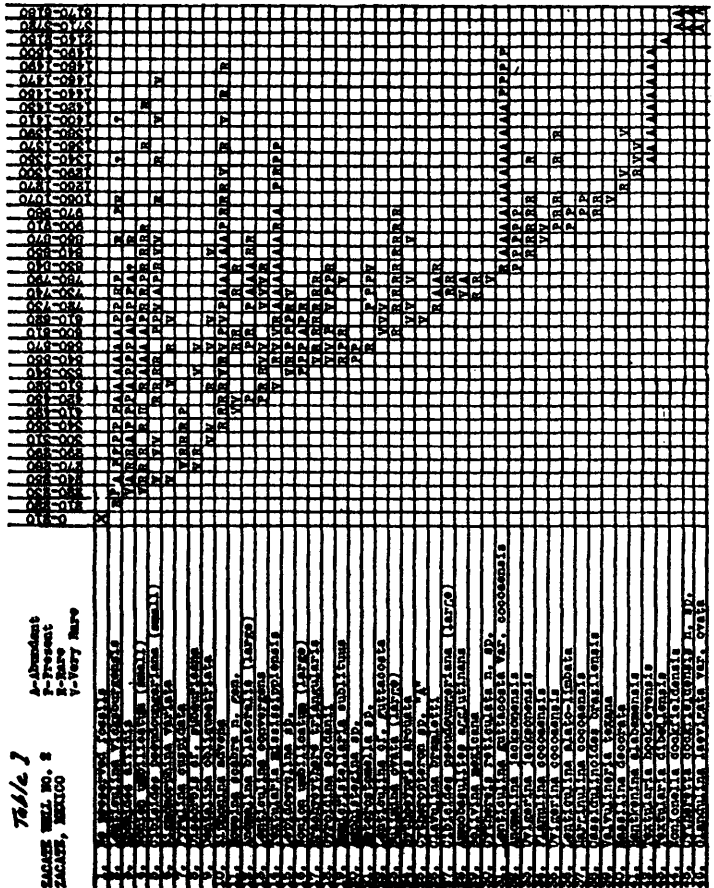


MICRO-FOSSILIFEROUS ZONES OF THE EOCENE-OLIGOCENE SECTION OF NORTHERN MEXICO-SOUTH TEXAS

R. W. Harris, H. L. Durgan, L. W. Calahan, *Norman, Oklahoma*

This paper is based upon an investigation of the stratigraphic range of microscopic fossils obtained from samples of the Zacate Well No. 2, located 50 mi. south of Laredo, Texas, near the town of Zacate, Mexico. Samples of cuttings were recovered at 10-ft. intervals from the surface to a depth of 6,180 ft. These samples were washed individually and the microscopic fossils, Foraminifera and Ostracoda, picked out and mounted; a separate slide for every sample. From this suite of slides a "first occurrence" range-chart was constructed, an abbreviated form of which is presented in Table I. The term "first occurrence" as used in this chart



indicates the stratigraphic position of first appearance of a given fossil as encountered by the drill and *not* its first appearance in the stratigraphic section. Accordingly, this so-called "first occurrence" chart actually indicates the stratigraphic position of disappearance of a given form by reason of change of environment at time of deposition or subsequent erosion.

The upper 210 ft. of the section involved contains no recognizable fossils. This section represents non-marine Frio member of the Oligocene? The first micro-fossiliferous zone recognized by the writers was encountered at a depth of 210 ft. It contains *Lenticulina vicksburgensis*, *Nonion umbilicatum* (small), and *Eponides affinis*. This zone marks the top of the Mint Springs member of the Vicksburg Oligocene. The second zone is characterized by the appearance of *Purulina cuspidata* and *Discorbis of subauricana*. This zone occurs within the Mint Springs member at 220 ft. The third zone includes *Anomalina bilateralis* (large) and *Lenticulina convergens*, marking the top of the Red Bluff member of the Vicksburg Oligocene at 420 ft. The zone of *Lepidocyclina sp.*, *Nonion umbilicatum* (large), *Brachycythere triangularis*, and *Hemicrstellaria sublituus* occurs within the Red Bluff at 540 ft. The zone of *Lenticulina guttacosta* and *Bulimina ovata* (large) occurs at a depth of 610 ft. near the base of the Red Bluff. The sixth zone of "first occurrence" at 830 ft. includes *Lenticulina guttacosta var cocoaensis*, *Discorbis jacksonensis*, and *Uvigerina jacksonensis*. Economic paleontologists consider this zone as marking the top of the Jackson Eocene or Whittsett member. The zone of *Margulina cocoaensis* and *Cassidulinoides brazilensis* occurs within the Whittsett at a depth of 970 ft. The eighth zone is marked by the first appearance of *Textularia hockleyensis*. This fossil, which occurred at depth of 1,340 ft., is one of the most widely known microscopic fossils of the gulf coastal section. It marks the top of the middle Jackson Eocene or McElroy member. The ninth zone is characterized by the "first occurrence" of *Textularia dibollensis*, the marker for the lower Jackson Eocene or Caddell member. This marker first occurs at a depth of 2,140 ft. The final zone presented in this section contains; *Nonionella cockfieldensis*, *Glandulina laevigata var ovata*, *Cytheretta cockfieldensis n. sp.*, and *Textularia dibollensis var dumbiei*. These fossils mark the top of the Cockfield Eocene at 3,710 ft.

From this information the following summary is presented:

Epoch	Age	Member	Depth	Thickness
		Frio	0 — 210	210
Oligocene	Vicksburg	Mint Springs	210 — 420	210
		Red Bluff	420 — 810	390
Eocene	Jackson	Whittsett	810 — 1340	530
		McElroy	1340 — 2140	800
	Glaiborne	Caddell	2140 — 3710	1570
		Cockfield	3710 — 6180	2470

The writers extend appreciation to George Boyle of Mission, Texas, for furnishing the well samples used in this study and to R. L. Denham of the King-Wood Oil Company for assistance in picking out and mounting the microscopic fossils.