BIOSTRATIGRAPHY OF SOME NEOGENE FORMATIONS, NORTHERN FLORIDA AND ATLANTIC COASTAL PLAIN

W. H. Akers[1]
New Orleans, Louisiana 70112

ABSTRACT

In recent years, world-wide studies by numerous specialists on planktonic Foraminifera and calcareous nannoplankton have been extended into the type European sections. It is now possible to establish zonations and correlations that appear to be synchronous over long distances, validating, for the first time, the use of European stratigraphic terminology in areas remote from the type localities. The recognition of planktonic microfossils for these purposes is a milestone in Tertiary biostratigraphy, particularly for those who have long found the Lyellian percentage method inadequate as a precise means of determining the age of a Cenozoic formation. The identification of these fossils in the subject areas is also a "breakthrough" because of the significance of many of the sites as type-localities for mollusks, and because of the question of the exact position of these formations in the geologic time scale.

Planktonic Foraminifera and the calcareous nannofossil genera, *Discoaster*, *Catinaster*, and *Sphenolithus* are identified from the subject areas, and the species indicate stratigraphic relationships that are at variance with ages traditionally ascribed to some of the formations of northwestern Florida, the Yorktown and Waccamaw sections on the coastal plains of the eastern United States, the Moín Formation of Costa Rica, and the Encanto and Agueguexquite Formations of Mexico. Comparative ranges of these ubiquitious microfossils pose a Burdigalian age for the Chipola Formation, a late Langhian age for the Encanto and Yellow River Formations, a Tortonian to Messinian age for the Red Bay Formation, and an early middle Pliocene age, at some localities, for the Jackson Bluff, Yorktown, and Agueguexquite Formations. From several sites, material assigned to the Waccamaw Formation is correlated with the Moín Formation, for which an early Pleistocene age is indicated.

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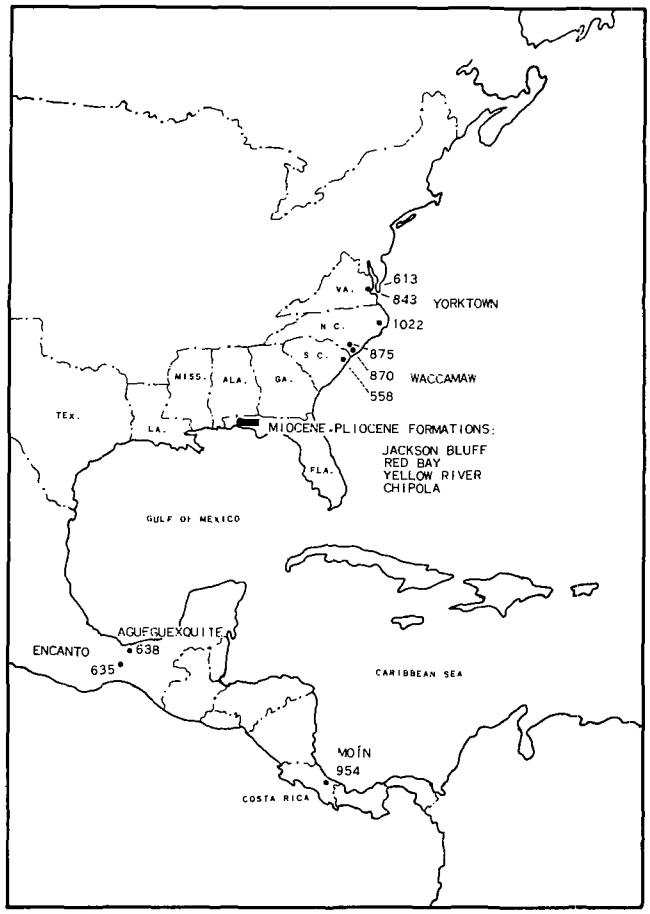
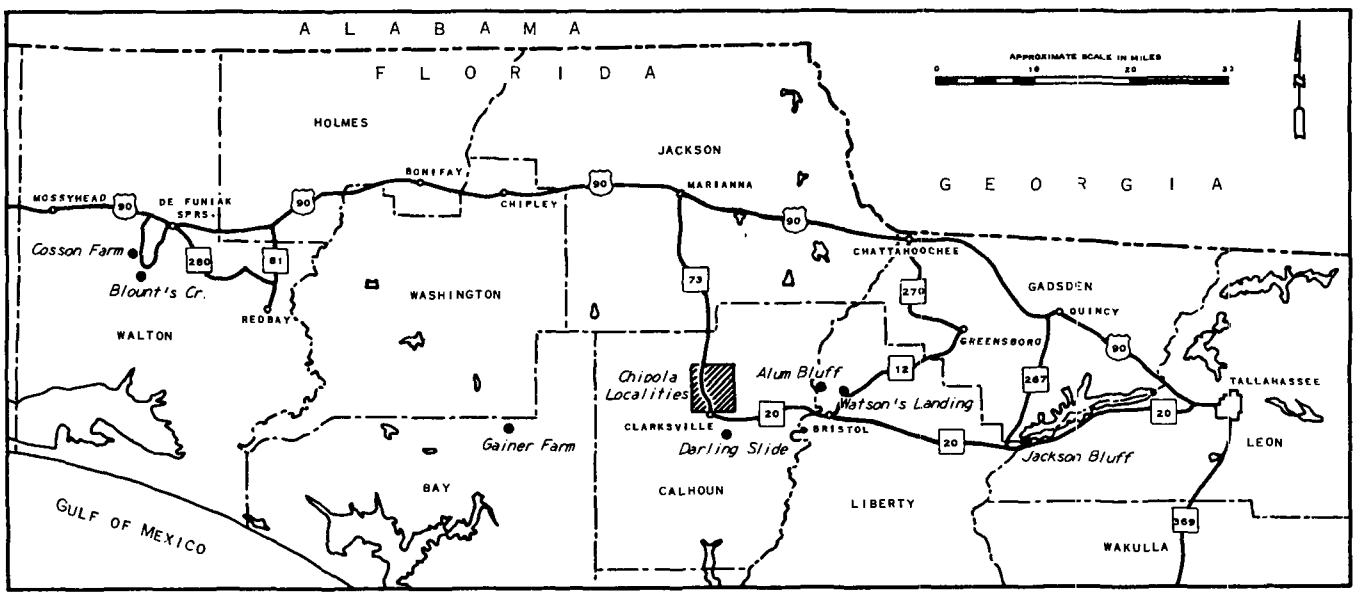
[1]Chevron Oil Company.

Editor's Note: Unfortunately the printer received this paper too late for the text to be included. The illustrations are included.



MAP 1
LOCATION OF NEOGENE FORMATIONS INVESTIGATED FOR THIS REPORT
NUMBERS REFER TO TULANE LOCALITIES



MAP 2
CHOCTAWHATCHEE AND CHIPOLA LOCALITIES OF NORTHERN FLORIDA
FROM WHICH PLANKTONIC MICROFOSSILS HAVE BEEN IDENTIFIED

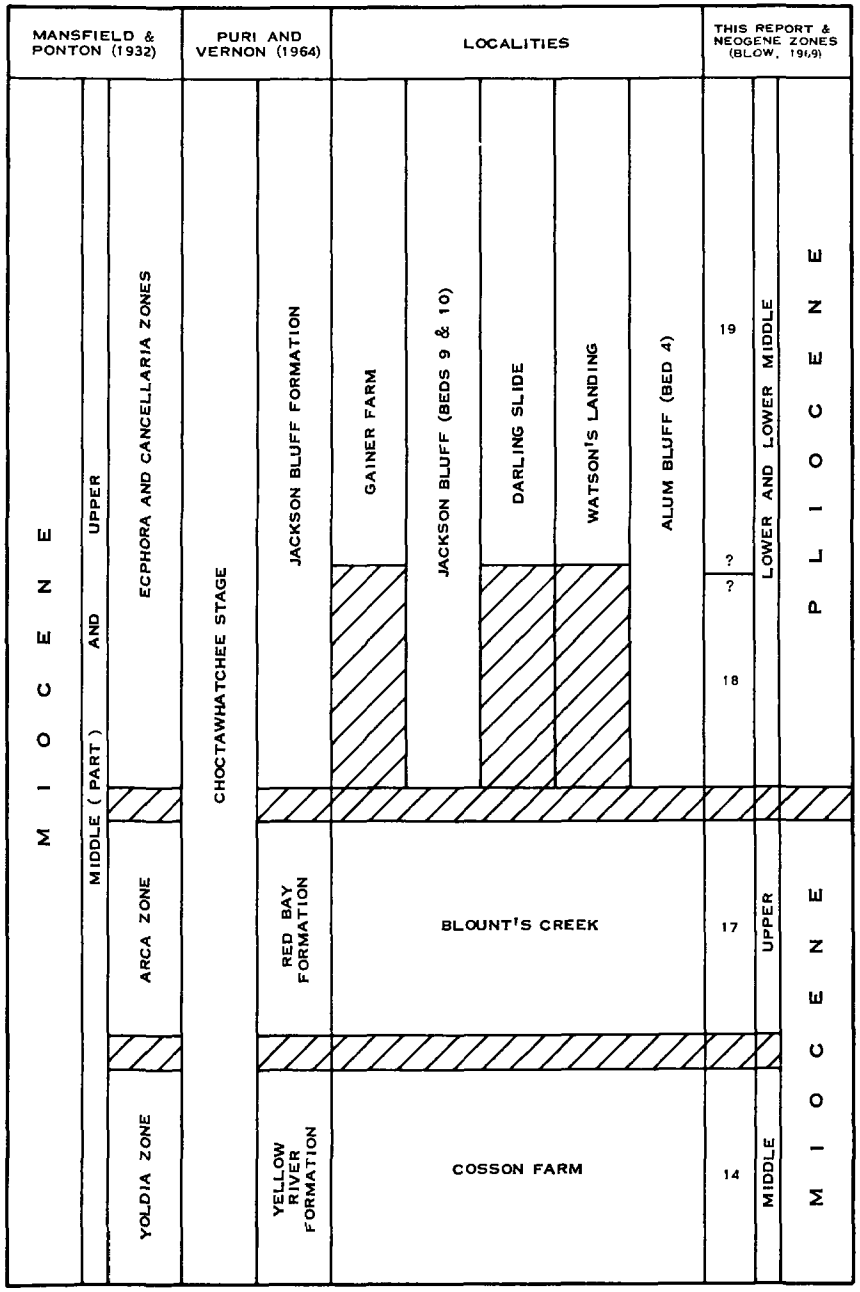


FIGURE 1 CORRELATION OF SOME FORMATIONS OF THE CHOCTAWHATCHEE STAGE BY PLANKTONIC MICROFOSSILS

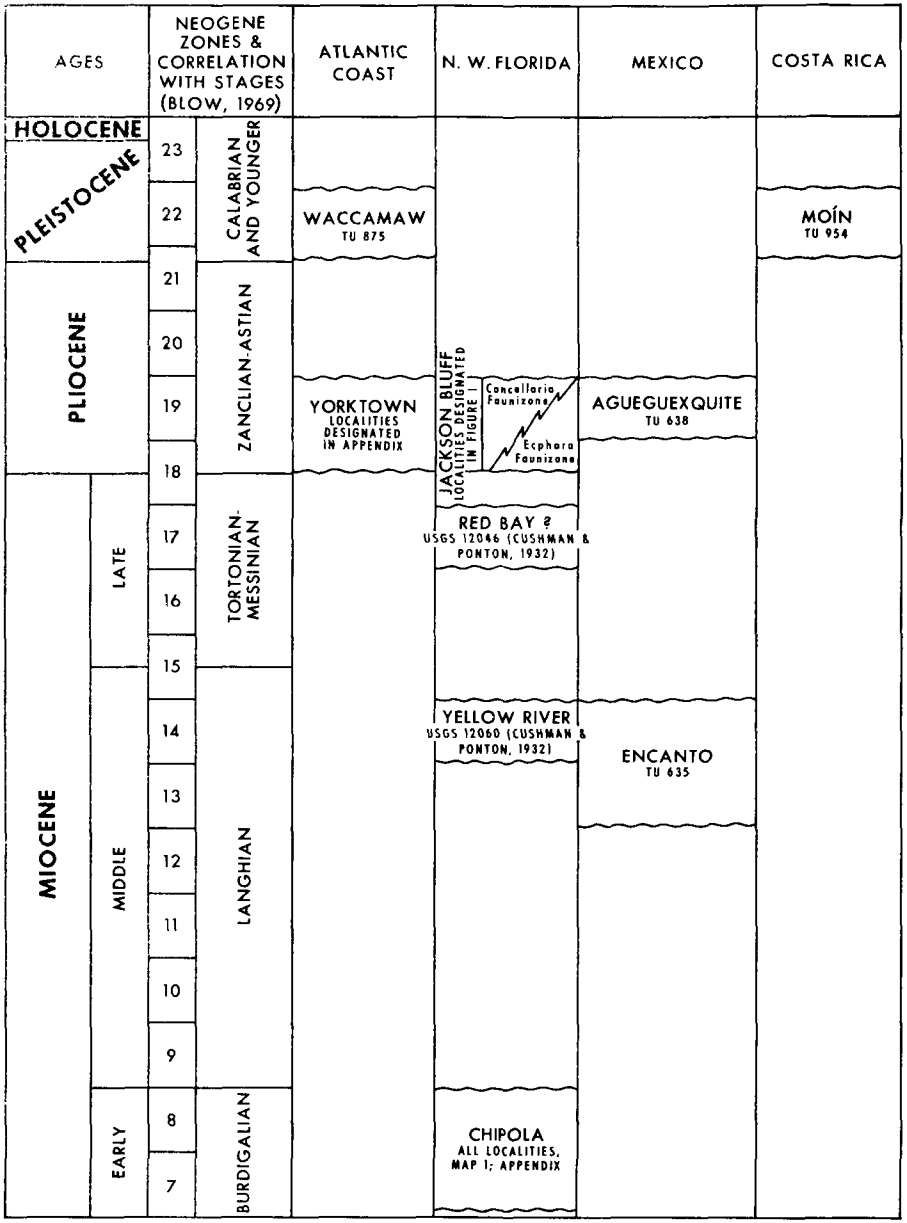
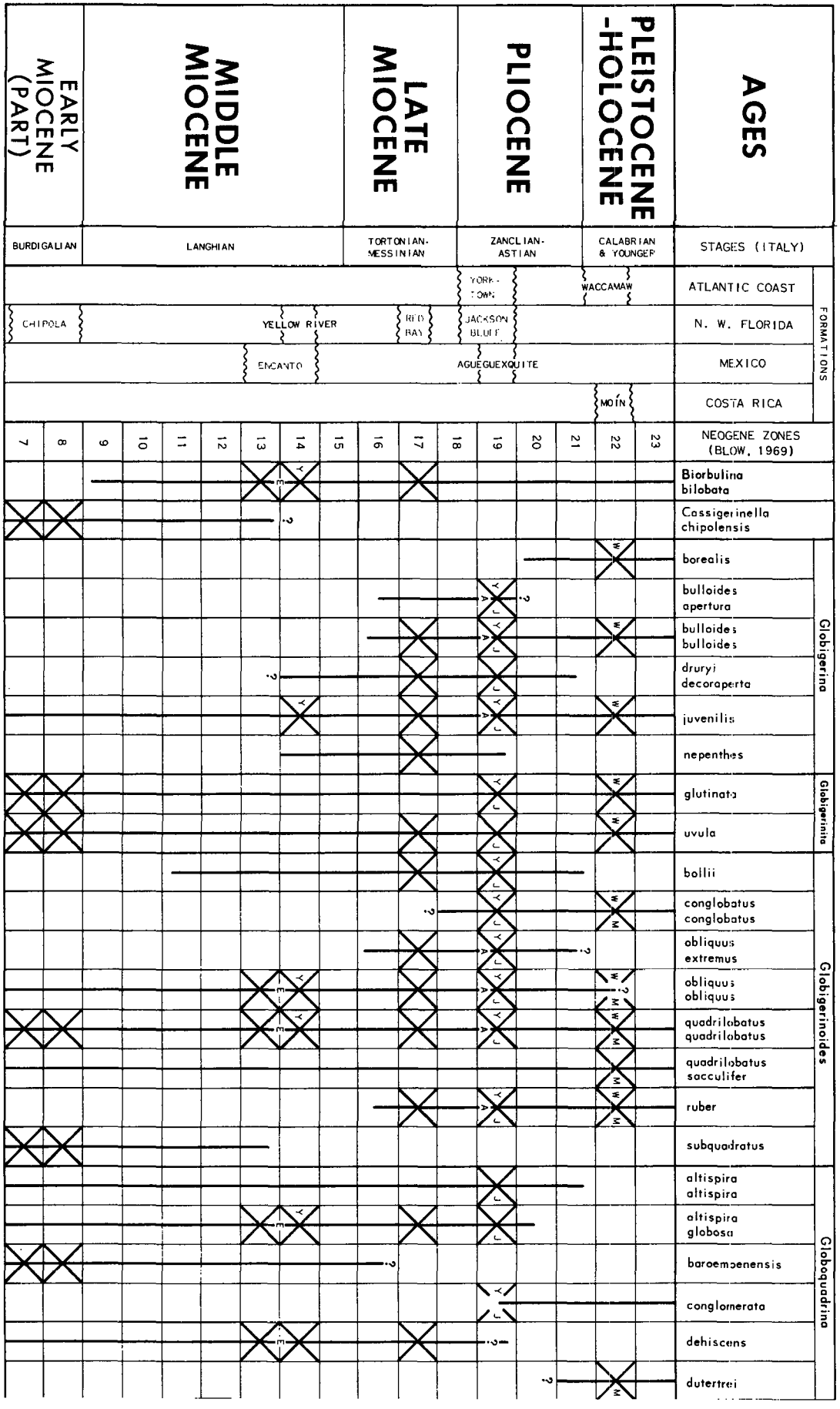


FIGURE 2. CORRELATION OF SOME NEOGENE FORMATIONS BY MEANS OF PLANKTONIC MICROFOSSILS

NOTE: "FAUNIZONE" IS USED THROUGHOUT THIS REPORT IN THE SENSE OF PURI AND VERNON (1964)


AGES
EARLY MIOCENE (PART)
MIDDLE MIOCENE
LATE MIOCENE
PLIOCENE
PLEISTOCENE -HOLOCENE
STAGES (ITALY)
BURDIGALIAN
LANGHIAN
TORTONIAN-MESSINIAN
ZANCLIAN-ASTIAN
CALABRIAN & YOUNGER
FORMATIONS
ATLANTIC COAST
YORK-TOWN
WACCAMAW
N. W. FLORIDA
CHIPOLA
YELLOW RIVER
RED BAY
JACKSON BLUFF
MEXICO
ENCANTO
AGUEGUEXQUITE
COSTA RICA
MOÍN
NEOGENE ZONES (BLOW, 1969)
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Biorbulina bilobata
Cassigerinella chipolensis
Globigerina
borealis
bulloides apertura
bulloides bulloides
druryi decoraperta
juvenilis
nepenthes
Globigerinita
glutinata
uvula
Globigerinoides
bollii
conglobatus conglobatus
obliquus extremus
obliquus obliquus
quadrilobatus quadrilobatus
quadrilobatus sacculifer
ruber
subquadratus
Globoquadrina
altispira altispira
altispira globosa
baroemoenensis
conglomerata
dehiscens
dutertrei

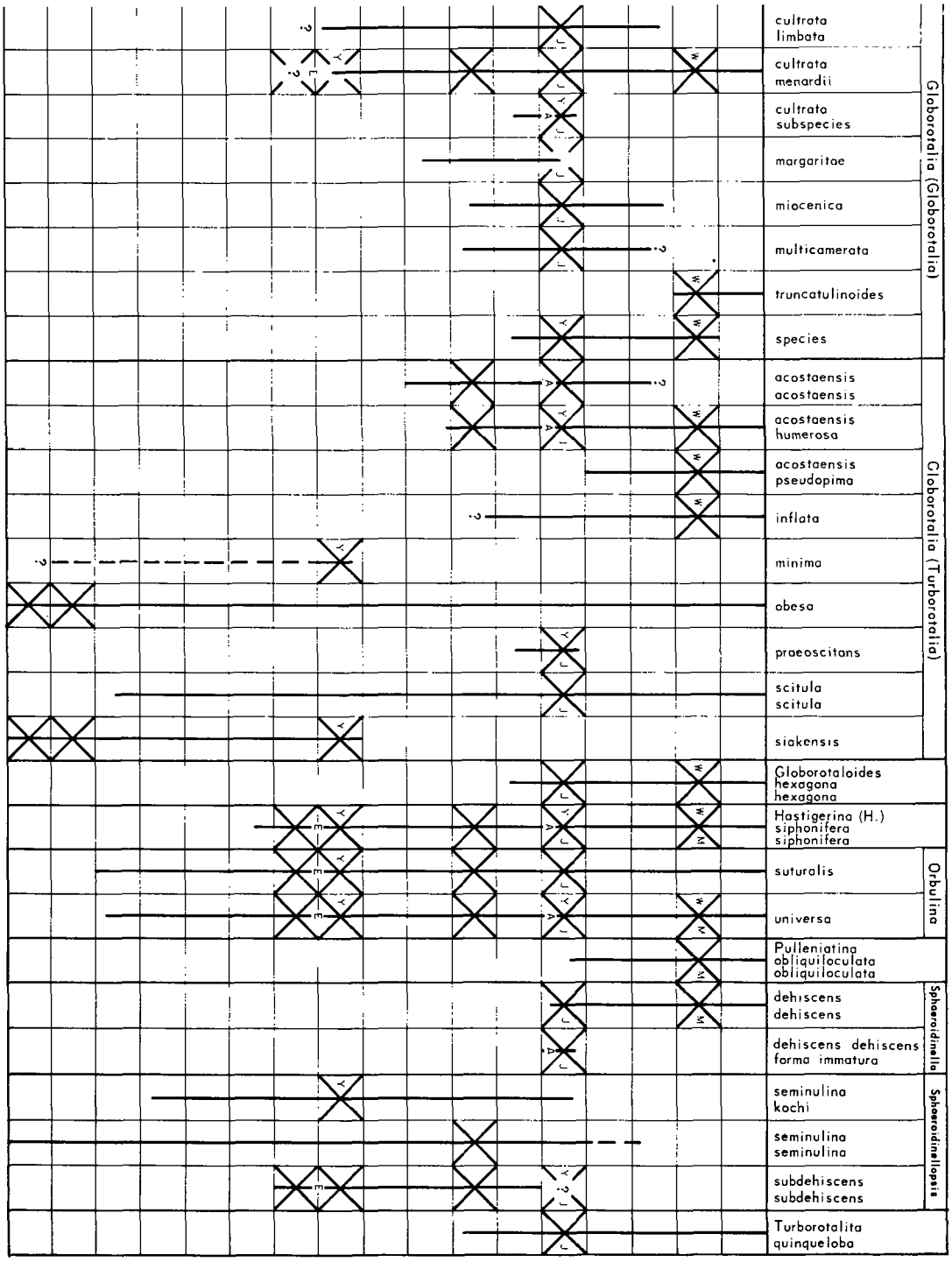


FIGURE 3

RANGE AND CHECK CHART

RANGES OF SOME PLANKTONIC FORAMINIFERA OCCURRING IN THE INTERVAL FROM EARLY MIOCENE (PART) TO RECENT AND CHECK CHART FOR THESE FORMS FOUND IN FORMATIONS OF THE ATLANTIC AND GULF COASTAL PLAINS. RANGES, ACCORDING TO VARIOUS AUTHORS, ARE IN ALPHABETICAL ORDER.

LETTERS (A, E, J, M, W, Y) INDICATE THOSE SPECIFIC FORMATIONS FOR WHICH THE TAXA ARE RECORDED WHERE TWO OR MORE FORMATIONS ARE ASSIGNED TO THE SAME ZONE, E.G., W FOR WACCAMAW AND M FOR MOÍN.