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REISSELLA RAMONENSIS GEN. NOV., SP. NOV. (FORAMINIFERA) FROM THE CENOMANIAN OF ISRAEL*

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ABSTRACT

Reissella ramonensis gen. nov., sp. nov., a foraminifer from the Upper Cenomanian of Israel, is described and illustrated.

INTRODUCTION

During a general study of the imperforate foraminifera from Cenomanian-Turonian strata of Israel, a new genus, probably belonging to the Peneroplidae, was recognized. It is herein described as *Reissella* gen. nov. (type-species *R. ramonensis* gen. nov., sp. nov.).

SYSTEMATIC DESCRIPTION

Family ? Peneroplidae Reuss, 1860
Genus *Reissella* Hamaoui, gen. nov.
Pl. 1, Figures 1-13; Text-figure 1

TYPE-SPECIES (designated herein): *R. ramonensis* Hamaoui, sp. nov.
DERIVATION OF NAME: in honour of Dr. Z. Reiss, Head of Palaeontology Division, Geological Survey of Israel

Test free, planispiral, involute in the early stages and sometimes uncoiling in the later ones. Wall structure calcitic microgranular, possibly originally porcellaneous (cryptocrystalline). The chambers are incompletely subdivided by three sets of subepidermal plates. Two of these sets are vertical interseptal, radially arranged and mostly in alignment from one chamber to the next. They are here referred to as "primary vertical subepidermal partitions" (*Pp* on Text-figure 1). These partitions are the largest but do not reach the middle of the chamber; and "secondary vertical subepidermal partitions" (*Sp* on Text-figure 1) which are parallel to the former, but are much shorter, being fairly regularly spaced between every two primary partitions. The third set of subepidermal partitions referred

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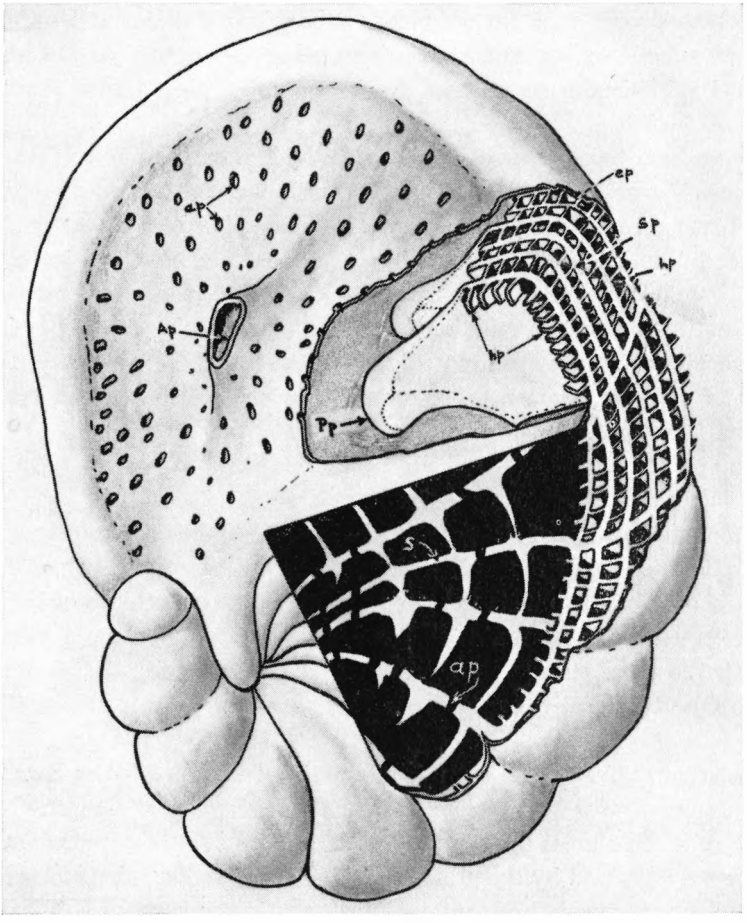
to here as "horizontal partitions" (*hp* on Text-figure 1) are situated normal to the primary and secondary subepidermal partitions, and to the test walls. They do not reach deeper than the secondary subepidermal plates and occur also in the marginal zone of the septal face (there being also normal to the latter). The three sets of subepidermal plates form a regular pigeon-hole (honey-comb) pattern.

There are two types of areal apertures: a main aperture (*Ap* on Text-figure 1 and Plate I, Figure 12) and a set of multiple and smaller, supplementary apertures (*ap* on Text-figure 1 and Plate I, Figure 12). The main aperture, which is slit-like to rounded elliptical, is surrounded by a short neck. It is interio-areal, situated near the base of the septal face in early stages, gradually becoming more centrally located until it lies in the middle of the septal face in the adult chambers. The supplementary apertures are situated all over the septal face, except in the "marginal zone". The supplementary apertures thus occur also between the primary interseptal partitions.

Remarks

The systematic position of *Reissella* is not clear due to the uncertainty with regard to its wall-structure. If the wall structure was indeed originally porcellaneous, *Reissella* should be attributed to the Peneroplidae. The occurrence of both a main and supplementary apertures, as well as of subepidermal horizontal plates which are parallel to the septa are, however, unusual characters for a Peneroplid; these characters (and especially the plates parallel to septa) are rather "lituolid" (Smout, 1963).

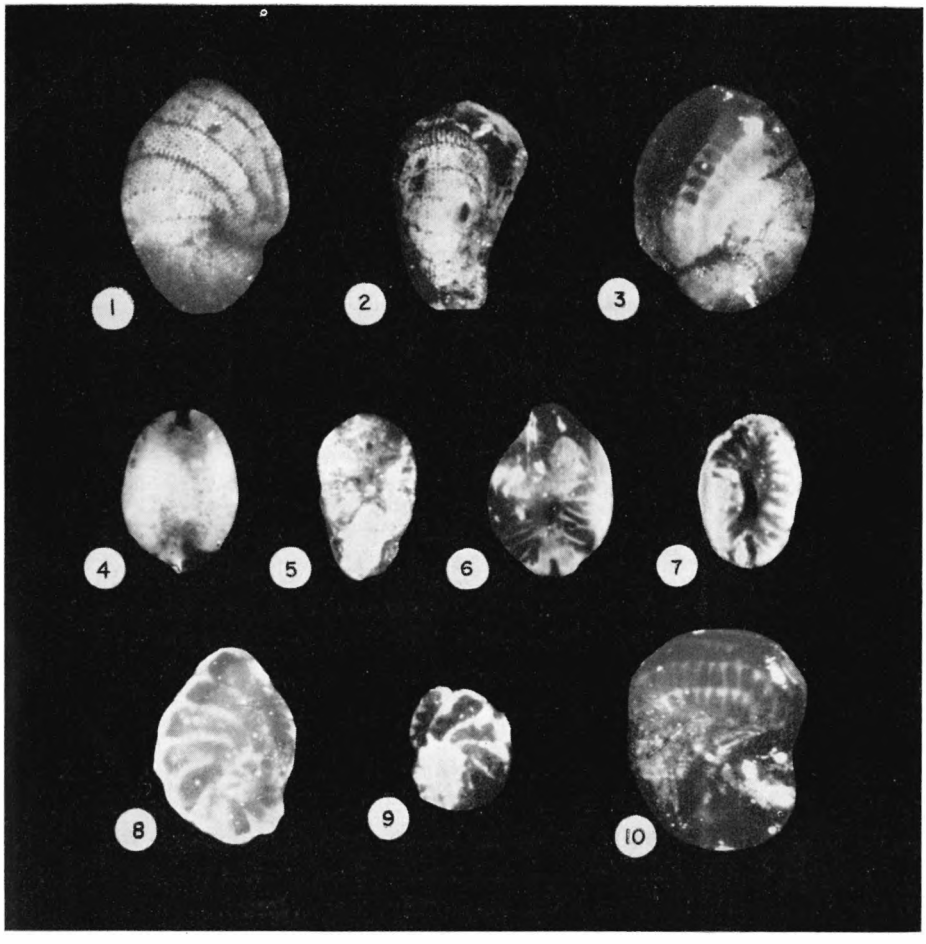
Reissella gen. nov. differs from *Rhapydionina* and *Rhipidionina* Stache, 1912, from *Praerhapydionina* van Wessem, 1943, and *Coskinolinoides* Keijzer, 1942 by the presence of a main areal aperture accompanied by a set of supplementary ones on the septal face, and by the presence of secondary radial subepidermal vertical partitions together with horizontal ones. These characters also differentiate it from *Sornayina* Marie, 1960 and *Taberina* Keijzer, 1945 which possess, unlike *Reissella* gen. nov., a set of interseptal central buttresses ("pillars"), as well as from *Orbitolinopsis* Silvestri, 1932, emend. Henson 1948 which have a central reticulum. *Pseudolituonella* Marie, 1954, emend. Reiss 1959 differs from *Reissella* gen. nov. by having interseptal irregular buttresses, by being completely devoid of subepidermal partitions, and by its trochospiral early stage. *Dictyoconella* Henson, 1948 differs from *Reissella* gen. nov. by the presence of a labyrinthic central zone and by its alternating subepidermal partitions. The "lituolid" (Choffatellinine) genera which resemble in some respects *Reissella* gen. nov. have usually more irregular subepidermal partitions and no areal, central aperture accompanied by supplementary ones.

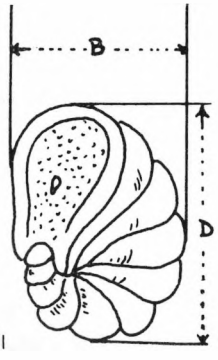


Text-figure 1

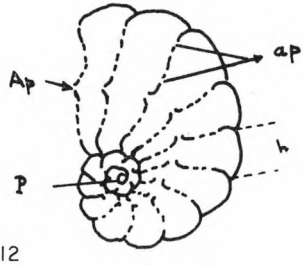
Reissella ramonensis Hamaoui, gen. nov., sp. nov.
Schematic reconstruction to show internal structure. *ep*-epidermis; *Pp*-primary vertical subepidermal partitions; *Sp*-secondary vertical subepidermal partitions; *S*-septum; *Ap*-main aperture; *ap*-supplementary aperture; hp- horizontal subepidermal partitions.

PLATE 1

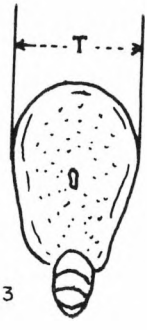




11



12



13

LEGENDS TO FIGURES

PLATE I

Figures 1—10

Reissella ramonensis Hamaoui, gen. nov., sp. nov.
Unnamed clays in Judea Limestone Group, of late Cenomanian age. Makhtesh Ramon (Nahal Hava), Negev, Israel. GSI No. 17886.

Figures 1 and 3. Holotype. Lateral views (specimen's side shown on Figure 3 has been prepared to show internal structure). Figures 2,4 — 10. Paratypes. Figure 2. Posterior edge view. Figure 4. View of septum showing multiple supplementary apertures (foramina) and main aperture (foramen) in lower part of photo. Figures 5—6. View of septum with main aperture (foramen) and subepidermal vertical partitions. Figure 7. View of primary and secondary vertical partitions showing thickening at inner ends. Figures 8—9. Horizontal sections showing apertures. Figure 10. Horizontal oblique tangential section showing subepidermal vertical partitions and apertures (foramina) 40x.

All specimens are preparations, embedded in Canada balsam.

Figures 11—13

Reissella ramonensis Hamaoui, gen. nov., sp. nov.
Schematic drawings.

Figure 11. Oblique, lateral view showing apertural face with main and supplementary apertures. Figure 12. Equatorial section showing main and supplementary apertures and foramina (note migrating position of main aperture). Figure 13. Front view showing septal face with main and supplementary apertures. B-breadth; D-diameter; T-thickness Ap-main aperture; ap-supplementary apertures; h-height of chamber; P-proloculus.

Reissella ramonensis Hamaoui, sp. nov.

Plate 1, Figures 1-13; Text-figure 1

HOLOTYPE: Plate 1 Figures 1 and 3. GSI, Palaeontology Division No. 17886.

PARATYPES: 35 isolated specimens (figured specimens Plate 1, Figures 2, 4-10).

REPOSITORY: Geological Survey of Israel, Palaeontology Division, Jerusalem, and The Hebrew University, palaeontology collection, Jerusalem.

DERIVATION OF NAME: From Makhtesh Ramon, Negev, Israel.

TYPE-LOCALITY: Makhtesh Ramon (Nahal Hava) Negev, Israel. Coordinates 1322/0055, sample no. R. 158 at 11.90 m depth of marble exploration bore-hole no. 4 drilled by the Israel Geophysical Institute (GSI No. 17886).

TYPE LEVEL AND AGE: Unnamed clays of Judea Limestone Group, about 4 metres above strata bearing *Praealveolina iberica* Reichel and *Pseudedomia* sp.; Upper Cenomanian.

MATERIAL EXAMINED: 4 random sections, 15 oriented thin-sections, 46 dissected preparations and more than 100 isolated specimens.

DESCRIPTION: Generally as for the genus. The test is usually bilaterally symmetrical, the sutures are depressed and recurved. Whenever partly devoid of the thin epidermis, worn tests show the distinct pigeon-hole (honey-comb) superficial pattern. The coiling is planispiral, involute in the early stages and becomes often uncoiling in later

stages. Periphery rounded, chambers rapidly increasing in size. The central zone of the septal face is usually convex around the main aperture. The primary and secondary partitions are usually in alignment from one chamber to the next and spaced at regular intervals. A few specimens were observed in sections where the primary partitions seem to be arranged in an alternating mode. In these cases the alternation has not been found to be a constant character between all the chambers and seems to be due either to inner bifurcation or deviations of the partitions, to an abnormal arrangement of one or two chambers in the test, or to the presence of a supplementary slightly shorter primary subepidermal partition. The primary subepidermal partitions are thicker and shorter at their distal ends, than at their proximal ones (at the lines of insertion below the epidermis). The horizontal subepidermal partitions are arranged in an alternating mode between both the primary and the secondary vertical subepidermal partitions. These horizontal plates are either parallel or normal to the septal face according to their position: within the marginal zone of the septal face they are perpendicular to it, while in the lateral and peripheral walls they are more or less parallel to the septa. The shape of the interioareal to central, main aperture, generally corresponds to the outline of the septal face, being rounded to elliptical. The main aperture is about one-tenth the size of the septal face, and possesses a small neck. The multiple, supplementary apertures are much smaller than the primary one and are rounded to elliptical. The proloculus of *Reissella ramonensis* gen. nov., sp. nov., as far as observed up to now is devoid of any "canal flexostyle". It is spherical and has an average diameter of 0.034mm. The flat forms have an average proloculus diameter of about 0.015mm (being probably the microspheric generation).

R. ramonensis displays a certain variation in the shape of the test from subcylindrical to flattened and flabelliform. Since these forms differ only in their external morphology and are found in the same assemblage, they are considered to belong to the same species. The flattened forms are much rarer than the cylindrical, often uncoiled ones and it was not possible for the time being to measure with accuracy the proloculi of a sufficient number of specimens. It seems probable that *R. ramonensis* is trimorphic.

MEASUREMENTS (IN MM)

Diameter (D)	0.83 to 0.032	(holotype: 0.76)
Breadth (B)	0.64 to 0.024	" 0.61
D/B	0.13 to 1.29	" 1.24
Average thickness of chambers (T)	0.37	
Nr. of chambers per whorl in completely spiral specimens	10 apprx.	
Nr. of chambers per whorl in uncoiled specimens	15 apprx.	
Average number of coils seen in equatorial section	2.5	

Average height of chambers (h)	0.071	0.054
Measured length (depth) of primary partitions (*Pp*)	0.03 to 0.089	
Average diameter of supplementary apertures	0.001 to 0.008	
Greatest measured "width" of main aperture (*Ap*)	0.032	
Greatest measured proloculus	0.048 (average: 0.034)	

In the holotype the number of primary vertical partitions per adult chambers is about 20 and the number of horizontal subepidermal partitions is 4 to 8 between consecutive septa (and adjoining vertical subepidermal partitions).

Occurrence

At the type-locality, *Reissella ramonensis* gen. nov., sp. nov. occurs associated with Textulariidae, *Valvulammina picardi* Henson, *Cuneolina* and *Dicyclina* spp., *Pseudolituonella reicheli* Marie, *Pseudochrysalidina* cf. *conica* Henson, *Nezzazata simplex* Omara, *Cribrostomoides* sp., Miliolidae, *Spirolina* sp., *Rhapydionina* sp., *Rhipidionina*?sp., *Taberina* sp., *Pseudedomia* sp., alveolinid gen. indet., Ostracoda, Charophyta, etc.

Reissella ramonensis occurs furthermore in Wadi Dimona (Negev), bore-hole no. L3 drilled for ~~marble~~ phosphate exploration (GSI, no. S-5882-II), and near Bi'na village (Galilee; GSI, no. S-6097), in strata considered of Late Cenomanian age (Shadmon, 1959) and associated among others with *Cisalveolina fallax* Reichel, *Cycledomia iranica* (Henson), ? *Oligostegina* sp., gastropoda and rudist fragments.

ACKNOWLEDGEMENTS

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