Zeitschrift: Eclogae Geologicae Helvetiae
Herausgeber: Schweizerische Geologische Gesellschaft
Band: 68 (1975)
Heft: 2

Artikel: Geology and paleontology of Soldado Rock, Trinidad (West Indies). Part I, Geology and biostratigraphy
Autor: Kugler, Hans G. / Caudri, C. M. Bramine
Kapitel: G: Annotations to the distribution chart
DOI: https://doi.org/10.5169/seals-164394

K.2650(D-5), marly clay with abundant Smaller Foraminifera; Larger Foraminifera very rare
K.1316(D-5), calcareous silt with a very rich Larger Foraminifera fauna and relatively few Smaller Foraminifera
K.3741(D-5), marl with few Smaller Foraminifera and very rare Larger Foraminifera
P.J.1162(D-5), marl as P.J.1146 and P.J.1147, but fauna characterized by the relative abundance of Miliolids, *Glandulina* and *Haplophragmoides*

Blocks of unknown origin in Bed 4

K.3676(F-3), amongst other blocks: fine-grained dark-coloured crystalline limestone
K.10714(B-3), barren quartzitic sandstone
Cd.24(G-3), recrystallized coral limestone
K.S.27(G-3), barren silt nodule with orientated dark organic or crystalline elements

G. ANNOTATIONS TO THE DISTRIBUTION CHART

(see plate II)

1. In 1938, KUGLER added to his sample numbers the letter "b" or "B" in order to distinguish them from a set of duplicate field numbers from a totally different area. VAUGHAN & COLE (1941) reproduced KUGLER's map *with* this additional "B", but throughout the text the letter was omitted. We have done the same here (also on the map) but with one exception: K.2951B (Bed 4) is distinct from K.2951 (Bed 3).

2. In the chart, the order of the various beds is chosen not in accordance with their position in the field but with the age determination of the fauna they contain. Bed 11 is inserted between the Paleocene and the Upper Eocene; Bed 10 is considered as the fully developed deeper-water version of the transgressive Bed 4 and is followed by the younger sequence of Beds 5 to 9a.

Within each bed, the samples are arranged roughly in stratigraphical order, that is: from South to North for Beds 2 and 3, 7 to 9, and 10 and 11. For the chaotic deposit of Bed 4 and for Bed 9a, which latter was belatedly recognized as a separate unit and was not as consistently measured in the field as the rest, the sequence was chosen in a rather arbitrary way, from NW to SE, at right angles to the strike which is more or less parallel to the shore line.

3. The stratigraphical position of K.S.25 is uncertain. Lithologically, the sample is quite different from any of the others; only the possible presence of Dasyclad algae would hint at a Paleocene age.

4. Reworking of older forms into the Upper Eocene is not just a surmise: it is clearly demonstrated in samples such as K.10716 and Rz.250, where the derived specimens are strikingly different in colour and preservation from the autochthonous fauna, both in the Larger and in the Smaller Foraminifera.

No reworked Larger Foraminifera have been observed in sample K.3677 (Bed 10), but the planktonic forams are mainly Middle Eocene.

For convenience, the non-foraminifera are all entered in the chart as "autochthonous". In reality, also these groups are a mixture of older and younger forms.

5. The faunas in samples K.3689, 3691, 3693 and 3696, as marked in the chart, are incomplete. Only the species mentioned by VAUGHAN & COLE for these localities have been entered; we had no duplicate material in our own collection.

6. The "very small *Neodiscocyclina*" of K.9454 (no. 7 in the chart) is in all probability *N. barkeri*, but identification of the specimens in this hard rock remains speculative. Also the common specimens listed as *N. barkeri* for K.10701 seem really to belong to that species, although these forms are abnormally small. On the other hand, the "very small *Neodiscocyclina*" in K.10712 (one vertical section, in hard limestone) does not necessarily represent that same species.

7. The abundant *Amphistegina* in the hard limestone Rz.247 (Bed 4) is presumably *A. grimsdalei* (no. 49), but identification is based on random sections only.

8. "Smaller Foraminifera" (no. 2) include benthonic and planktonic forms, also Globigerinidae et al. in general. Only where this latter group occurs in excessive quantities is it listed separately as "Globigerinidae s.l." (no. 14). Globigerinidae also flood the assemblage of Smaller Foraminifera in some of the pockets of the Athecocyclina reef limestone, which locally are lacking in Larger Foraminifera and are therefore omitted in the chart (P.J.1159, 1160; Cd.21).

The composition of the Smaller Foraminifera assemblages is highly variable. Miliolidae are locally common in the Ranikothalia limestone (K.10701, 10708; pebble in K.2951B), in Bed 11 (K.10712, 10719), in Bed 4 (Rz.247) and in the Asterocyclina marl, Bed 9a (P.J.1162, together with *Glandulina* and *Haplophragmoides*). Textulariidae s.l. may also be common in the Ranikothalia limestone (K.10701) and predominate in some of the samples of Bed 11 (K.10709, 10712). *Robulus* is a conspicuous genus in J.S. 1955 (Bed 11) and in several samples from the Asterocyclina marl (P.J.1146, 1147 and 1162). *Bulimina jacksonensis* was spotted in Bed 3 (K.2950), in Bed 10 (K.3677), in Bed 7 (K.2954, in combination with *Hantkenina alabamensis*) and in the Asterocyclina marl (K.1316, P.J.1162).

9. The Soldado section comprises three conspicuous mollusk horizons: in Bed 2, at the top of Bed 10 and in the upper (northern) part of Bed 11. As a rule, such shell banks do not contain a representative foraminiferal fauna, though in Bed 10 both megafossils and microfauna occur sometimes together.

In the foraminiferal samples listed in the "Distribution Chart", the mollusks (no. 4) are in general represented by fragments of medium-sized shells and a multitude of very small to microscopic forms. Rich agglomerations of tiny shells of both pelecypods and gastropods are, for instance, found in Bed 11 (K.10709, 10721, 10722; E.L.1440), in Bed 10 (K.10707), in Bed 9 (K.1499) and in the Asterocyclina marl (K.1316, 2651, 2854; the samples P.J.1146, 1147, 1161 and 1162 contain, in addition, innumerable minute "seeds" of either mollusks or ostracods, or both.)

H. CONCLUSIONS: THE GEOLOGICAL HISTORY OF SOLDADO ROCK

The Soldado section, in which Jacksonian Upper Eocene lies sandwiched between the Paleocene and beds carrying an early Middle Eocene fauna, has for a long time presented a confounding enigma.

The age of the Soldado Formation (Beds 1 and 2) has been firmly established as Paleocene by MAURY's mollusk fauna in Bed 2 and by the Larger Foraminifera in the remains of the disintegrated foraminiferal deposits which must once have covered those shell limestones. As for the stratigraphical sequence of these denuded Paleocene