Waverly arch. This flexure was identified by Woodward in 1961 in lower Paleozoic rocks of Ohio and northeastern Kentucky, but the extent and thickness trends of Mississippian formations beneath the basal Pennsylvanian unconformity show that the flexure was also positive in late Paleozoic time. Distribution patterns of these formations indicate that the Waverly arch is more extensive than previously indicated, extends southwestward across eastern Kentucky into northern Tennessee, and approximately parallels the Cincinnati arch 50-60 mi toward the west.

FREY, M. G., Chevron Oil Company, New Orleans, La.

INFLUENCE OF SALINA SALT ON STRUCTURE IN NEW YORK-PENNSYLVANIA PORTION OF APPALACHIAN PLATEAU

The Silurian salt serves as a *décollement* zone above which the younger sedimentary section is involved in a series of folds. The southeastern limb of each of these folds is generally oversteepened. Beds older than the Salina salt are apparently not involved in the folding, as evidenced by seismic data. A comparison of the folds in this area is made with those in other areas underlain by bedded salt. Factors controlling salt-influenced structures include (1) thickness of salt layer, (2) manner of deposition of overburden, and (3) angle of slope of salt-sediment surface during deposition of overburden.

GRISCOM, A., U.S. Geol. Survey, Menlo Park, Calif.

STRUCTURE IN NORTHERN APPALACHIANS FROM AEROMAGNETIC AND GRAVITY DATA

No abstract available.

GROW, G. C., JR., Transcontinental Gas Pipeline Corporation, Newark, N.J.

RECENT EXPLORATORY ACTIVITIES AND FUTURE POTENTIAL—NORTHEASTERN AREA

No abstract available.

JACKSON, J. R., JR., Humble Oil and Refining Company, Houston, Tex.

IMPACT OF ENVIRONMENTAL IMPACT STATEMENTS

No abstract available.

JANSSENS, A., Ohio Div. Geol. Survey, Columbus, Ohio, and J. R. EBRIGHT, East Ohio Gas Co., Cleveland, Ohio

STRATIGRAPHY AND ECONOMIC POTENTIAL OF CAMBRIAN AND LOWER ORDOVICIAN ROCKS IN OHIO

Fine-grained to conglomeratic basal Mt. Simon Sandstone (0-350 ft) is overlain in western Ohio by fine-grained glauconitic Eau Claire Sandstone (200-600 ft) and in eastern Ohio by Rome dolomite and poorly sorted sandstone (190-750 ft). The Rome is overlain by the Conasauga Formation (40-400 ft), consisting of siltstone, sandstone, limestone, dolomite, and southward-thickening prodelta shale. Eau Claire and Conasauga are overlain by a deltaic sandstone (0-170 ft) derived from the north; in northeastern Ohio the equivalent rocks are dolomite and discontinuous sandstone. The Knox Dolomite (0-1,200 ft) overlies these beds and in eastern Ohio includes the Rose Run sandstone (100-120 ft). Both Rose Run and deltaic sandstone subcrop below the Knox unconformity as potential traps.

Only one show (gas) has been recorded from the Mt. Simon. Younger sandstones (Rome, Conasauga, deltaic, Rose Run, and unnamed sandstone in the Knox) are potential reservoirs where they have structure or form stratigraphic traps (porosity pinchouts, facies boundaries, erosional highs below the Knox unconformity). Gas and oil have been produced from the Knox from both structural and stratigraphic traps.

Prime exploration areas are north-central Ohio, where sediments were deposited close to the shoreline, and eastern Ohio, currently active, where secondary porosity below the Knox unconformity has created gas reservoirs.

JOHNSTON, J. E., U.S. Geol. Survey, Washington, D.C.

REMOTE SENSING AS TOOL FOR INTERPRETING STRUCTURAL GEOLOGY IN APPALACHIANS

The science of remote sensing of the earth's surface with special cameras and other instruments that measure reflectance and/or emission of energy in the electromagnetic spectrum has had nearly exponential growth since the early 1940s. Since the mid-1950s scientists and engineers gradually have become aware of and interested in utilizing remote sensor technology in the natural sciences. This technology, developed principally from classified military projects, has been used only in unclassified civilian projects in natural sciences and earth resource fields during the past decade. Applications of remote sensing that have been advanced and tested include geologic use of Gemini and Apollo satellite photography, Nimbus AVCS (advanced vidicon camera system) and thermal infrared scanner data, as well as data from a number of aerial systems.

Remote sensor systems which have received attention in geology and allied disciplines are: (1) black and white (B/W) photography (panchromatic and infrared), (2) color and color infrared (IR) photography, (3) multiband (MB) photography, (4) thermal infrared (TIR) scanner images, (5) multispectral scanner (MSS) images (from near-ultraviolet to far-thermal infrared), (6) side-looking radar (SLAR or SLR) images, and (7) passive microwave scanner (PMS) images. Several of these systems have been tested from aircraft and spacecraft over parts of the Appalachians and adjacent regions. Remote sensing image data (ground observations, etc.) have provided useful information related to regional structures such as joint patterns, drainage patterns, fault traces, and rock types.

The application of geologic remote sensing is in its infancy, however, and these tests are not meant to imply that remote sensing is or will be a panacea for all the problems of Appalachian structural geology, but surely a combination of selected sensing systems can provide additional information for a well-balanced scientific approach to the problems of the Appalachians. Remote sensors provide synoptic views of large areas and of conditions that cannot be perceived either by the unaided eye or by field observations. These include surface distributions of heat, moisture, open water, and vegetative vigor differences, all of which are useful to the geologist.