havior allows such a determination. It is encouraging that a survey of those experiments in which steady-state creep of salt and other rocks was measured reveals viscosity parameters which, when used in hydrodynamic theory, explain in a satisfactory manner the geometry and growth rates of salt structures observed in many areas of the world.

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PLANKTONIC FORAMINIFERA, PALEOECOLOGY, PALEOGEOGRAPHY, AND CORRELATION

Studies of the species composition of Paleocene and early Eocene planktonic foraminiferal faunas from selected sections in the Atlantic and Gulf Coastal Plains, Trinidad, and South India show that recognizable faunal differences occur in a longitudinal direction as well as in a latitudinal direction. These data indicate that it is possible to identify and delineate paleo-faunal provinces.

These studies also show that the stratigraphic ranges of planktonic foraminiferal species may differ along lines of latitude and longitude. This raises questions concerning the use of these fossils for detailed intercontinental and regional correlations. There is no one standard section that shows world-wide faunal sequences. The local stratigraphic range (*teilzone* of Arkell) of a species is most important and useful for stratigraphic work. The planktonic foraminiferal sequences of each stratigraphic section simply reflect the pattern of faunal changes that occurred on a local or regional basis.

Analysis of the species composition of fossil planktonic foraminiferal faunas and the stratigraphic ranges of species from many local sections can lead to important data on faunal migration and species dispersal. A more detailed understanding of the evolutionary history and of the intercontinental correlative value of fossil planktonic Foraminifera will result from such studies.

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FAUNAL ZONES OF THE PALEOCENE AND EOCENE GEOLOGIC SECTION ALONG CHATTAHOOCHEE RIVER, ALABAMA

The stratigraphic interval from the top of the Upper Cretaceous Providence Sand to the bottom of the upper Eocene Ocala Limestone, extending 49 miles along the Chattahoochee River, was studied and sampled. The section, more than 600 feet thick, can be correlated with the standard section in central and western Alabama by means of fossil zones. Each of the eight formations studied contains beds with distinctive guide fossils.

The Paleocene Series is represented by a limestone facies that contains a more poorly preserved fauna than the equivalent argillaceous facies of western Alabama. The upper Paleocene (Naheola Formation) is absent in eastern Alabama. The lower Eocene Series is lithologically and faunally similar to its equivalent farther west. The middle Eocene Series is more calcareous than in western Alabama. The lower Lisbon (Winona equivalent) and the Gosport Sand are absent. The upper Eocene Series is represented by a limestone facies of the Moodys Branch Formation and Yazoo Clay of western Alabama.

Foraminiferal zones established for the geologic section on the Chattahoochee River conform closely to the macrofossil zones.

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RECENT PEAT DIAPIRS IN THE NETHERLANDS: A COMPARISON WITH GULF COAST SALT STRUCTURES

Several peat diapirs, three to four feet high, were observed in Recent sediments of the Flevoland. The peat was deposited approximately 7,000 years ago on an eroded Pleistocene surface. Four to six feet of sediments which overlie the peat include, beginning with the oldest, *Unio* Clay, Young Peat, *Cardium* Clay, and Almere and Zuiderzee deposits. On the flanks of several elongate Pleistocene sand ridges, diapiric folds and related structures, similar to Gulf Coast structures, exist in the Recent deposits. The structures most like those of the Gulf Coast are down-to-the-basin normal faults, rim synclines, and, in one case, a central graben. These diapiric folds exist where the dip of the onlapping Recent sediments increases along the sand ridge flanks. The folds probably resulted from peat flowage down the sand ridge slopes.

The time of diapirism can be dated as about 1,000–1,500 A.D., because the overlying Zuiderzee deposits (1,600 A.D.) usually are not involved.

Although these small-scale diapirs resemble some Gulf Coast salt domes, they differ in two principal ways: (1) a shorter time for formation (500 years maximum) and (2) a negligible sedimentary overburden (four–six feet) when diapirism occurred. Nevertheless, the Flevoland diapirs suggest a possible mechanism of origin for salt diapirs on buried basement topography early in the history of the Gulf Coast geosyncline.

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SEDIMENTATION IN ARCTIC WATERS

Bottom studies involving physiography, sedimentation, and paleontology indicated that there was pre-Pleistocene fluvial erosion when the land stood higher relative to sea level, followed by modification of trunk systems by valley glaciers, then submergence of much of the archipelago, and finally emergence. Tertiary headlands are still submerged more than 400 meters. Following these physiographic and crustal events, Arctic sedimentation occurred.

Sediments from lake, river, delta, protected bay, channel, and ocean environments were studied. River and delta environments were selected as classical depositional sites, and others were interpreted from this norm. In fluvial deposits, a direct relationship of decrease in size of detritus with distance of transport occurs together with reduction in percentage, mean size, and number of heavy mineral species. Where river gradients lower abruptly, sedimentary particles decrease immediately from gravel to sand and silt. In deltas, decrease in size is exponential with distance of transport, and deposits consist chiefly of silt and mud. There, contours on lithofacies maps protrude seaward over bathymetric contours indicating prograding of clastic sediments due to marine regression or relative crustal uplift.

Offshore, no progressive variation in texture exists, due to occurrences of ice-rafted material and lack of sufficient currents. Where currents exist, as in mid-channel areas, sediments are better sorted. Thus, anomalous distributions of sediments arise wherein nearshore deposits in channel areas consist of fine material, but in mid-channel areas they are coarser. Occurrences of coarse marine sands off seaward tips of islands are