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(2003/7/27 2002/12/22 )

:

1. *Globotruncanita calcarata* Zone.
2. *Globotruncanella havanensis* – *Rosita fornicata* Zone.
3. *Globotruncana aegyptiaca* Zone.
4. *Gansserina gansseri* Zone,

## **Litho and Biostratigraphy of the Shiranish Formation (Late Campanian-Late Maastrichtian) In Sinjar Area, Northwestern Iraq**

**Majid M. Al-Mutwali**

**Fars N. Al-Juboury**

*Department of Geology  
College of Science  
Mosul University*

### **ABSTRACT**

The present investigation deals with the lithostratigraphy and planktonic foraminiferal biostratigraphy of the Shiranish Formation from a surface section in Sinjar area,

northwestern Iraq. Depending on lithological characteristic, the formation is divided into three units: the lower unit consists of friable marl, the middle unit embrace an alternations of marl, marly limestone, limestone, sandy limestone and lenses of breccia, while the upper unit is consist of marl and marly limestone. The stratigraphic distribution of the planktonic foraminifera throughout the section permits the recognition of four zones, these are:

1. *Globotruncanita calcarata* Zone.
2. *Globotruncanella havanensis* – *Rosita fornicata* Zone.
3. *Globotruncana aegyptiaca* Zone.
4. *Gansserina gansseri* Zone,

The present work indicates that Shiranish Formation is of Late Campanian-Late Maastrichtian age.

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(Buday and Jassim, 1987) -

75 -

(Bellen et al., 1959) ( - )

(Buday, 1980)

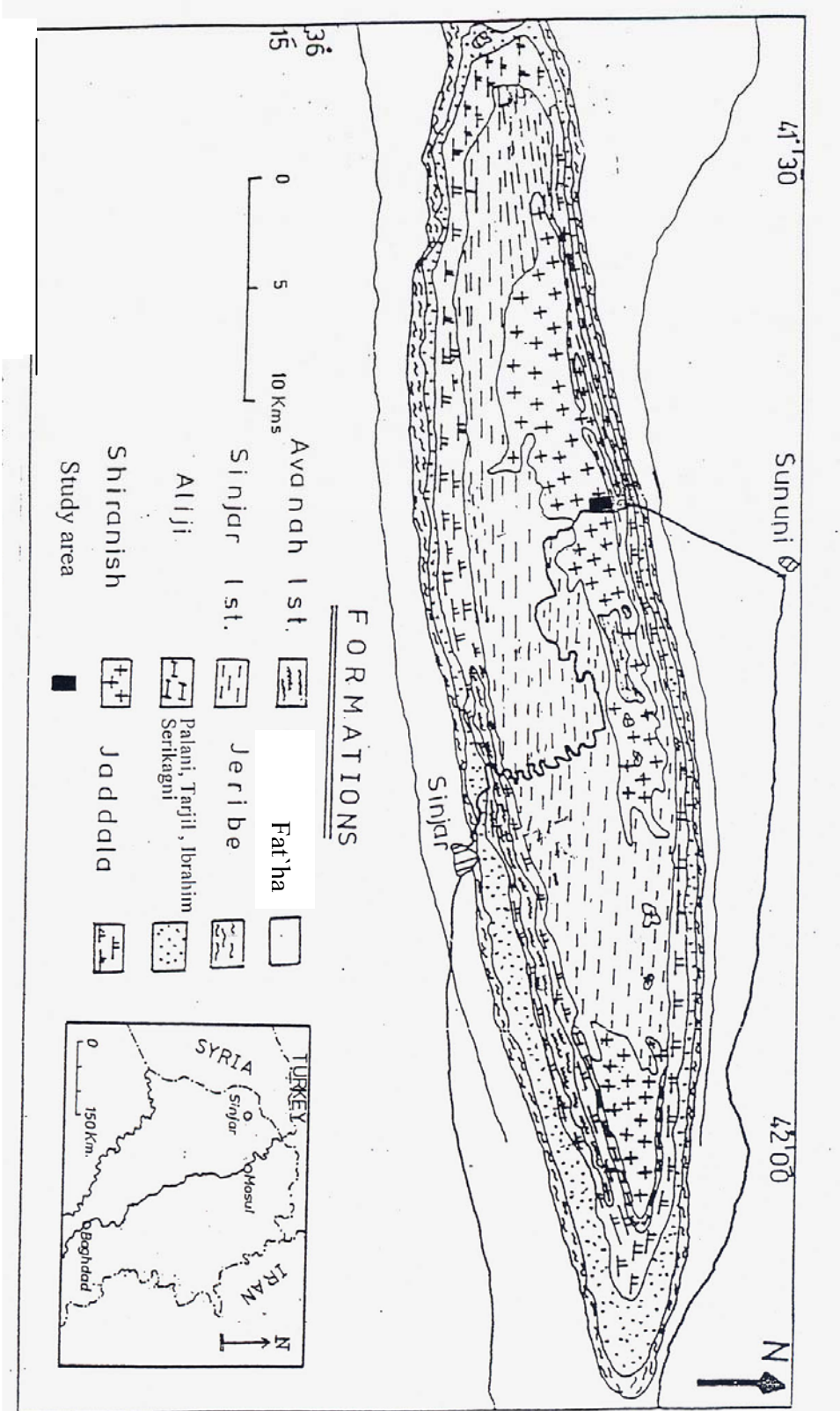
(Kassab, 1972-1978)

(Henson, 1940, in Bellen et al., 1959)

99 128.8

(Al-Qyiem, 1992)

(Al-Rawi, 1973)



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.(Ma'ala, 1977)

(Jawi and Said, 1978)

(Amer, 1977)

(Al-Dalamee, 1988)

(Al-Badrani, 2001)

88

(7-1)

430

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45

.(1 )

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285

, (2 )

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(60-40)

(2-1)

(Lamination)

(Ammonite)

(Trace fossils)

.(3 )



صورة رقم (1)  
منظر عام  
للوحدة السفلى  
وجزاء من  
الوحدة الوسطى  
لتكوين شرانش  
قرب قرية  
كرسي في لب  
طية سنجار.

صورة رقم (2)  
تعاقب صخور  
المارل مع  
الحجر الجيري  
المارلي والحجر  
الجيري ضمن  
الوحدة الوسطى  
لتكوين شرانش.

صورة رقم (3)  
مستحاثات اثرية  
بهيئة انابيب  
مائلة تظهر  
ضمن طبقة من  
الحجر الجيري  
في الوحدة  
الوسطى لتكوين  
شرانش.

(15-10)

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.(6 )

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صورة رقم  
(4) عدسة  
من البريشيا  
ضمن  
الوحدة  
الوسطى  
لتكوين  
شرايش.



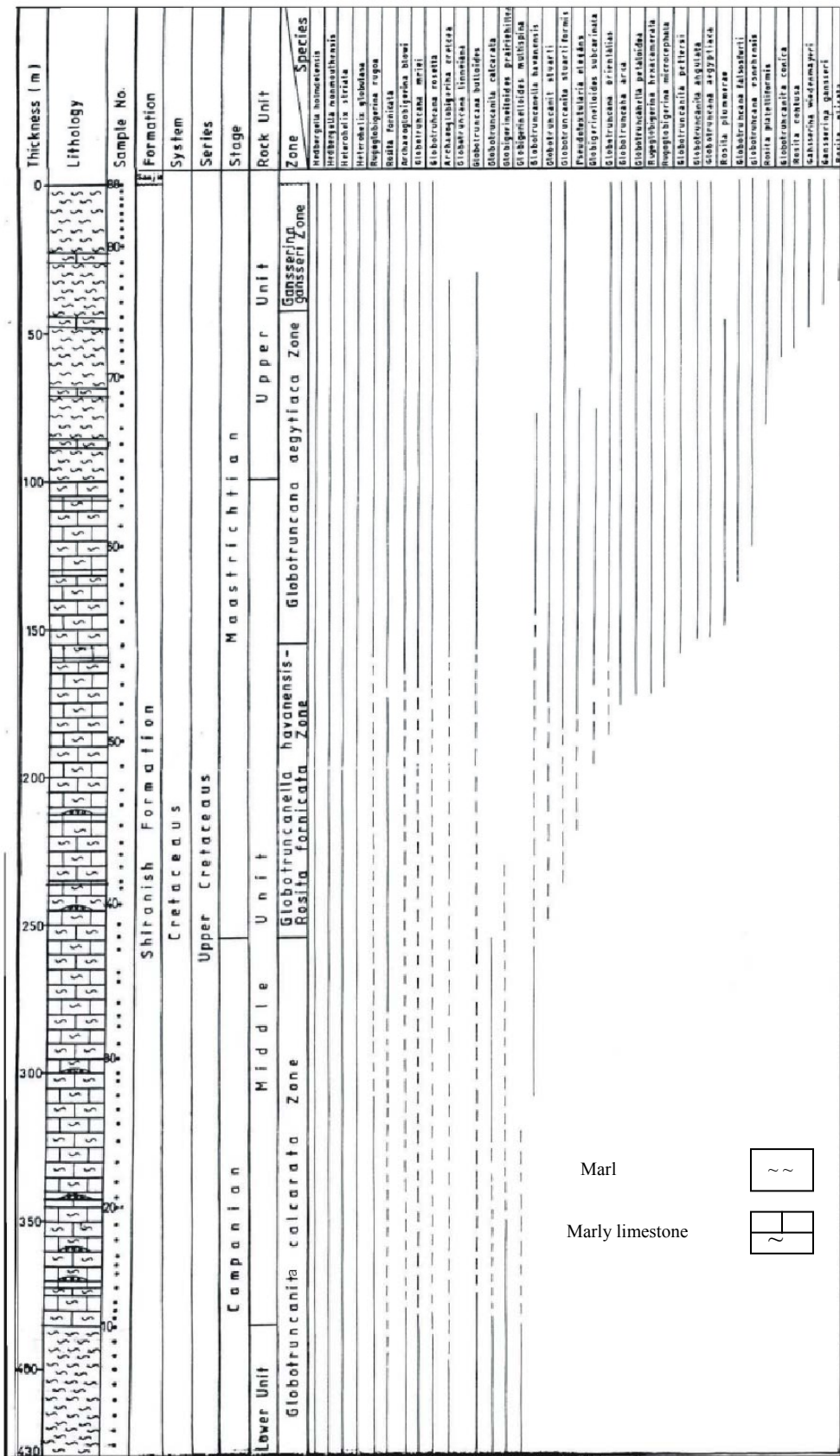
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صورة  
رقم (5)  
تتابعات  
صخور  
المارل في  
الوحدة العليا  
للتكوين



6

صورة رقم  
(6) حد  
التماس  
الاعلى  
لتكوين  
شرايش  
الغير  
متوافق  
طباقيا مع  
تكوين  
سنجار  
الجيري.





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Stage		Present Study	Hammoudi, 2000. Jambur Well No.(13)	AL-Mutwali,1996. Kashab Well No.(1)	Abawi etal.,1982 and Abdel-Kireem,1986 NE.Iraq		Kassab, 1986	
Maastrichtian	Late				Late	<i>Glt. aegyptiaca-lapparenti-starti</i>	<i>A. mayaroensis</i>	<i>Glt. contusa esnehensis duwi</i>
		<i>G. gansseri</i>	<i>G. gansseri</i>	<i>G. gansseri</i>	Middle		<i>Glt.contusa</i>	
	Early	<i>Glt. aegyptiaca</i>	<i>Glt. havanensis</i>	<i>Glt. aegyptiaca</i>	Early		<i>Rugotruncara subcircumao-difer</i>	<i>Glt. fornicata-stuartiformis elevata-rosetta-ventricosa.</i>
		<i>Glt. havanensis-Rosita fornicata</i>						
Campanian	Late	<i>Glt. calcarata</i>	<i>Glt. rosetta</i>	<i>Rosit fornicata Glt. elevata-stuartiformis</i>		<i>Glt. fornicata arca-stuarti</i>	<i>Glt. calcarata</i>	

Arnon, 1985 Sliter, 1989	Liangquan Li et al., 1999	Bolli, 1966	El- Naggar , 1966 a	Pessagno, 1967	Postuma, 1971	Van-Hinte, 1976
<i>A. mayaroensis</i>	CF <sub>1</sub>	Late	<i>A. mayaroensis</i>	<i>A. mayaroensis</i>	<i>A. mayaroensis</i>	<i>A. mayaroensis</i>
	CF <sub>2</sub>					
	CF <sub>3</sub>					
	CF <sub>4</sub>					
<i>Gt. gansseri</i>	CF <sub>5</sub>	Middle	<i>Glt. gansseri</i>	<i>Glt. gansseri</i>	<i>Glt. gansseri</i>	<i>Glt. gansseri</i>
	<i>Rosita contusa</i> CF <sub>6</sub>					
	G. CF <sub>7</sub> <i>gansseri</i>					
<i>Glt. egyptiaca</i>	<i>Rugoglobigerin</i> CF <sub>8a</sub> <i>hexacamerata</i>	Early	<i>Glt. lapparenti tricarinata</i>	<i>Glt. fornicata</i>	<i>Glt. subcircu - ,nodifer</i>	<i>Glt. stuarti-formis</i>
	<i>Glt.</i> CF <sub>8b</sub> <i>aegyptiaca</i>					
<i>Glt. n. avanansis</i>	Glt. n. CF <sub>9</sub> subcarinatus					
<i>Glt. n. calcarata</i>	<i>Glt. n.</i> CF <sub>10</sub> <i>calcarata</i>					

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**1- *Globotruncanita calcarata* Partial Range Zone:**

*Glt. calcarata* (Cushman) :  
 Late Campanian :  
 175 :  
 :  
*Glt. calcarata*  
 :

*Glt. mariei* (Banner & Blow), *Glt. bulloides* (Vogler), *R. fornicata* (Plummer), *H. globulosa* (Ehrenberg), *H. striata* (Ehrenberg), *Hed. holmdelensis* (Olsson), *Arch. cretacea* (d'Orbigny), *Arch. blowi* (Pessagno), *Rug. rugosa* (Plummer) & *Glgs. prairiehillensis* (Pessagno).

*Glt. calcarata* Zone

(Bolli, 1966; Postuma, 1971; Van Hinte, 1976; Sigal, 1977; Premoli-Silva and Sliter, 1981; Robaszynski et al., 1984; Caron, 1985 and Sliter, 1989)

**2- *Globotruncanella havanensis* – *Rosita fornicata* Partial Range Zone:**

:  
 .Early Maastrichtian :  
 100 :  
*Glt. calcarata* :  
*Glt. aegyptiaca*(Nakkady)

*Hed. holmdelensis* (Olsson), *Hed. monmouthensis* (Olsson), *H. striata* (Ehrenberg), *H. globulosa* (Ehrenberg), *Arch. cretacea* (d'Orbigny), *Arch. blowi* (Pessagno), *Rug. rugosa* (Plummer).

Caron, ) *Globotruncanella havanensis* Zone

(1985 and Sliter, 1989

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**3- *Globo truncana aegyptiaca* Interval Zone:***Glt. Aegyptiaca* (Nakkady) :

.Upper Early Maastrichtian :

. 112 :

*(Glt. aegyptiaca* Nakkady) :.*Gansserina gansseri* (Bolli)

:

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*Glt. mariei* (Banner & Blow), *Glt. rosetta* (Carsey), *Glt. linneiana* (d'Orbigny),  
*Glt. esnehensis* (Nakkady), *Glt. stuarti* (de Lapparent), *Glt. stuartiformis*  
(Dalbiez), *Glt. pettersi* (Gandolfi).

Caron, ) *Glt. aegyptiaca* Zone

(1985 and Sliter, 1989

**4- *Gansserina gansseri* Partial Range Zone:***Gan. gansseri* (Bolli) :

.Late Maastrichtian :

. 43 :

:

*Gan. gansseri* (Bolli)*Gan. gansseri* Zone (Caron, 1985) :*Gan. gansseri* (Bolli)*Abathomphalus mayaroensis* (Bolli)*Gan. gansseri* Zone*Gan. gansseri* Zone (2 )

( Caron,1985 and Sliter,1989 ;Robaszynski et al.,1985 )

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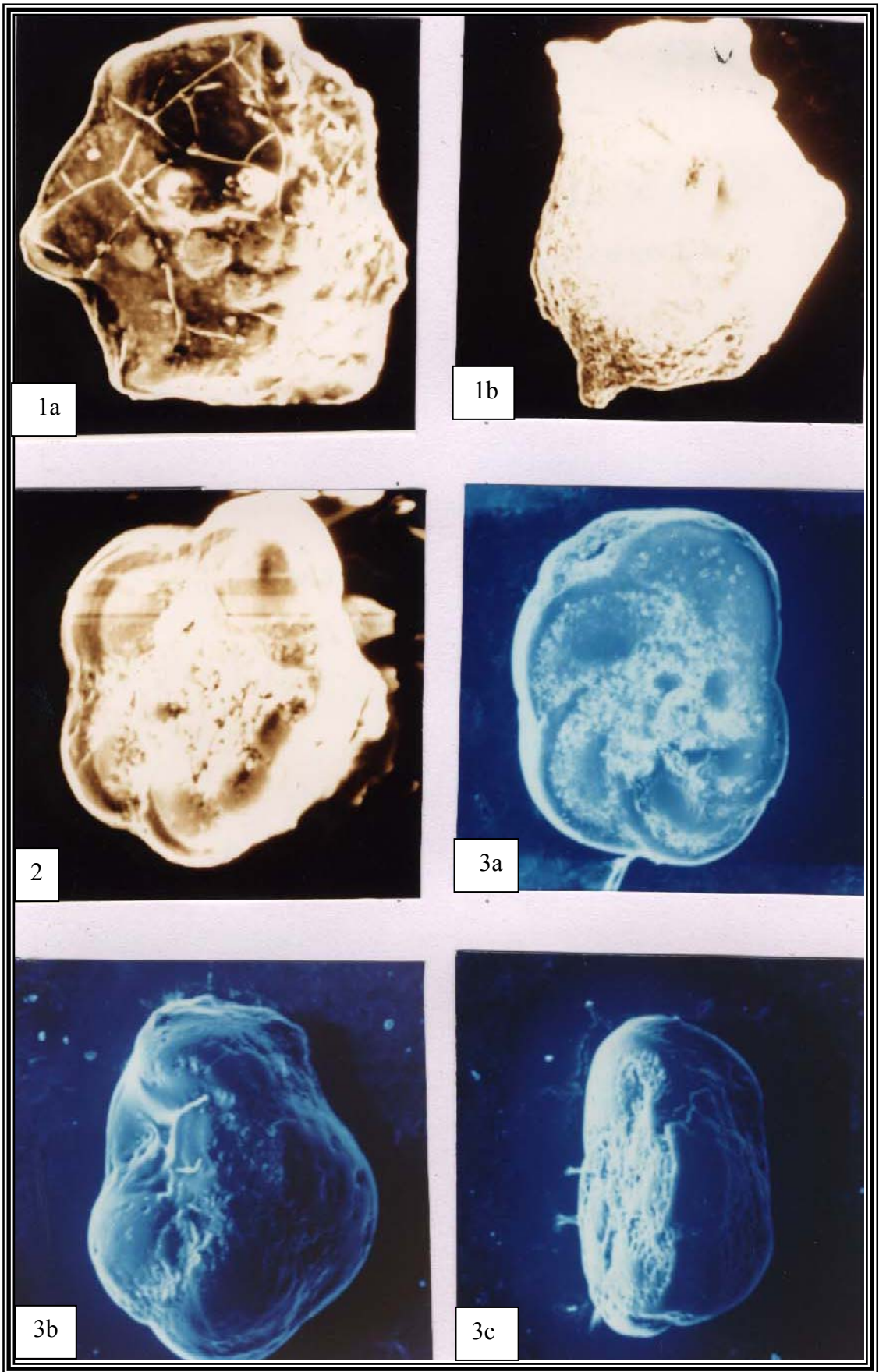


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#### PLATE –1

- Fig.1** *Globotruncanita calcarata* (Cushman)  
b-spiral view, X280, sample No. 9.  
a-umbilical view, X200, sample No. 9.
- Fig.2** *Globotruncanella havanensis* (Voorwijk)  
umbilical view, X200, sample No. 43.
- Fig.3** *Globotruncana aegyptiaca* Nakkady  
a-spiral view, X133, sample No. 58.  
b-umbilical view, X150, sample No. 58.  
c-side view, X153, sample No. 58.

PLATE 1\_



**PLATE -2**

**Fig.1** *Globotruncana mariei* Banner and Blow

a-spiral view, X155, sample No. 60.

b-umbilical view, X148, sample No. 60.

**Fig.2** *Globotruncana bulloides* Vogler, spiral view, X182, sample No. 5.

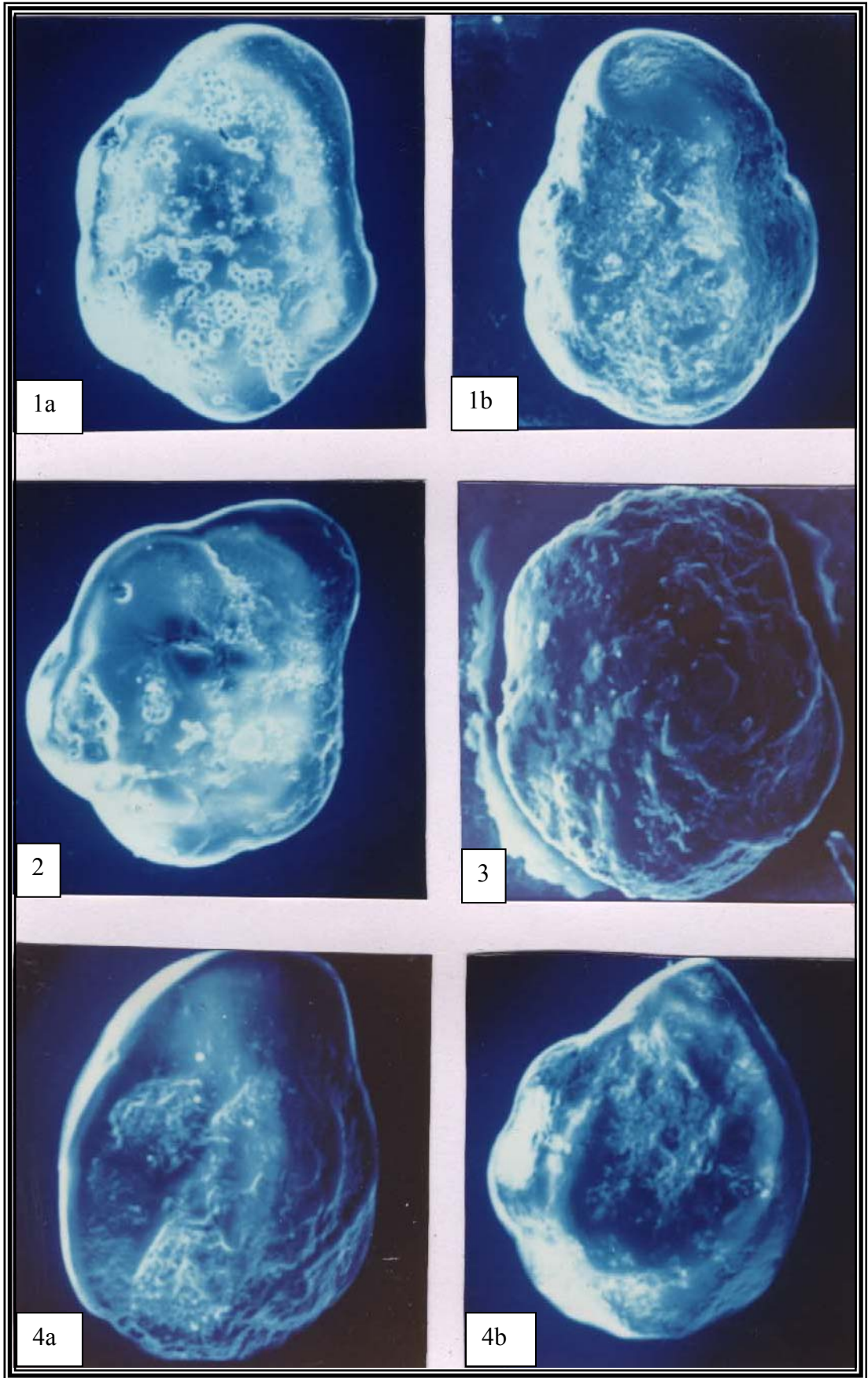
**Fig.3** *Globotruncana rositta* (Carsey), spiral view, X143, sample No. 7.

**Fig.4** *Globotruncanita stuartiformis* (Dalbiez)

a-spiral view, X180, sample No. 64.

b-umbilical view, X151, sample No. 64.

PLAT 2\_

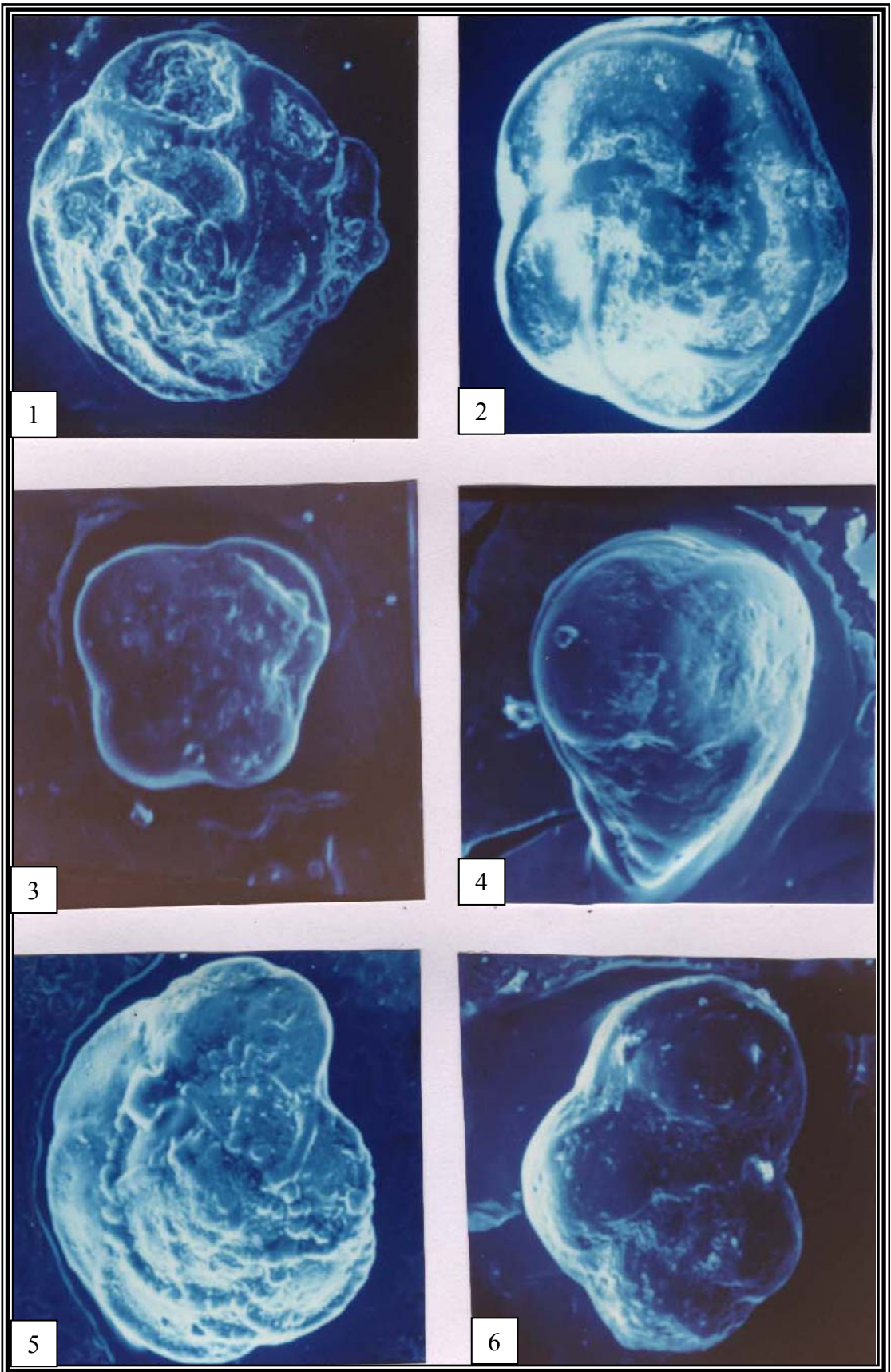


**PLATE –3**

- Fig.1** *Globotruncanita stuarti* (de Lapparent)  
spiral view, X123, sample No. 63.
- Fig.2** *Globotruncana falsostuarti* Sigal  
spiral view, X153, sample No. 66.
- Fig.3** *Globotruncanella petaloidea* (Gandolfi)  
spiral view, X251, sample No. 52.
- Fig.4** *Pseudotextularia elegans* (Rzehak)  
X162, sample No. 40.
- Fig.5** *Globotruncana orientalis* El-Naggar  
Spiral view, X143, sample No. 70.
- Fig.6** *Rugoglobigerina rugosa* (Plummer)  
Spiral view, X182, sample No. 20.



PLATE 3\_



**PLATE –4**

**Fig.1** *Globotruncanita pettersi* (Gandolfi)

a-spiral view, X133, sample No. 68.

b-umbilical view, X134, sample No. 68.

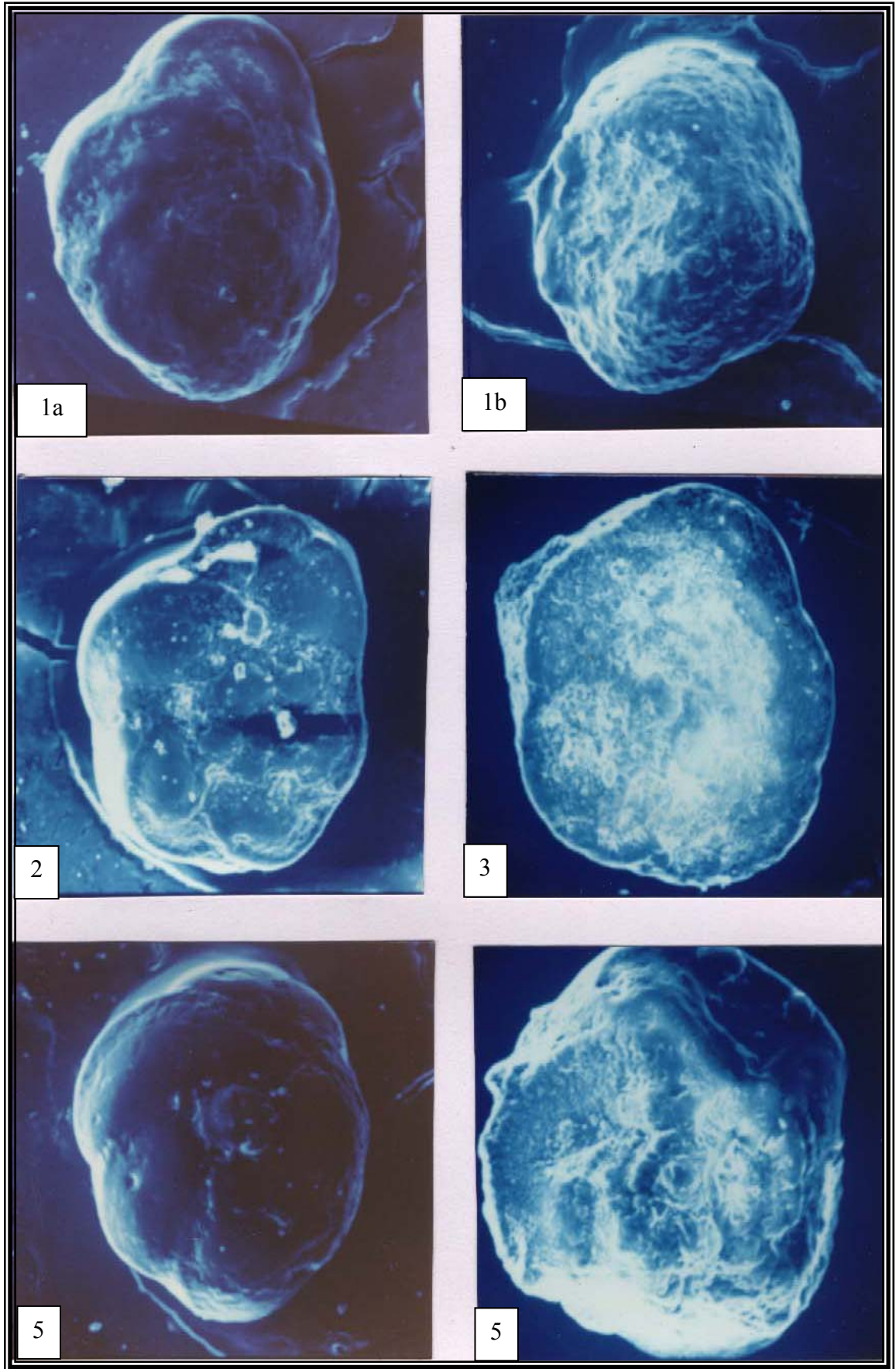
**Fig.2** *Globotruncana arca* (Cushman), spiral view, X153, sample No. 70.

**Fig.3** *Globotruncanita angulata* (Caron), spiral view, X153, sample No. 56.

**Fig.4** *Rosita plummerae* (Gandolfi), Spiral view, X143, sample No. 63.

**Fig.5** *Rosita patelliformis* (Gandolfi), Spiral view, X166, sample No. 69.

PLATE 4



**PLATE –5**

**Fig.1** *Rosita contusa* (Cushman),umbilical view, X170, sample No. 78.

**Fig.2** *Rosita plicata* (White),spiral view, X145, sample No. 82.

**Fig.3** *Gansserina gansseri* (Bolli)

a-umbilical view, X134, sample No. 80.

b-side view, X148, sample No. 80.

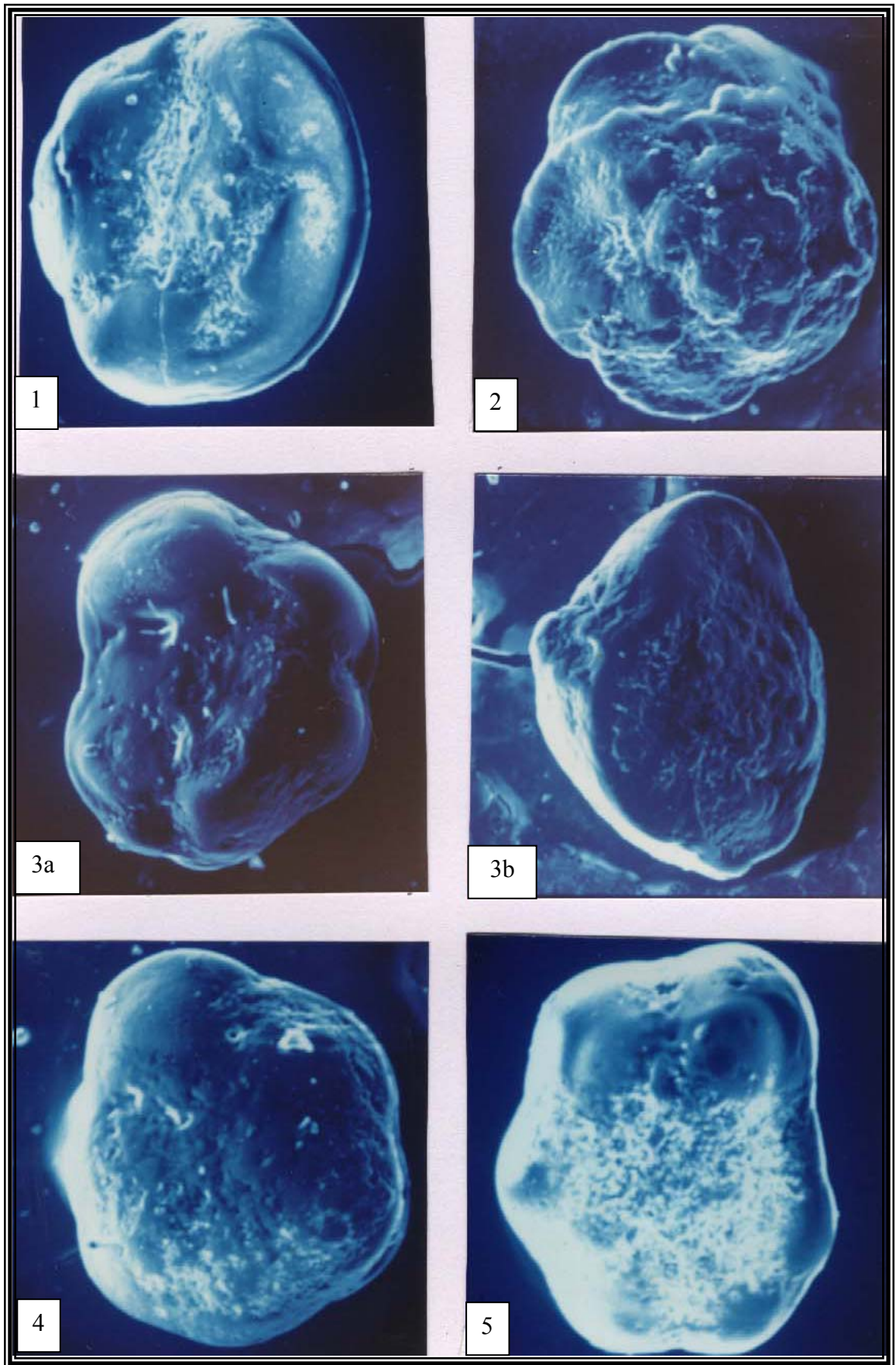
**Fig.4** *Gansserina wiedenmayeri* (Gandolfi), spiral view, X226, sample No. 78.

**Fig.5** *Rugoglobigerina hexacamerata* Bronnimann

umbilical view, X250, sample No. 61.



PLATE 5





**PLATE -6-**

- Fig.1** *Rugoglobigerina microcephella* Bronnimann.  
umbilical view, X200, sample No. 62.
- Fig.2** *Archaeoglobigerina cretacea* (d'Orbigny),  
umbilical view, X182, sample No. 44.
- Fig.3** *Archaeoglobigerina blowi* Pessagno  
umbilical view, X190, sample No. 46.
- Fig.4** *Hedbergella holmdelensis* Olsson  
umbilical view, X187, sample No. 6.
- Fig.5** *Hedbergella monmouthensis* (Olsson)  
spiral view, X187, sample No. 3.
- Fig.6** *Heterohelix straita* (Ehrenberg), X162, sample No. 30.

PLATE\_6\_

