

# ON THE OCCURRENCE OF NEOTROCHOLINA IN TURKEY

T. F.J. DESSAUVAGIE

*Mineral Research and Exploration Institute of Turkey*

## INTRODUCTION

During the examination of samples collected by K. Nebert in NE Turkey and by M. Çetinçelik in the region of Bursa, specimens of the genus *Neotrocholina* were encountered, which was described first from the Upper Jurassic and Lower Cretaceous strata in Switzerland (M. Reichel, 1955).

Inasmuch it is the first time that *Neotrocholina* is mentioned from Turkey, it should be useful for a better understanding of the geographical repartition of this genus.

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## DESCRIPTION OF SPECIMENS

As previously explained and discussed by M. Reichel (1955), the test of *Neotrocholina* is built up of calcite and shows a hyaline-radial structure. In contrast with *Trocholina*, which is generally recrystallized, the structural features may clearly be observed in *Neotrocholina*. Reichel pointed out that the hyaline-radial structure may not be restricted to *Neotrocholina*, the real structure of the test of *Trocholina* still not being well known.

Although *Trocholina* is believed to be connected to the *Involutina*-group (C. A. Wicher, 1952), the structure of *Neotrocholina* resembles more *Conicospirillina basilienses* Mohler.

Genus *Neotrocholina* REICHEL, 1955

*Neotrocholina valdensis* Reichel var. 1

*Neotrocholina valdensis* Reichel var. 2

*Neotrocholina* aff. *infragranulata* Noth

General form of the test, conical, with a flat base. Apical angle varying between 70°-120°. A second undivided tubular chamber coils spirally down from the proloculum with approximately five volutions. Surface of the conical side and base rippled. This is caused by the growth of calcite fibres, perpendicular to the surface. Slightly convex base, consisting of the last spiral-whorl and a pillar-bundle, in the central part of the test.

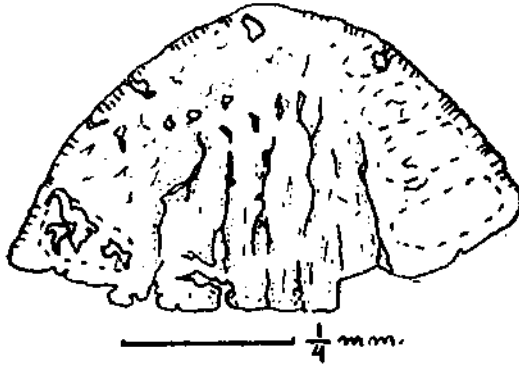


Fig. 1 - *Neotrocholina infragranulata* Noth.  
Axial section.

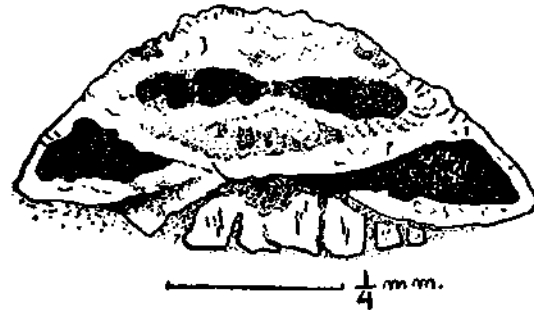


Fig. 2 - *Neotrocholina valdensis* Reichel.  
Section parallel to the axis, showing inner  
structure of two whorls.

In our collection, five different forms have been observed :

- a. Form with a low conical side, resembling Reichel's holotype (Text-fig. 2; Pl. I b, c).
- b. Larger forms with low conical side. Diam. 1.00 mm, height 0.51 mm (Text-fig. 3; Pl. I d).
- c. Forms with a hemispherical dorsal side. Diam. 0.70 mm, height 0.42 mm (Text-fig. 1; Pl. I a).
- d. Forms with a high conical side. Diam. 0.45 mm, height 0.27 mm (Text-fig. 4, 6; Pl. II a, 6, c, d, f).
- e. Larger forms with a high conical dorsal side. Diam. 0.71 mm, height 0.45 mm (Text-fig. 5; Pl. II e).

Unfortunately we have not enough material at our disposal to decide on the taxonomic significance of these individual variations.

Reichel's re-examinations of *Trocholina infragranulata* Noth show that this species may belong to *Neotrocholina* because of its hyalo-radial wall-structure. Its typical characteristic, the hemispherical dorsal side, is found also in one of our specimens (Text-fig. 1), which shows a faintly developed pillar-bundle. Our sections through the spiral-chamber are not distinct, because of the strong recrystallization of the chamber's filling-material.

Text-fig. 2 shows clearly two whorls with a triangular profile in a section parallel to the axis.

Reichel (1955) suggested that his larger forms of *Neotrocholina* may represent the microspheric generation. Our large specimen (Text-fig. 3) shows a form-ratio similar to that of the smaller specimens. Our axial section does not intersect the proloculum; that seems to indicate its very small size. The same figure shows clearly the parallel pillars of the central part of the test. Corrosion along fissures accentuates the regular forms and direction of these pillars perpendicular to the basal plane. When the corrosion is stronger, the double structure of the test becomes visible.

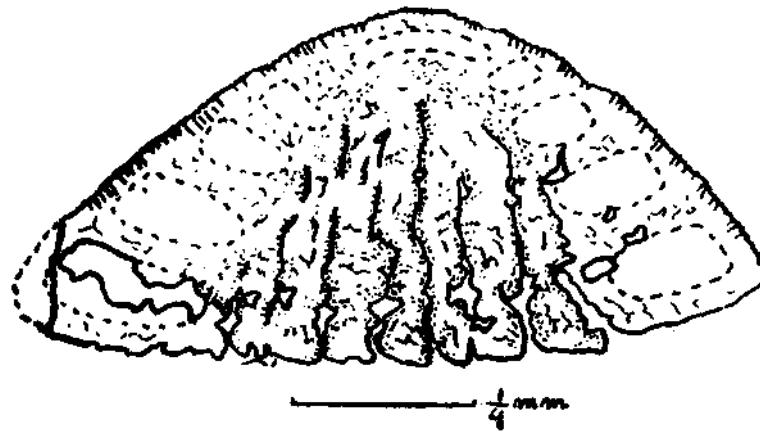


Fig. 3 - *Neotrocholina valdensis* Reichel.  
Axial section of a large specimen, pillar-bundle clearly visible.

The specimen shown in Text-fig. 4 has a pillar-bundle, which is clearly more leached than the spiral-chamber wall. This fact suggests that, although both parts are made of the same material, the calcite possesses a different structure in each case.

Another notable feature caused by the weathering (Text-fig. 5) is the presence of holes in the pillar-bundle along three parallel lines. They probably indicate a structural feature, corresponding to some process during the growth of the test.

Among the smaller forms of *Neotrocholina* with a high spiral we found one completely calcified specimen (Pl. II c). The several sections of the spiral chamber of this specimen are rather rectangular, instead of triangular, as it is normally observed in *Neotrocholina*. This fact may be due to phenomena of recrystallization.

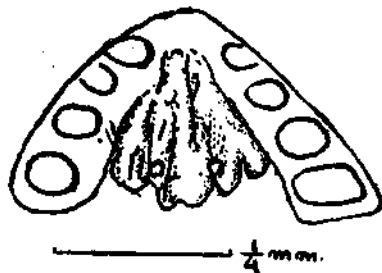


Fig. 4 - *Neotrocholina valdensis* Reichel.  
Weathered specimen, showing double structure of the test.

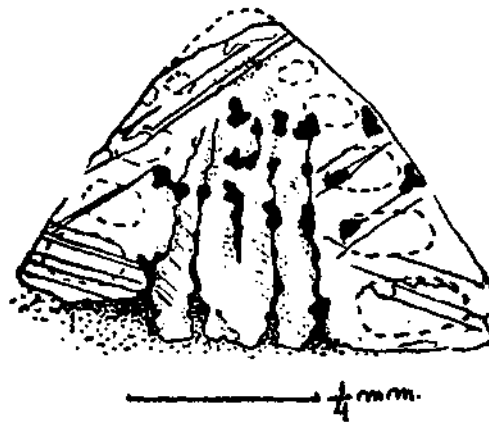
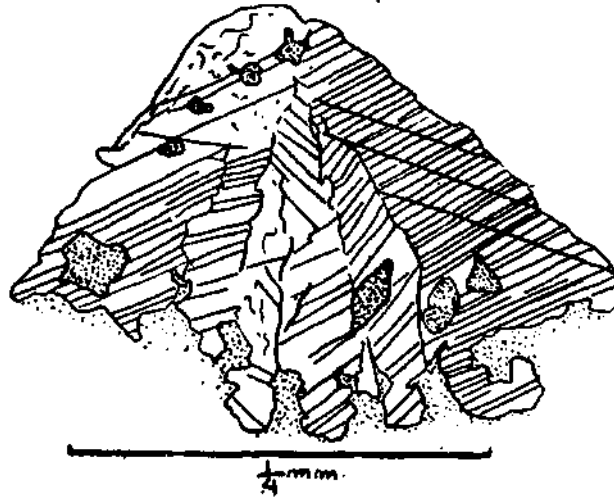


Fig. 5 - *Neotrocholina valdensis* Reichel.  
Axial section of a specimen with a high spiral. Leaching accentuated the form of the pillars and the holes in three parallel lines.

In our enlarged drawing (Text-fig. 6) we may observe how the cleavage planes in the calcite, corresponding to the pillar-bundle, are closely controlled by the structural features of the test. The cleavage direction appears to be different in each individual pillar. On the contrary, in the external spiral part, these cleavage planes are not controlled by the internal structures. Here, the recrystallized filling material forms a homogenous unity with the material of the spiral-wall.



**Fig. 6 - *Neotrocholina valdensis* Reichel.**  
Axial section of a completely calcified specimen, showing the change in the direction of the cleavage-planes of the calcite in the central pillar-bundle.

#### FAUNAL ASSOCIATION

The specimens of *Neotrocholina* described in this paper were found in detrital and pseudo-oolitic limestones together with the following Foraminifera :

*Trocholina elongata* Leupold, *Trocholina alpina* Leupold, *Coscinospirillina basiliensis* Mohler, *Ventrolamina cribrans* Weynschenk, Miliolidae, Verneulinidae.

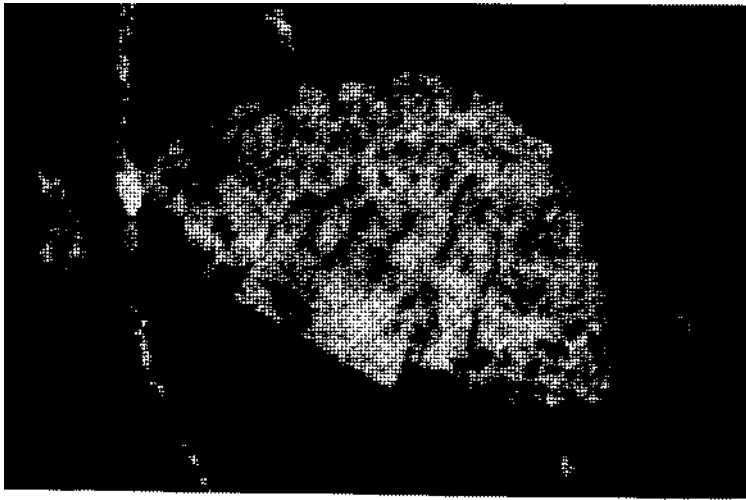
#### AGE

The age of our *Neotrocholina*-bearing material is determined as Upper Malm (Tithonian) - Valanginian, based on the above-mentioned faunal association.

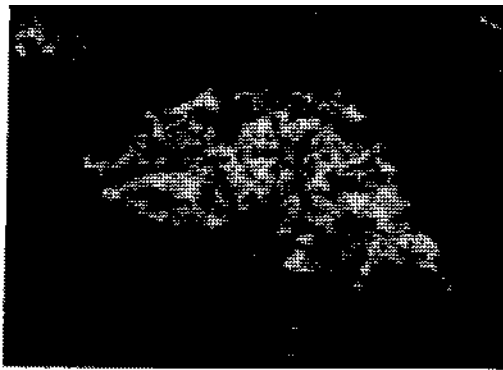
#### OCCURRENCES IN TURKEY

In the Upper Jurassic strata, between Gümüşane and Siran (all the pictures are taken from samples of this region).

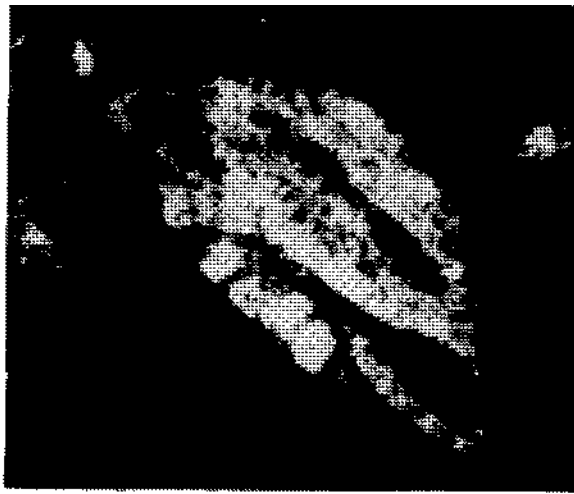
In the Upper Jurassic - Lower Cretaceous beds, in the Bursa-Bilecik region.



a



b

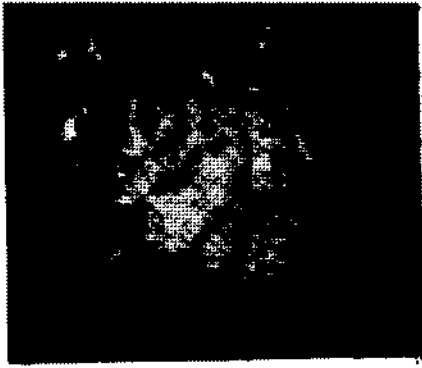


c

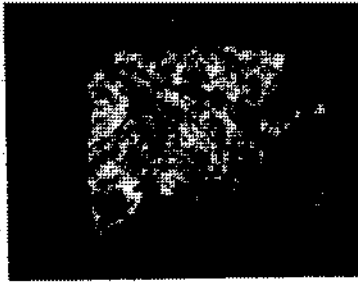


d

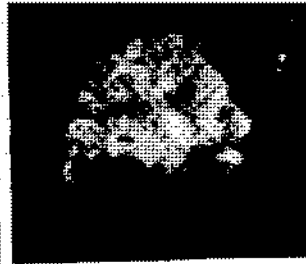
T.F.J.DESSAUVAGIEPLATE-II



a



b



c



d



e



f



g

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## EXPLANATION OF PLATES

## PLATE I

- a — *Neotrocholina infragranulata* Noth (100 X).  
Axial section.
- b — *Neotrocholina valdensis* Reichel (100 x).  
Axial section.
- c — *Neotrocholina valdensis* Reichel (100 x).  
Section parallel to the axis,
- d — *Neotrocholina valdensis* Reichel (100 x).  
Axial section.

## PLATE II

- a — *Neotrocholina valdensis* Reichel (100 x).  
Axial section.
- b — *Neotrocholina valdensis* Reichel (100 x).  
Axial section.
- c — *Neotrocholina valdensis* Reichel (100 x).  
Axial section.
- d — *Neotrocholina valdensis* Reichel (100 x).  
Axial section of a weathered specimen.
- e — *Neotrocholina valdensis* Reichel (100 x).  
Axial section,
- f — *Neotrocholina valdensis* Reichel (100 X).  
Axial section.
- g — *Neotrocholina valdensis* Reichel (240 X).  
Enlarging of (b) showing cleavage planes  
in the calcite.