

VOORTHUYSENIELLA (MICROPROBLEMATICA) FROM
THE SUBSURFACE EARLY NEOGENE OF THE
LOUISIANA CONTINENTAL SHELF

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Representatives of the genus *Voorthuy-seniella* Szczechura (1969) were discovered in ditch-cutting samples obtained from a well drilled in a nearshore East Cameron location on the Louisiana continental shelf. The section penetrated was the *Lenticulina macomberi* interval (= *Robulus* 43 interval of Gulf Coast terminology *sensu* Skinner and Steinkraus, 1972). The interval may be equated with the planktic foraminiferal zone N8 (Blow, 1969) of early Miocene age. One *Voorthuy-seniella* specimen was obtained from each of three samples in the 500 foot section examined. This report documents for the first time the Miocene occurrence of this problematic genus from the Gulf Coast area.

An alternating series of siltstones and fine grained sandstones characterises the penetrated section. This sequence yielded a rich and diverse (>50 species) foraminiferal fauna. The microfauna within this interval exhibited the following composition ranges: Textulariina 14-18%, Miliolina 3%, and Rotaliina 79-83%. The planktic constituent was reasonably stable throughout the interval and comprised an abundance range of 16-18% of the Rotaliina component. The microfaunal composition and character indicates a stable depositional environment characterized by middle to outer shelf (300'-600') paleobathymetries.

Although the poorly preserved specimens retrieved from this well bore preclude definitive assignment to any formal species group, some systematic relationships may be suggested. Until these relationships can be established, however, the present specimens are left in open nomenclature. Greek alphabet designations are used in this report due to the fact that since the first description of a *Voorthuy-seniella* specimen as *Lagena* - x by Voorthuysen (1949) authors have made free use of both alpha and numeric designations for specimens in open nomenclature (e.g., Keij (1970), sp.A, sp.B, sp.C; Haman (1978), sp.1, sp.2, sp.3). Repetition of these designations prove to be con-

fusing in any taxonomic treatment. Test orientation, morphologic terms and measurement terminology used in this article follows Haman (1978, fig. 2).

VOORTHUYSENIELLA sp. α
Plate 1, figs. 1-6

Description: Test free, unilocular, calcareous, imperforate, longer than high, almost as wide as high, slightly asymmetrical in side view (pl. 1, figs. 2, 6). Test widest at or just below the middle of the camera when viewed from either lateral aperture (pl. 1, figs. 1, 3); exhibiting symmetrical cameral inflation when viewed from above (pl. 1, fig. 4). Tubus generally flat but slightly raised towards both lateral apertures; widest at the middle, tapering slightly to either end (pl. 1, fig. 5). Porta elongate ovate (0.19mm \times 0.08mm), aligned in plane of greatest test length; set in depression (0.22mm \times 0.10mm) at top of camera (pl. 1, fig. 4). Tubus pore elliptical (0.08mm \times 0.04mm), situated midway between the lateral apertures and in line with them (pl. 1, fig. 5). Lateral aperture A circular to subcircular with cameral extension over the upper margin (pl. 1, fig. 1). Supra apertural flap visible above the cameral extension (pl. 1, figs. 1, 4). Lateral aperture B circular, surrounded by a rim, varying in width from 0.015mm to 0.032mm (pl. 1, fig. 3). Internal cameral structure not determined. Test surface rough and pitted, camera slightly smoother than tubus area.

Dimensions: Maximum length 0.38mm, maximum width 0.25mm, height 0.29mm.

Locality: Well cuttings sample 12, 790' (specimen illustrated on pl. 1, figs. 1-5); well cuttings sample 13, 180' (specimen illustrated on pl. 1, fig. 6); East Cameron area, offshore Louisiana.

Stratigraphic Level: Early Miocene, *Lenticulina macomberi* interval.

Remarks: These forms exhibit marked morphologic similarities to *Voorthuy-seniella griegi*, which has been reported from the subsurface Pleistocene of the Southwest Pass area (Haman, 1978), and from the early Holocene of Mudlum 90, Mississippi Delta area (Haman, 1981). If the present forms are conspecific with *V. griegi* a stratigraphic range extension for this species is indicated. Unfortunately, the preservation

of the Miocene individuals has resulted in the modification or obliteration of certain of the original morphocharacter configuration. This is particularly evident with the nature of the porta. The porta of *V. greigi* is subcircular to ovate, whereas in the present specimens it is distinctly elongate, which is probably the result of test dissolution. However, it is this discrepancy which precludes the definitive assignment of the present forms to *V. greigi*.

VOORTHUYSENIELLA sp. β
Plate 1, figs. 7-11

Description: Test free, unilocular, calcareous, imperforate, slightly longer than high, as wide as high, slightly asymmetrical in side view (pl. 1, fig. 8). Test widest around the middle of the camera when viewed from either lateral aperture (pl. 1, figs. 7, 9); displaying uniform cameral inflation when viewed from above (pl. 1, fig. 10). Tubus flat at center, around the tubus pore, becoming higher towards both lateral apertures (pl. 1, fig. 8). Tubus generally equidimensional, only slightly wider at A lateral aperture end (pl. 1, fig. 11). Porta elongate ovate (0.15mm \times 0.09mm), set in a bevelled depression (0.20mm \times 0.10mm) at top of camera (pl. 1, fig. 10). Tubus pore elliptical, irregular (0.12mm \times 0.06mm), situated between the lateral apertures and in line with them (pl. 1, fig. 11). Lateral aperture A subcircular with cameral extension over the upper portion (pl. 1, fig. 7). A thin flap present above the cameral extension (pl. 1, figs. 7, 10). Lateral aperture B circular, surrounded by a partially eroded rim approximately 0.01mm in thickness. Internal cameral structure not determined. Test surface pitted and rough, features which are more evident on the tubus than on the camera. Camera surface fractured.

Dimensions: Maximum length 0.35mm, maximum width 0.30mm, height 0.32mm.

Locality: Well cuttings sample 12,670', East Cameron area, offshore Louisiana.

Stratigraphic Level: Early Miocene, *Lenticulina macomberi* interval.

Remarks: This specimen is a problematic form insofar as it displays morphocharacters reminiscent of both *Voorthuyseniella baileyi*, reported from the early Holocene of Mudlump 90 (Haman, 1981), and from the subsurface late Pleistocene of offshore Texas (Haman and Kohl, 1976) and *V. greigi*. It is not possible however, due to the preservation, to assign this specimen to either of the established species with any certainty. It is conceivable that this specimen may represent an intermediate morphotype between *V. baileyi* and *V. greigi*. If this proves to be the case, and gradation does exist between these two species, *V. baileyi* would be the senior synonym of *V. greigi*, which would become a junior subjective synonym based on pagination in Haman (1981).

In the Gulf Coast province the genus *Voorthuyseniella* is present in Texas, Louisiana, Mississippi, and Alabama, where it stratigraphically ranges from the Eocene to the Modern (Haman, 1977, and this report). It is clear, however, that each new discovery of this genus confuses the systematic relationships between specimens and consequently complicates any taxonomic treatment of the group. This is perhaps only to be expected when the Linnean system of nomenclature is imposed upon an organism about which nothing is known concerning its life mode or its systematic position. Despite these problems it is necessary to document each new occurrence, as done in this article, in an endeavour to solve this problem eventually. Haman (1979) suggested that the general morphologic variation in shape of *Voorthuyseniella* specimens

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| Figs. 1-5 | <i>Voorthuyseniella</i> sp. α | Well bore sample 12,790' |
| Fig. 6 | <i>Voorthuyseniella</i> sp. α | Well bore sample 13,180' |
| Figs. 7-11 | <i>Voorthuyseniella</i> sp. β | Well bore sample 12,670' |
| Figs. 1, 7 | Views to lateral aperture A | |
| Figs. 2, 6, 8 | Side views | |
| Figs. 3, 9 | Views to lateral aperture B | |
| Figs. 4, 10 | Portal views | |
| Figs. 5, 11 | Views to tubus and tubus pore | |
- (Bar = 50 microns)

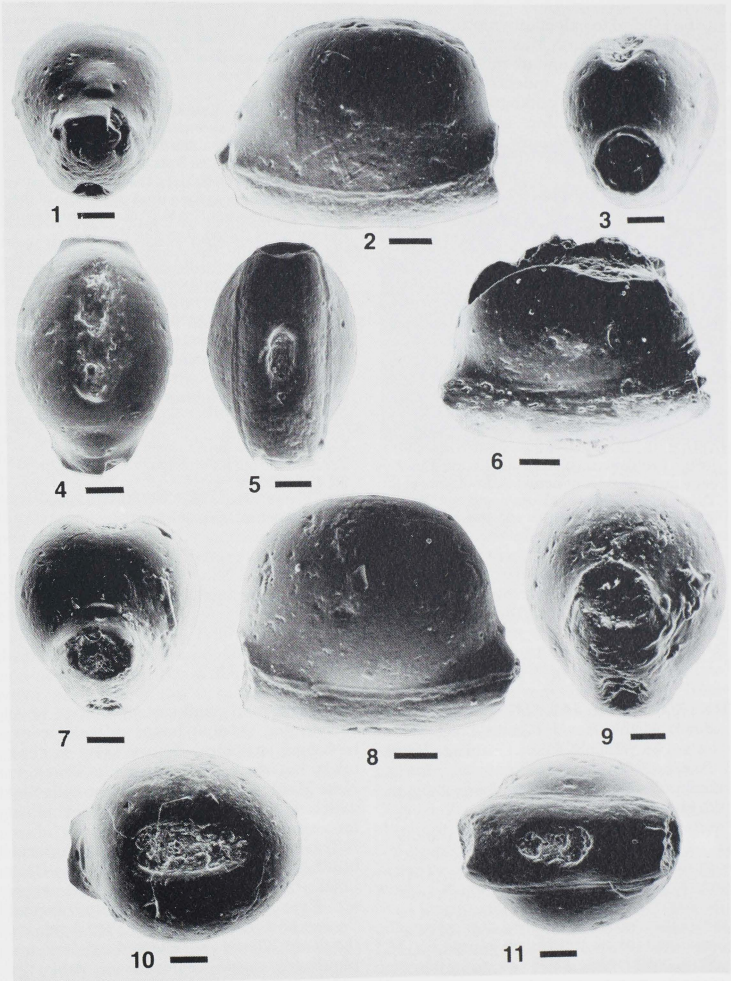


PLATE 1

may be related to paleobathymetric control. The new Louisiana Miocene forms described herein substantiate this concept.

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REVIEW

THE ROAD TO JARAMILLO: Critical Years of the Revolution in Earth Science, by William Glen. Published by Stanford University Press, Stanford, California, 1982, xix + 459 pp., 36 figs., 71 photographs, \$37.50

This book is the exciting story of the discoveries that produced Plate-tectonics Theory during the critical decade, 1957-1966. The author interviewed the important contributors to this theory and as a result is able to include personal relationships, the role of institutional support, rivalries and frictions between and within research groups and other human factors based on the recollections of the principal participants.

Many individuals, working on once seemingly unrelated problems of rock-dating, geomagnetic polarity reversals, deep-

sea cores, and seafloor spreading, have contributed to what has now become established structural theory. The volume takes its name from Jaramillo Creek in New Mexico where rocks were collected which when dated produced the evidence for a new polarity event.

This volume is divided into three parts, title I. *Building the Hourglass: Young-Rock Potassium-Argon Dating*, II. *Uncovering the Key: Geomagnetic Polarity-Reversal Scales*, and III. *Turning the Key: Applying the Scale*. These are followed by three appendices, notes, references, and the index.

Historians can be grateful that these human events have been recorded while still fresh in the minds of living individuals. It adds much to the understanding of twentieth century geology to have this record.

—H.C.S.