dicates that 1965 will be an active exploration year in the state.

One well, in Montgomery County, drilled to the Cambrian basal arkose, and several wells drilled into the Knox dolomite in eastern and central Kentucky, have provided new subsurface information. The geological significance of recent drilling results is illustrated by structure and isopach maps, and by cross sections.

The Trapp gas field in Clark County is soon to be connected to central Kentucky markets by pipeline. This will be Kentucky's first commercial production from the St. Peter Sandstone. Possibilities of extending St. Peter production in the area are shown by isopach and structure maps.

Relationship of recent leasing activity to regional geology is discussed, and the need for geophysical surveys emphasized.

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January 18, 1965

ROBERT L. FOLK, Univ. of Texas, Austin

"Electron Microscopy of Carbonate Muds and Carbonate Rocks"

Electron microscopy reveals that modern caronate muds show great variation in properties and origin. Mud examples are shown from Yucatan, Florida Bay, Bahamas and the Deep Caribbean. Lithified limestones show many curious features, most of which are at present not easy to explain.

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February 1, 1965

J. A. KORNFELD, Kornfeld International, Tulsa

"Geology and Economics of North Sea Basin"

The North Sea basin represents the most active geophysical and drilling exploration area today in northern Europe. This petroliferous province comprises the offshore waters of seven nations which share offshore mineral rights including: England, Scotland, The Netherlands, Belgium, West Germany, Denmark and Norway.

The area encompassed by the North Sea basin comprises 220,000 square miles, comparable in size to the State of Texas.

The depth of water ranges from 100 feet in the south to 320 feet in the central portion, to 840 feet in the extreme northern portion.

Economic factors leading to the heavy concentration of exploration, exploitation, and capital investment in this vast, undrilled basin are:

1. Proximity to rich petroleum markets in the EEC (European Economic Community) and EFTA (European Free Trade Association) in the bordering countries;

2. Proximity to major crude-oil tanker terminals for marketing such as the port of London, Rotterdam-Europoort, Amsterdam, Antwerp, Hamburg, and Wilhelmshaven;

3. Existence of a series of major Paleozoic, Mesozoic, and Cenozoic basins with a maximum thickness of sedimentary beds of possibly 20,000 feet to the Precambrian basement;

4. Existence of a new, undrilled salt-dome province, comprised principally of piercement-type domes which are interspersed with highly-faulted horsts and grabens, accompanied by numerous facies occurrences in the Permian and Carboniferous systems, which are hydrocarbon-bearing peripheral to the basin in land areas in West Germany, The Netherlands, England, and Scotland; and

5. Existence of relatively shallow waters, averaging only 180 feet.

By the end of 1965, 14 rigs are expected to be active in the North Sea, of which 3 lie off West Germany, and the remainder off Great Britain. By the summer of 1966, at least 20 rigs will be at work.

Paleozoic targets range between 8,000 and 16,000 feet and up to 20,000 feet.

As to the overall investment, $300,000,000 has been pledged to date. This figure could rise to $500,000,000 for a single year in the event of successful and commercial discoveries of hydrocarbons.

Western European crude-oil demand, which exceeded 6,000,000 barrels a day during 1964, is expected to reach 10,000,000 barrels a day during 1975, and 13,500,000 barrels a day during 1985.

Western Europe consumes more than a billion barrels of petroleum a year or more than ten times as much hydrocarbons as she produces. Europe holds less than one per cent of the world's proved developed petroleum reserves and produces less than two per cent of the world's oil.

Discovery in 1959 by N. A. M., a Dutch company owned jointly by Jersey Standard and Royal Dutch-Shell, of one of the world's largest natural-gas fields at Groningen province, which borders the sea, aroused interest in the adjacent underwater area.

Three major sedimentary and structural basins are known from geophysical surveys: the Zechstein basin extension from West Germany, the British basin, and the Norwegian basin. Maximum depths to the