M. Tenaille, Soc. Africaine des Petroles (Senegal)

M. A. Nicod, Soc. Petroles du Senegal (Senegal)

A. de Spengler, Soc. Africaine des Petroles (Senegal)

Petroleum Exploration in Senegal-Mauritania and Ivory Coast Coastal Basins (West Africa)

The Cretaceous and Tertiary Senegal-Mauritanian basin was almost completely unknown below the surface, before its reconnaissance was started in 1952 by the French "Bureau de Recherches de Pétrole."

The great depth of the basin was at first indicated by airborne magnetometer and refraction seismograph tests and checked by a deep stratigraphic well (3,403 m., 11,165 ft.). Active exploration was carried on since 1955, three companies being active now in the French part of the basin.

Reflection and refraction seismograph and geological core holes were effective tools for exploration, gravity having been useful only locally. A marine section of about 5,000 meters (16,400 ft.) is known in deep wells, from Lower Cretaceous (Aptian) up to Miocene, mainly shale and sands in various proportions, with some limestones, overlapping the basement toward the East. The basin is open toward the Atlantic Ocean. The regional westward dip is very low and structure is mainly controlled by deep north-south flexures and by basement uplifts. A first gas well producing $3\frac{1}{2}$ m.c.f./day was drilled near Dakar in 1959.

In Ivory Coast, a narrow coastal basin, almost as deep as broad on land, was discovered by gravity and checked by refraction-seismograph since 1952. Active exploration was started in 1957. Marine, lagoonal, and terrestrial reflection-seismograph and geological coreholes were done at first in the French part of the basin, before spudding deep exploratory tests.

The northern border of the basin is a fault system, and structures are related to plunging noses with southward dip. A marine section of about 2,700 m. (7,856 ft.) was drilled, with mainly shale, sands and conglomerates ranging from Aptian or Albian up to Miocene. Below Aptian or Albian, possibly non-marine dark shales and sandstones, or continental red-beds, were encountered. Good shows (tar sands and heavy oil seepages) occur in the eastern part of the basin, in Ivory Coast and in Ghana.

R. Thorsteinsson and E. T. Tozer, Geological Survey of Canada, Ottawa, Canada

Stratigraphy and Structural History of Canadian Arctic Islands

The islands south of Parry Channel, except Banks, have a thin, discontinuous cover of Ordovician and Silurian carbonates, relatively undisturbed except for local north trending structures adjacent to the Boothia arch. Late Silurian or early Devonian fanglomerates near the arch were deposited contemporary with these movements. On northwestern Victoria and Banks islands a monoclinal section to the northwest reaches the Upper Devonian (which is clastic as in the northern islands) followed by marine Lower Cretaceous and non-marine Tertiary.

Queen Elizabeth Islands, north of Parry Channel, record heavier sedimentation and complex structural history. From Cambrian to Upper Devonian an arc-shaped geosyncline extended easterly through Parry Islands and then northeasterly through Ellesmere. Adjacent shelf regions are south Melville and Bathurst islands, most of Devon Island and southeastern Ellesmere Island. Cambrian, Ordovician, and Silurian rocks, locally at least 20,000 feet thick, are essentially carbonate and shale with some evaporites. Ordovician and Silurian carbonates occupy outer side of arc and shale the inner. North Ellesmere and northwesternmost Axel Heiberg have metasediments and volcanics, probably the contemporary eugeosyncline. The Devonian sequence 17,000 feet thick is mainly quartzose clastics locally with carbonates in the lower part.

Cornwallis Island and neighboring coasts have northeasterly structures produced at time of movement on Boothia arch. Main body of geosyncline was deformed between Upper Devonian and Middle Pennsylvanian forming east-west structures in Parry Islands and northeasterly structures in Ellesmere. In middle Pennsylvanian the Sverdrup Basin, centered on Axel Heiberg Island, developed above the old eugeosynclinal belt and received about 50,000 feet of Pennsylvanian to early Tertiary sediments. The Permo-Pennsylvanian includes carbonates, shales and evaporites; the Mesozoic comprises alternating marine and non-marine sandstones and shales. In Meozoic thin sandy deposits characterize basin margins, and shales the axis. Section on axis is essentially conformable, on margins it is incomplete from overstep and thinning. Early Tertiary rocks are entirely non-marine with coal seams, and are followed by orogeny that produced mainly northerly thrust faults and folds, also diapiric intrusion of Upper Paleozoic evaporites.

Lyman D. Toulmin, Florida State University, Tallahassee, Florida

Philip E. LaMoreaux, U. S. Geological Survey, Washington, D. C.

Stratigraphy along Chattahoochee River, a Connecting Link between Atlantic and Gulf Coastal Plains

The geologic section along the Chattahoochee River is one of the best and most complete in the Coastal Plain of the United States. It is the only continuous unweathered section of Cretaceous and Tertiary beds in southeastern Alabama and southwestern Georgia, and comprises a connecting link between the well-known standard section and type exposures to the west in Alabama and beds to the east in Georgia and South Carolina. It is also an important section because of its intermediate position between the clastic facies in the central and western Gulf Coastal Plain and the equivalent carbonate facies in the subsurface in Florida.

Upper Cretaceous, Paleocene, lower Eocene, and middle Eocene strata are exposed in an almost continuous section down the dip from the crystalline rocks at the Fall Line at Columbus, Ga., to upper Eocene exposures about 8 miles north of the Alabama-Florida boundary, a distance of 126 miles. This study of a part of that section supplies detailed stratigraphic and structural information on rocks of Tertiary age that are exposed southward from the Upper Cretaceous-Paleocene contact 15 miles south of Eufaula, Ala., to exposures of upper Eocene Crystal River limestone of Moore, 1955, 15 miles south of Columbia, Ala., a distance of 49 miles. The total thickness of Paleocene, lower Eocene, and middle Eocene strata in this part of the river is a little over 600 feet. The average dip is 15 feet per mile to the south, but in places the beds are horizontal for distances of as much as 3 miles.

The formations recognized in the river section are those in the standard Alabama stratigraphic section. From the bottom up they are the Clayton formation of Paleocene age, the Nanafalia formation, Tuscahoma