

# Jurassic Foraminifera from New Zealand

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## Summary

A small foraminiferal fauna from greywacke in an oil-prospecting well near Uruti, North Taranaki, includes *Lingulina evansi* Hornibrook, n.sp. closely related to *L. tenera* Bornemann of the Jurassic of Europe, indicating that the basement rock at Uruti is Jurassic like the rocks outcropping 40 miles to the north

## INTRODUCTION

In the course of oil exploration, the New Zealand Petroleum Company Limited drilled in September, 1943, an oil-prospecting well, "Uruti No. 1," in North Taranaki. The well was located beside Mangahia Stream at the end of a side road, 2.3 miles from the main road, Mimi Survey District, One Mile Series Sheet N 100, grid ref. 035069.

In the Company's report Uruti No. 1 well is logged as follows—

- 0–90ft.: Recent sand and clay.
- 90–725ft.. Silty and sandy micaceous mudstone of the Tongaporutu Formation (upper Miocene).
- 725–1070ft. Tuffaceous mudstone and grit with a thin limestone at the base; Mohakatino Formation (middle to upper Miocene).
- 1070–1173ft. Indurated mudstone and siltstone of basement (Hokonui System).

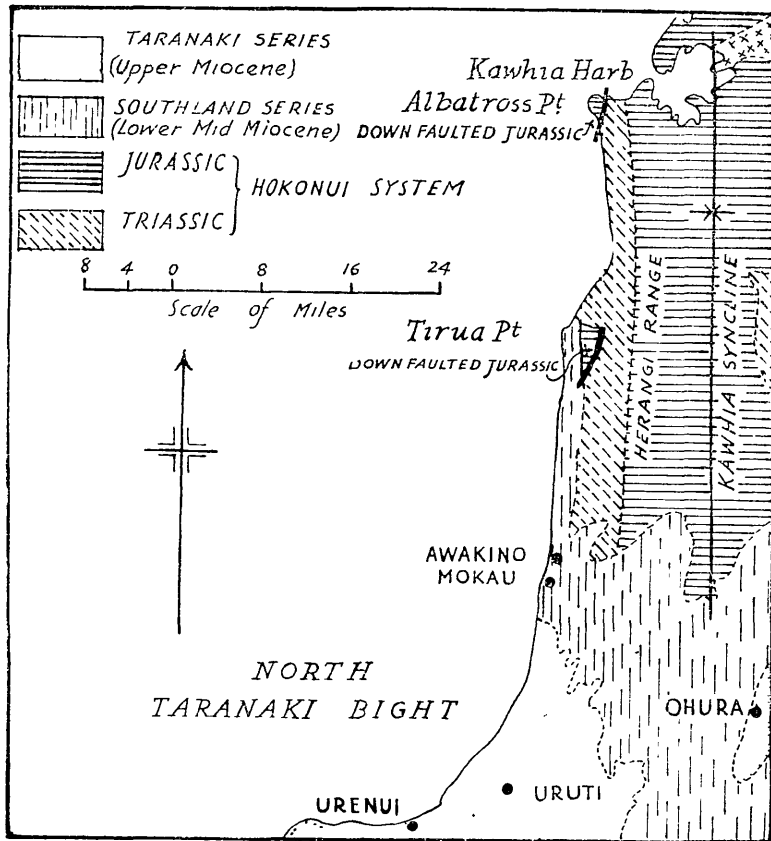
The well was abandoned after it had penetrated 103 feet of basement rocks.

The cores from the indurated basement rocks were examined for microfossils by the Company's micropaleontologist, Mr. H. J. Evans, who recognized a few calcareous Foraminifera in core No 3, 50 feet below the base of the Tertiary. These Foraminifera were deposited with the New Zealand Geological Survey (registered as F 7814) when the company ceased operations.

In the Company's report, core No 3 is described as five feet of indurated banded siltstone, mostly siliceous, with light coloured thin bands of calcite, tuff and mica. White and grey tuff occur sporadically. The core is interlaced with thin plates of calcite and where it is massive the fracture is angular.

The basement rocks at Uruti are probably an extension of Jurassic rocks down-faulted on the west limb of the Kawhia Syncline of indurated Triassic and Jurassic sediments (Text-fig. 1). Marwick (1946, p. 31 and Text-fig. 3) noted down-faulted rocks in Whareorino Survey District containing the Aratauran (Liassic) fossil *Otapiria marshalli* (Trechmann). About 15 miles further north, at Albatross Point, Mr. A. P. Mason, of Auckland War Memorial Museum, collected Jurassic fossils described by Marwick (in press). If a line joining these down-faulted rocks is extended southwards parallel to the axis of the Kawhia Syncline beneath the Tertiary cover, it passes close to Uruti.

The discovery of these few Jurassic Foraminifera gives ground for hope that microfossils will eventually help to subdivide the very thick beds of greywacke and argillite comprising the bulk of the main ranges in the North and South



TEXT-FIG 1.

Index map showing the relation of the Jurassic in Unit No 1 well to the Jurassic and Triassic rocks outcropping to the north

Islands, shown as undifferentiated Jurassic-Triassic-Permian on the Geological Map of New Zealand (N.Z. Geol. Surv. 1948).

#### DESCRIPTION OF THE FORAMINIFERA

**Astacolus** ? sp., Text-fig. 2, fig. 5.

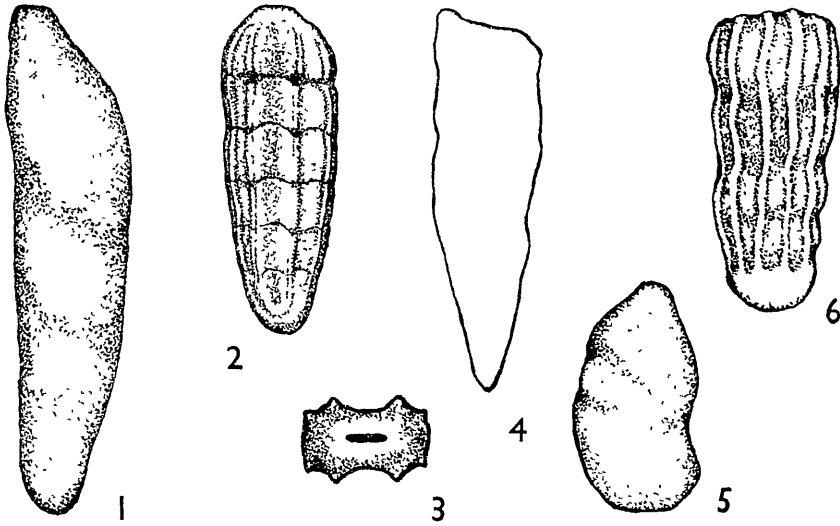
A single rather squashed, loosely coiled lagenid is identified tentatively as *Astacolus*

**Dentalina** sp., Text-fig 2, fig. 1

Three squashed specimens of a *Dentalina* have steeply sloping, obscure sutures and little tendency towards separation of chambers. The material is too poor to be worth a specific name. The writer has identified a similar *Dentalina* in thin section in a greywacke boulder with *Pseudancella* from Waunana Gorge, near Taneatua (Fleming, in press).

**Nodosaria cf prima** d'Orb., Text-fig 2, fig. 6

A single broken, rather squashed *Nodosaria* has inflated, short, stout, distinctly separated chambers and 10 strong vertical ribs, much resembling d'Orbigny's species, which is common in the Lias of Europe.



TEXT-FIG II.—Jurassic Foraminifera from New Zealand.  
(All Figs  $\times 90$ .)

FIG 1.—*Dentalina* sp. FIG 2.—*Lingulina evansi* Hornibrook, n.sp., holotype macrospheric.  
FIG 3.—*L. evansi*, holotype, apertural view. FIG 4.—*L. evansi*, paratype microspheric.  
FIG 5.—*Astacolus*? sp. FIG 6.—*Nodosaria* cf. *prima* d'Orb.

***Lingulina evansi* Hornibrook, n.sp., Text-fig 2, figs. 2-4.**

Test elongate and stoutly built, macrospheric form blunt initially with a globular proloculum, chambers increasing very slowly in width, sides subparallel; microspheric form sharply pointed and tapering initially; middle of test distinctly concave; four distinct costae running the length of the test with concave areas between; test suboctohedral in transverse section with ends squarely truncate; aperture a terminal, simple, elongate slit.

Holotype Length, 0.48 mm; width, 0.18 mm.; depth, 0.14 mm.

Named after Mr H. J. Evans, who discovered the Jurassic Foraminifera in Uruti No 1 Well.

Twelve specimens of this distinctive *Lingulina* were found. It is very like *L. tenera* Bornemann, but differs in its squarely truncated ends, which are carinate in the latter species. *Lingulina* of the *tenera* lineage is apparently confined to the Jurassic, and is especially characteristic of Lias microfaunas of Europe. It was described originally by Bornemann (1854) from the Lias of Gottingen in Germany and recorded subsequently by Klähn (1921), Franke (1936), and Bartenstein and Brand (1937) in the Jurassic of Germany where *L. tenera* and its varieties range from the Lias to the Dogger and Corallian (i.e., the whole of the Jurassic). Macfadyen (1941) did not find *L. tenera* above the Lias in Britain, but credited European records in the Middle and Upper Jurassic. Barnard (1950) recorded *L. tenera* and varieties from the lower Lias of Britain.

The earliest previous record of *Lingulina* in New Zealand is from the Raukumara Group of the Clarence Series (Albian-Cenomanian) in the North Island which contains the earliest members of the *Lingulina pygmaea* Reuss lineage (Finlay and Marwick, 1940, p. 103). *Lingulina* of the *tenera* lineage has not been found previously in New Zealand.

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