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Geology and Paleontology of Soldado Rock, Trinidad (West Indies)

Part 1: Geology and Biostratigraphy¹⁾

By HANS G. KUGLER²⁾ and C. M. BRAMINE CAUDRI³⁾

ABSTRACT

The little islet called Soldado Rock, off the Southwest tip of Trinidad, is but a Paleocene and Eocene olistostrome mélange in Miocene turbidites. Compared with the former interpretation of the stratigraphic sequence of beds (KUGLER 1938), showing a gap between Paleocene and Late Eocene rocks, there is now clear evidence also of the presence of the Lower Middle Eocene (or very high Lower Eocene = Boca de Serpiente Formation), and of the Lower Upper Eocene.

Soldado Rock is the type locality of 11 Smaller Foraminifera, 20 Larger Foraminifera, 54 mullusks, 2 brachiopods, 3 echinoids and 5 ostracods.

In the paleontological part of this monographic study¹⁾ forty-nine species and varieties of Larger Foraminifera from the Paleocene, early Middle Eocene and Upper Eocene of the Soldado Rock are described, ten of them new: *Operculinoides trinitatis* var. *granulata*, *Operculinoides spiralis*, *Neodiscocyclina mauryae*, *Asterocyclina soldadensis*, *Amphistegina undecima*, *Amphistegina pauciseptata*, *Amphistegina grimsdalei*, *Lepidocyclina peruviana* var. *nana*, *Lepidocyclina pustulosa* var. *compacta* and *Lepidocyclina spatiosa*. Special attention has been paid to the stratigraphical significance of *Helicostegina soldadensis* GRIMSDALE [here renamed *Helicosteginopsis soldadensis* (GRIMSDALE)] and to the fauna and general nature of the Boca de Serpiente Formation, which at the moment is known only from this islet, in the form of a remnant slump mass. The recognition of heavy reworking in the upper part of the section has changed older ideas about the vertical range of several of the species described before.

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¹⁾ Part 2: “*The Larger Foraminifera*” will appear towards the end of this year, in *Eclogae geol. Helv.*, Vol. 68, No. 3.

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Introduction

The Soldado Rock stands sentinel in the strong tidal currents of the shallow Southern passage, called the Serpent's Mouth, between Trinidad and the South American mainland, about 10 kilometers West of Columbus Bay on the Cedros Peninsula.

The Rock comprises an area of about 6500 square meters. From its Northern point, which carries the trigonometrical signal, and which is 36 meters above sea level, one can see the flat Pedernales area at the Northern end of the Orinoco delta. The coordinates of this point are: Latitude 10° 04' 24", Longitude 62° 00' 56". To the South of the highest point there follows a saddle of softer beds and then another, lower, elevation. During the breeding season the intruder is greeted by the shrieks of terns and other guano producing birds. The guano and its resulting phosphate of lime cover the island from the top to the high-water level.

Though Amerindians, and later on fishermen of Trinidad, regularly collected eggs during the breeding season of the terns, one cannot expect anyone to visit the inhospitable Soldado Rock excepting biologists, surveyors and geologists. The first geologist to have visited Soldado Rock known to us was V.C. Veatch, whose collection of fossil shells, together with some stratigraphic details, was described by MAURY in