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Bicyclina (FORAM), a new peneroplid genus from Late Cenomanian in Iraq

Qahtan A. Mohammed
Technical College - Kirkuk

Abstract

A new genus of larger foraminifera, *Bicyclina* (type: *Cycledomia iranica*) n. gen., from the Mishrif limestone (Late Cenomanian)in Rifaiy area of southern Iraq is described and figured .This new form belongs to the family Peneroplidae.The difference with other genera showing comparable structures and the stratigraphic position are described.

Introduction

Cycledomia iranica was described by(Hamaoui,1964)from Bin‹a Formation (Judea Group) of Late Cenomanian – Turonian in Galilee and the Jerusalem area, Israel . Many partially Equatorial and vertical sections wer figured (pp.440,Pls.1-2),as well as ,he stated, there is only one a deqate section of this species which may belong to a new genus closely related to *Cycledomia* (pp.440,Pl.2,fig.15). During the study of larger foraminifera from Mishrif Formation (Late Cenomanian) in Rifaiy bore hole- 1, of the southern Iraq (Fig. 1) ,espically in Alveolinid bearing limestone,we described many sections of *Cycledomia iranica* associated with *Cisalveolina fallax* Riechel, *Praealveolina tenuis* Reichel, *Nezzazata simplex* Omara ,as well as many sections like this species were identified, their structures agree with that of type species of *Cycledomia iranica* but differs from the later by having two distinct sets of subepidermal partitions. For this reason ,*Cycledomia iranica* is here designated as the type species of a new genus, *Bicyclina*, in order to study the structure of this species ,rock samples wer stained with methylene blue .The alveolinid bearing limestone(2778–2860) Ft. of Mishrif Formation(Late Cenomanian) ,which represent lagoonal facies mainly composed from light gray micritic limestone with abundant *Multisprina iranica* Henson,*Cisalveolina fallax* Reichel, *Praealveolina tenuis* Reichel,*Pseudorhapydionina dubia* De Castro,*Nezzazata simplex* Omara, as well as the new genus *Bicyclin*a which is described below.

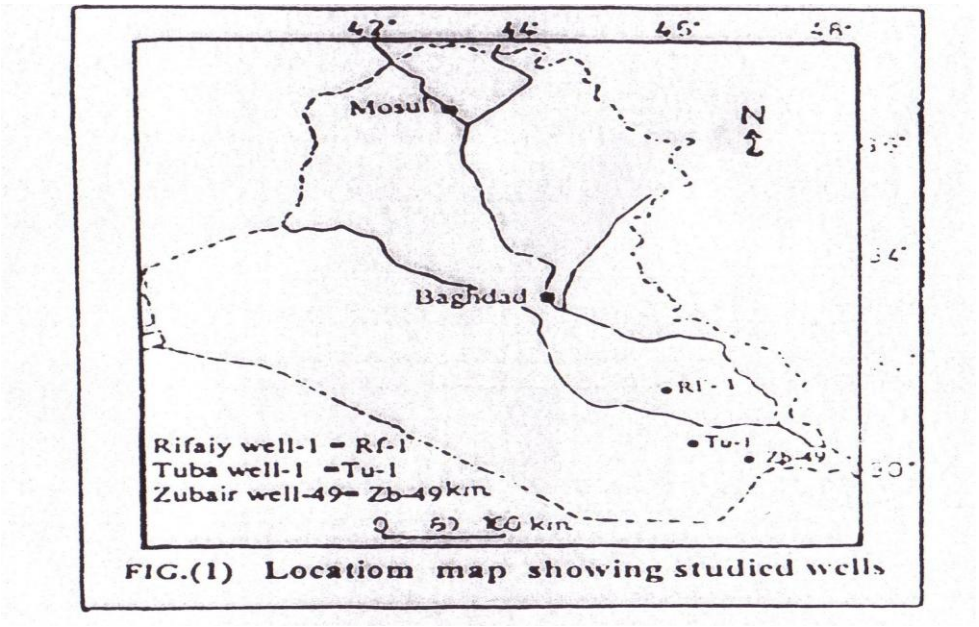

FIG.(1) Locatiom map showing studied wells

The Mishrif Formation was described as Conformably overlying the Rumaila Formation(Early Cenomanian)and disconformably underlying the Khasib Formation(Turonian) , its lower contact was drawn at the change from the deep water Oligostegina – Globigerina limestone of Rumaila Formation to overlying shallow water neritic limestone containing miliolids,alveolinids ,textularid and algae(Bellen et.al. ,1959).

Family PENEROPLIDAE Reuss,1860
Genus BICYCLINA Al-Nuaimy n. gen.

Derivation of name :From distinct two set of partitions of the sub epidermal part.

Type species : *Cycledomia iranica*(Hamaoui,1964) .

Diagnosis : Test free, flabelliform in the young, circular in the adult , discoidal and biconcave ,chambers curved arranged in a planispiral, pseudoevolute manner in the early nepionic stage and annular, evolute in the adult; megaalospheric nucleoconch composed of spherical proloculus followed by a tubular chamber ,test wall calcitic, icrogranular,imperforate, porcellaneous composed of two layers, an external epidermis and an internal, subdivided hypodermis, the latter extending into interseptal subepidermal plate situated normal to the lateral walls and to the septa,two distinct sets of subepidermal partitions, of which the main, longer partitions

thicken slightly inward and may fuse with interseptal buttresses, and a secondary set of shorter and thinner partitions ,which alternate regulary with the primary partitions(Fig. 2).The interseptal buttresses irregularly distributed in the median part of each chamber, apparently in alignment from one to the next; buttresses crescentic in trasverse section becoming ellipsoidal toward the junction with the septal face; apertures numerous,rounded,distributed on and restricted to the central part of the apertrural face.

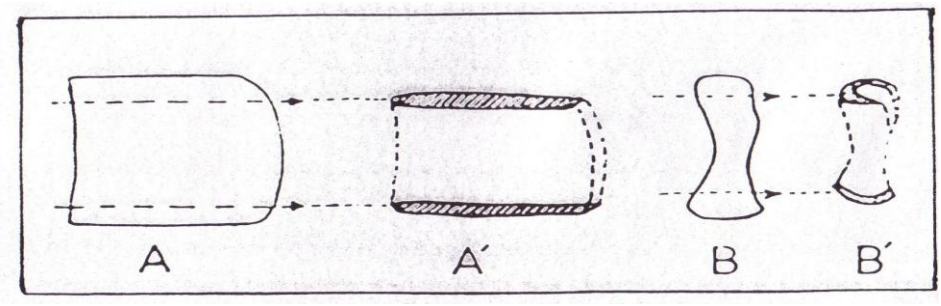

Fig (2) Shematic drawings of the morphology of the internal structures in Bicyclina (A-A□□= subepidermal partitions:B-B□=Pillars)

REMARKS

Bicyclina differ from *Cycledomia* Hamaoui,1964, in having two distinct sets of subepidermal partitions ,longer partitions thicken slightly inward and shorter ,thinner partitions which alternate regularly with primary partitions,but the subepidermal partitions in *Cycledomia* of the same length through out.

Edomia (Henson,1948) differ from *Bicyclina* in lacking of a well – developed annular stage in the adult stage and subepidermal partitions.Many foraminifera though displaying some identical outer morphology and some identical aspects in thin sections are of different geographic and distribution ,acompared anatomical study of the larger imperforate benthonic genera were done by (Hamaoui & Brun,1974).

Praesorites Douville,1902 , *Dohaia* Henson,1948, and Qataria Henson,1948 differ from *Bicyclina* in the lake of buttresses, *Archaias* Montifort1808, lacks subepidermal partitions. Other genera resembling *Bicyclina* in some respects , Orbitopsella Munier-Chalmas 1902,possess generally alternating subepidermal plate with interseptal buttresses which are lamelliform.

BICYCLINA RIFAIENSIS n.sp.

Pl.1,figs.1-6 ;Pl.2, figs.1-3

Derivation of name: From the region of Rifaiy (S. Iraq)

Holotype: sections figured on Pl.1,figs 1-6(coll.MOHAMMED,Kirkuk,RF 90/ 6 /1)
Type locality: Rifaiy region,Rifaiy bore hole-1(southern Iraq)

Type Horizon: Shelly foraminiferal limestone of the Mishrif Formation (Late Cenomanian) at interval (2778- 2860)m.,composed of dense-gray,white fractured alveolinidae wackstone to packstone in association with *Praealveolina tenuis* Reichel; *Cisalveolina fallax* Cumble ; *Chrysalidina gradata* d‹Orbigny, *Cycledomia iranica* Henson,miliolids.

Material: About fifty random thin sections.

External morphology

Test free,imperforate ,originally porcellaneous,flabelliform in the young,subcircular in the adult, biconcave of discoidal test wih a bulge around the proloculus,and thickens gradually toward the periphery, the chamber height is almost the same in the juvenile and the adult stages. The diameter of the test (megalospheric form) is between (3.6 – 5.5)mm. and the thickness at periphery is(0.25 – 0.35)mm. . The septal face possess numerous rounded aperture restricted to the central part of the apertural face in the region of interseptal buttresses.

The isolated individual of the microspheric form could not gathered easily because of the samples are too strongly indurated , dolomitized and state of preservation , therefore we mainly independed on thin sections of these specimens. The microspheric embryonic stage seems to be cornuspirine followed by planispirally arranged chambers,then followed by up to 40 annular chambers (pl. 2, fig.1).

Internal structure

The megalospheric nucleoconch is characterized by a tabular ,somewhat flattened (canal flexostyle) chamber embracing about half the periphery of the proloculus, the diameter of the proloculus is about(0.2 – 0.25)mm.;the height of neck is nearly (0.02 – 0.03)mm.The early nepionic stage is composed (6 -10)laterally compressed strongly curved chambers arranged planispirally in pseudoevolute manner (pl.1,fig.4).

The adult stage is contain a set of annular, evolute chambers,their number may reach about (35) in the megalospheric form.

The wall structure is calcitic ,microgranular, the epidermis is often brighter than the subdivided hypodermis thus appearing as a separate layer(vitreous)(pl.1,fig.1) .The internal structure is formed by interseptal subepidermal plates situated normal to the lateral walls,the subepidermal having two distinct sets of partitions of which the main ,longer partitions thickens slightly inward and may fuse with the interseptal buttresses,and a secondary set of shorter ,thinner partitions which alternate regularly with the primary partitions (pl.1 ,figs. 1-2).There are interseptal buttresses irregularly distributed in the median part of the chamber but apparently in alignment from one chamber to the next, the buttresses are generally crescentic in transverse section, becoming ellipsoidal toward the junction with the septal face (pl.2,fig.2,3).

Geographic and Stratigraphic distribution

Bicyclina rifaiensis has thus far been recorded only from Israel and Iraq, (Hamaoui, 1964) described only one section of this species associated with *Cycledomia iranica* in shallow water limestone of probable Late Cenomanian age in bore- hole Dimona L1 ,with mention that this section may belong to a new genus without giving more details.

In Iraq, it is known from Mishrif Formation of Late Cenomanian age in Rifaiy area (Rifaiy bore-hole-1) ,as well as from Tuba region(Tuba bore hole -1) and Zubair region(Zubair bore hole-49) associated with *Praealveolina tenuis* Reichel ; *Cisalveolina fallax* Cumble; *Nezzazata simplex* Omara ;*Pseudorhapydionina dubia* De Castro; *Crysalidina gradata* d‹Orbigny ;miliolids. The rang of *Cisalveolina fallax* seems to be Late Cenomanian to Early Turonian (see Schroeder&Neumann,1985; DeCastro,1982).In Iraq, *Bicyclina rifaiy* dose not range higher than *Cisalveolina fallax*,although it appears later .

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وصف الجنس الجديد Bicyclina من الفورامنيفيرا (عائلة Peneroplidae) من السينومنيان المتأخـــر في العراق

قحطان أحمد محمد

الكلية التقنية_كركوك

الخلاصة

تم وصف جنس جديد(*Bicyclina*) من الفورامنيفيرا الكبيرة العائدة لعائلة(Peneroplidae)مـــن الحجـــر الجيري لتكوين المشرف (السينومنيان المتأخر) من منطقة الرفاعي الواقعة في جنوب العراق ، وتم مقارنته مع الاجناس ذات الأشكال والتركيب المتشابه وكذلك حدد الموقع الطباقي والجغرافي له .

PLATE - 1

1 – 6 *Bicyclina rifaiensis* n. gen. n. sp., Mishrif Formation,Late Cenomanian ,Rifaiy bore hole – 1 ,depth 2558 m.

1. Slightly oblique vertical section (X 35).
2. Same section above (X 75) , showing two distinct sets of subepidermal partitions,longer one thicken slightly inward and secondary shorter thinner set ,which alternate regulary with primary partitions.
3. Part of axial section showing annular chambers,(X 30).
4. (a) Oblique axial section showing the pseudoevolute intial coiling of the megalospheric form. (b) Part of equatorial section of the megalospheric form (X 40).
5. Slightly equatorial–tangential section of the microspheric form(X40).
6. Part of the equatorial section showing the buttresses in the chambers.(X40).

PLATE - 2

1 – 3 *Bicyclina rifaiensis* n. gen.n.sp. ,Mishrif Formation,Late Cenomanian.

1. Part of the equatorial section of the microspheric form,Tuba well – 1 ,depth 7891 Ft. (X 40).
2. Oblique vertical section , Zubair well- 49 ,depth 2445 m. (X 40).

Slightly oblique vertical – tangential section,Tuba well -1 ,Depth 7891 Ft.
4–7 *Cycledomia iranica*-Hamaoui,1964,Mishrif Formation ,Late Cenomanian

3. Oblique axial section (X 40).
4. of the megalospheric form showing the pseudoevolute coiling and megalospheric proloculus and the canal flexostyle,Zubair well – 49 ,depth 2445 m.(X 40).
5. Part of axial section of the branching specimens,Tuba well_1 ,depth 7891 Ft.(X 40).
6. Olique axial section ,Tuba well- 1, depth 7841 Ft.(X 40).
7. Oblique vertical section ,Tuba well -1 ,depth 7895 Ft.(X 40).

PLATE - 1

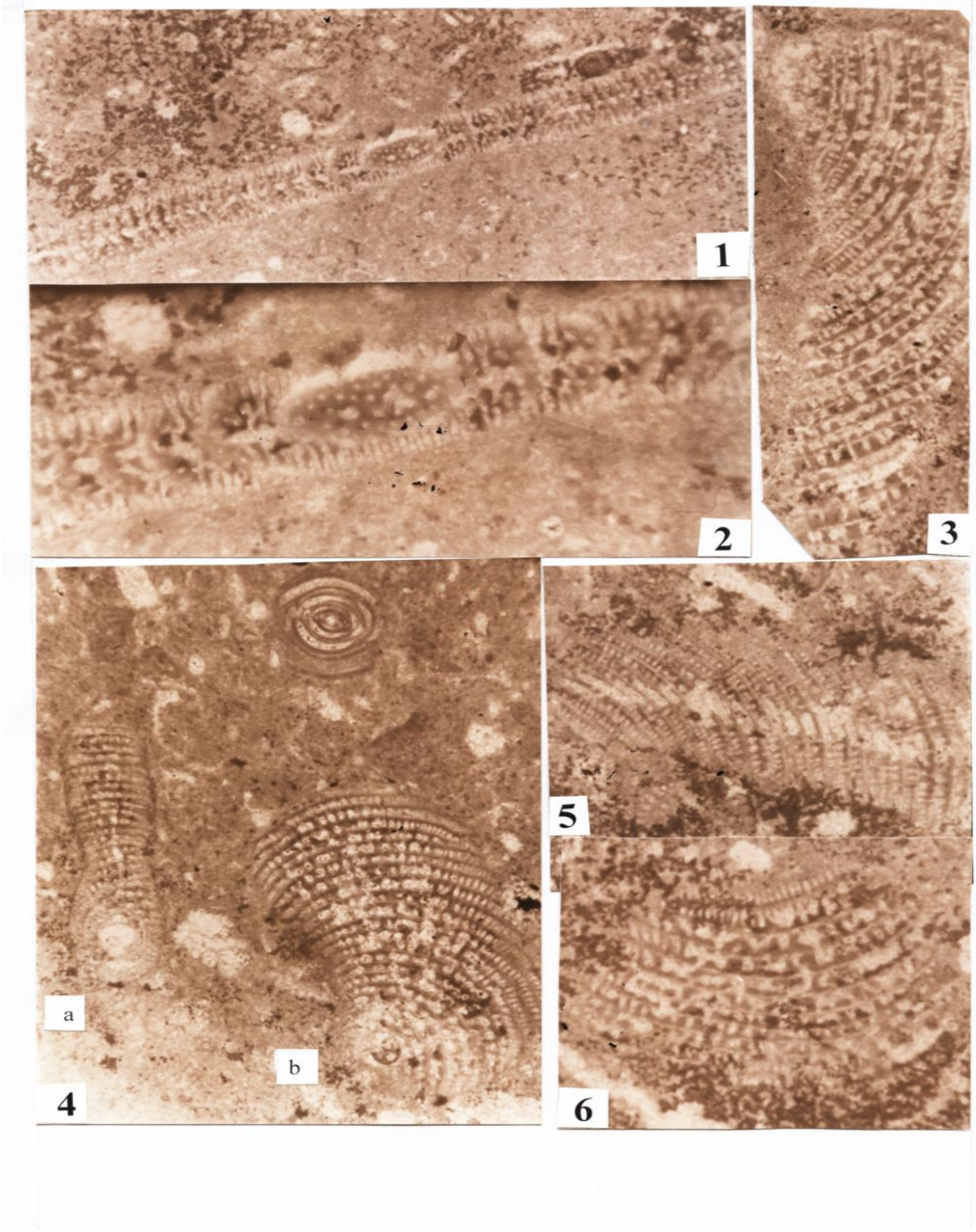

PLATE - 2