

LATE MIOCENE TO HOLOCENE
PLANKTONIC FORMINIFERAL ZONATION
IN THE CARIBBEAN AND GULF OF MEXICO

By J. L. Lamb and J. H. Beard
Esso Production Research Company

The Late Miocene to early Pleistocene planktonic succession within standard European stages and reference sections in Italy is compared with that of the Caribbean and Gulf of Mexico to clarify stage and epoch boundaries in the latter regions. In ascending order, the stages comprise the Tortonian and Messinian (Late Miocene), Tibianian and Plisancian (Early to Late Pliocene), and Calabrian (early Pleistocene). Climatic Criteria obtained by analysis of the planktonic fauna provide a basis for recognition of the Calabrian, Emilian and Sicilian stages in southern Italy. Correlation of epoch boundaries and other paleontological datums from the Italian to the Caribbean and Gulf of Mexico regions utilizes restricted occurrences of planktonic foraminiferal species common to both regions and also horizons of reference within species of the Globorotalia crassaformis evolutionary lineage.

Species important for this intercontinental correlation and dating include Globorotalia acostaensis and Sphaeroidinellopsis sphaeroides in Late Miocene, Globorotalia margaritae in Early Pliocene, species of the Globorotalia crassaformis lineage in Middle and Late Pliocene, and appearance of Globorotalia truncatulinoides and faunal evidence for onset of climatic deterioration in early Pleistocene. On the basis of these data and information obtained from many localities in the Caribbean and Gulf of Mexico, a sequence of regional planktonic zones and subzones is defined for the Late Miocene to Holocene interval. These zones seemingly have broad application in warm and temperate regions from about 45° S. latitude to about 45° N. latitude.

Zonation of the late Neogene was accomplished by recording in detail the stratigraphic occurrence of approximately 40 species of planktonic foraminiferas in the Caribbean and Gulf of Mexico.