

BIOSTRATIGRAPHY OF SHIRANISH FORMATION , WELL DD - 1 (N . IRAQ)

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ABSTRACT

Shiranish formation has been divided into two microfacies units : 1 - Marly biowackestone facies and 2 - maly packstone using planktonic foraminifera and other carbonate components in the rock cutting and core slides . Microfacies reflect marin deep shelf margin in the lower part of the formation , the upper part was deeper . The thickness of the formation is determined , depending on addition to the presence of echinoderm fragments , debris and spines . This is in disagreement with the 195 ft thickness reported by the Oil Exploration Company . The age of the formation is estimated depending on the recognized biostratigraphic zone using the index fossils to be Upper - Middle Maastrichtian .

INTRODUCTION

Shiranish formation was first defined by Henson (1940) in Northern Iraq near the village Shiranish Islam , northeast of Zakho . The formation consists of blue marls in the upper parts and marly limestone and dolomite in the lower part .

The formation was originally described by Dunnington in 1937 from Anah I Well , situated in the Anah Trough of stable shelf . Part of Iraq I , e . ,

The present well is located in the northern / 25 Km west of Erbil City (Fig . 1) .

The aim of the study is to identify the sedimentary microfacies and microfossils in the Shiranish formation .

Slide examination were used to identify lithology and fossil groups present in the rock . A total of 238 slides of rock cutting and core are examined for comparison purpose .

BIOSTRATIGRAPHY

The following genera of foraminifera were identified in the Shiranish formation :

Upper Maastrichtian
Heterohelix glabrans (CUSHMAN)

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H. Striata (EHERENBERG)
Globigerinelloides (BRONNIMAN)
Rugoglobigerina reichelli (BRONNIMAN)
Rug. scotti (BRONNIMAN)
Globotruncata aegyptica (NAKKADY)
Glt. bulloides (VOGLER)
Glt. conica (WHITE)
Glt. contusa (CUSHMAN)
Glt. duwi (NAKKADY)
Glt. enshensis (NAKKADY and OSMAN)
Glt. falsocalcarata
Glt. falsostuarti (SIGAL)
Glt. fornicata (PLUMMER)
Glt. rosetta (CARSEY)
Glt. stuarti (DELAPPARENT)
Glt. trinidadensis (GANDOLF)

Additional records : Bryozoa , Gastropoda , and *Nodosaria* sp .

Middle Maastrichtian :

Globigerinelloides subcarinata (BRONNIMAN)
Globotruncana aegyptica (NAKKADY)
Glt. conica (WHITE)
Glt. duwi (NAKKADY)
Glt. enshensis (NAKKADY and OSMAN)
Glt. falsostuarti (SIGAL)
Glt. gansseri (GANDOLF)
Glt. rosetta (CARSEY)
Glt. trinidadensis (GANDOLF)
Glt. wiedenmayeri (GANDOLF)

Fig . 2 shows the vertical distribution of observed fossils .

MICROFACIES

The microfacies depend on lithological components , sedimentary structures , and fossils, However Shiranish formation was divided in to two microfacies units , according to Dunham (1962) . The first unit is Marly Biowackstone facies which present in the upper part of the formation with thickness of 359 ft and constitutes 89 . 95 % of the thickness of formation . The skeletal components composed mostly of planktonic foraminifera (Fig . 2) . The matrix composed of micrit rich in clay . The most important diagenetic process is the precepitation of drusy cement inside shells and cracking in foraminifera . This facies represents the standard microfacies (SMF - 3) of the facies zone (FZ - 3) , I . e . , deep shelf margin of Flugel (1982) . The second unit is Marly Packstone which is found in the lower part of the formation with thickness of 40 ft and constitute 10 . 05 % of the bulk formation . The skeletal components composed of planktonic foraminifera . The most important diagenetic process is

the alteration of micritic matrix by recrystallization in which rhombic dolomite substitute the matrix leaving the fossil chambers empty of these rhomboide . This reflects the autogenic dolomization since the dolomite crystals gains magnesium ions from the same place growing on it . The distribution of microfacies in the studied well is shown in figure 3 . Predeposition of drusy cement was also observed in some parts of planktonic foraminifera . These processes increase the lower part of this facies with the appearance of autogenic pyrite and glauconite in the micritic matrix inside some shells . This facies represents the standard microfacies (SMF-2) which preprecipitate within the open sea shelf (FZ - 2) on normal salinity .

CONCLUSIONS

- The stratigraphic contact between Shiranish formation and Beckma formation at DD-1 is at the depth of 5540 ft , and between Shiranish formation and Ali jii formation is at the depth of 5141 ft .
- 2- Thickness of this formation is 399 ft . This is in disagreement with that reported by Oil Exploration Company .
 - 3- Some autogenic minerals are present , like Glauconite accompanied with pyrite in the upper part of the formation . This means that its formation occurred in the storm wave base . The pyrite spreaded in all parts of the formation filling chambers of planktonic foraminifera and as a precipitated matter inside some cracks without reflecting definite shape (moldic pyrite) . The appearance of pyrite in this formation rejects the idea that its origin was of clastic sediments .
 - 4- Abundance of foraminifera shells in the upper part of the formation represents open sea shelf .
 - 5- The deposition of Shiranish formation represented by Packstone facies in the lower part then changed into Wackstone facies in the upper part . This reflects the changes in the environmental energy level which lead to differences in the speed of granule aggregation in relation to speed of micritic aggregation .

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EXPLANATION OF PLATES

PLATE 1

Globotruncana falsocalcarata (Git ; fal :) Shiranish formation ; Upper - Middle Maastrichtian
20x .

Globotruncana bulloides (Git . Bul .) Shiranish formation ; Upper - Middle Maastrichtian
20x .

Globgerinelloides sp . ; Shiranish formation ; Upper - Middle Maastrichtian 20 x .

PLATE 2

Fig . 1- Globotruncana conica ; formation ; Upper - Middle Masstrichtian 20 x .

Fig . 2- Globotruncana fornicata 20 x .

PLATE 3

Biowackstone

الطباقية الحياتية لتكوين الشيرانش في بئر د مرداغ
-1- (شمال العراق)

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الخلاصة

تم تقسيم ضخور تكوين الشيرانش الى وحدتين سحنية باستخدام الشرائح الرقيقة المعمولة لنماذج اللباب والفتات الصخري وذلك بالاعتماد على المتحجرات المميزة بالاضافة الى نوعية التركيب الصخري والذي تتواجد فيه المتحجرات الى :

- 1- سحنة الحجر الجيري الواكي العضوي المارلي .
- 2- سحنة الحجر الجيري المرصوص المارلي .

تعكس هذه السحنات ظروف بيئية بحرية عميقة في اسفل التكوين والجزء الاعلى اكثر عمقا" في ساحل البحر المفتوح . لقد امكن تحديد سمك التكوين ب (399) قدم وهو غير مطابق لما ورد في تقرير الحفر النهائي لشركة الاستكشافات النفطية والمعروف ب (195) قدم في بئر د مرداغ - 1 وذلك عن طريق تشخيص عدد من انواع واجناس الفورامنيفرا الطافية بالاضافة الى تواجد مكسرات وقطع واشواك الفنفيذيات . وقد تم تحديد عمر تكوين الشيرانش في المنطقة التي شملها البحث استنادا" الى النطاق الطبقي لتواجد المتحجرات الدالة ب (الماسترخي) الاعلى والاوسط .

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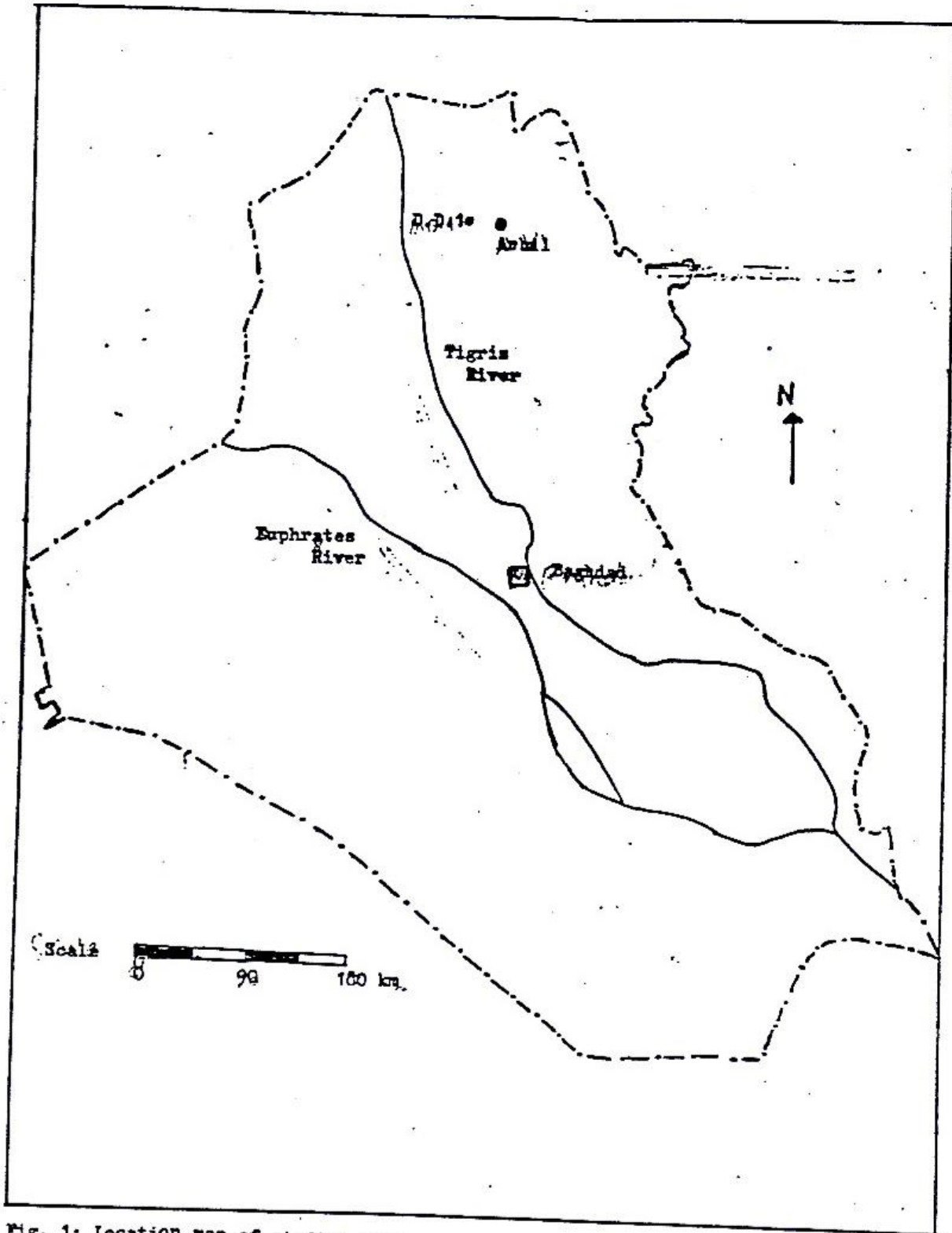
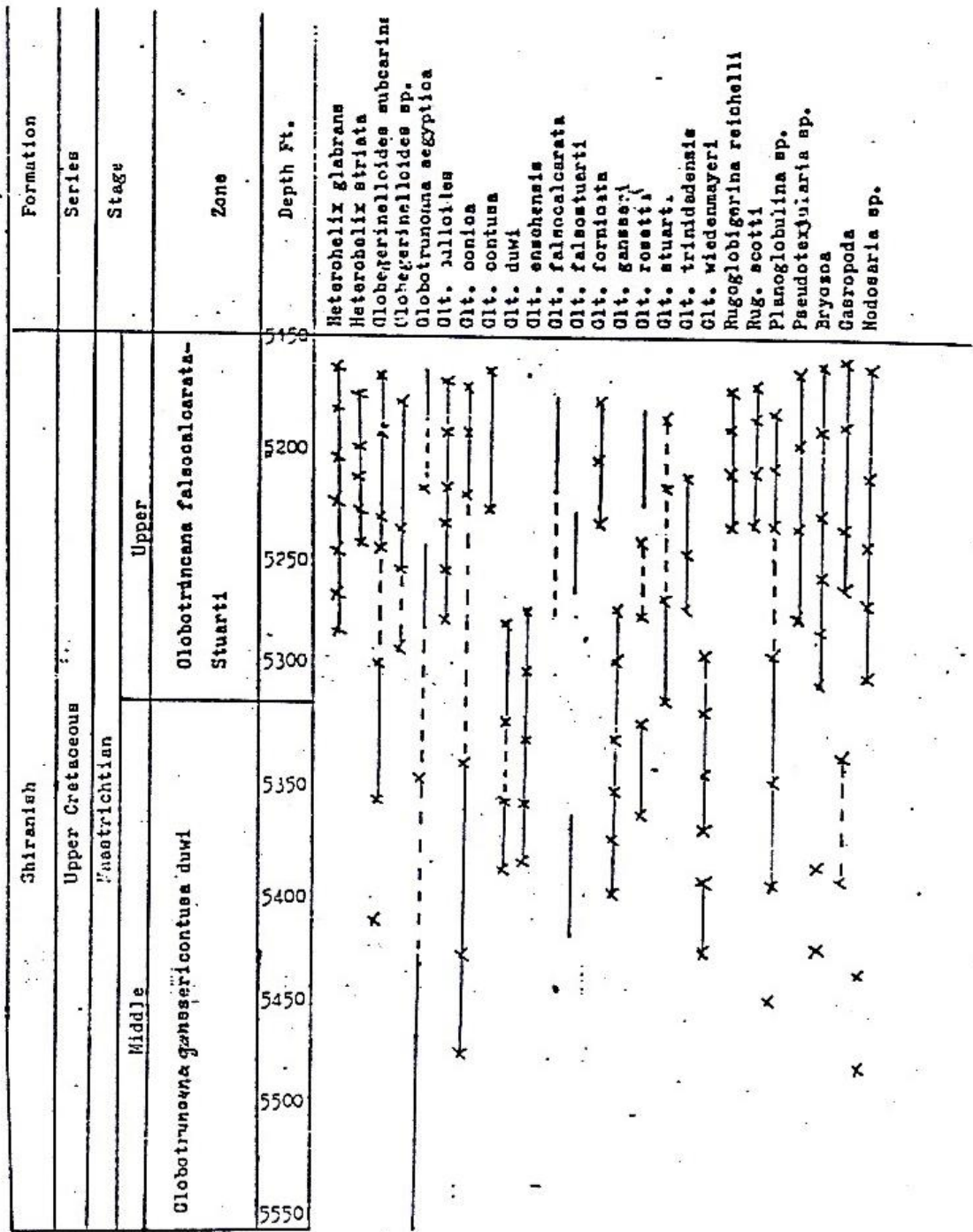
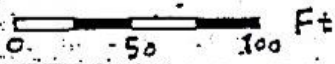


Fig. 1: Location map of studied well



x discrete
 | abundant
 - absence

Fig. 2. Vertical distribution of fossils in Shiranish formation in the studied area.



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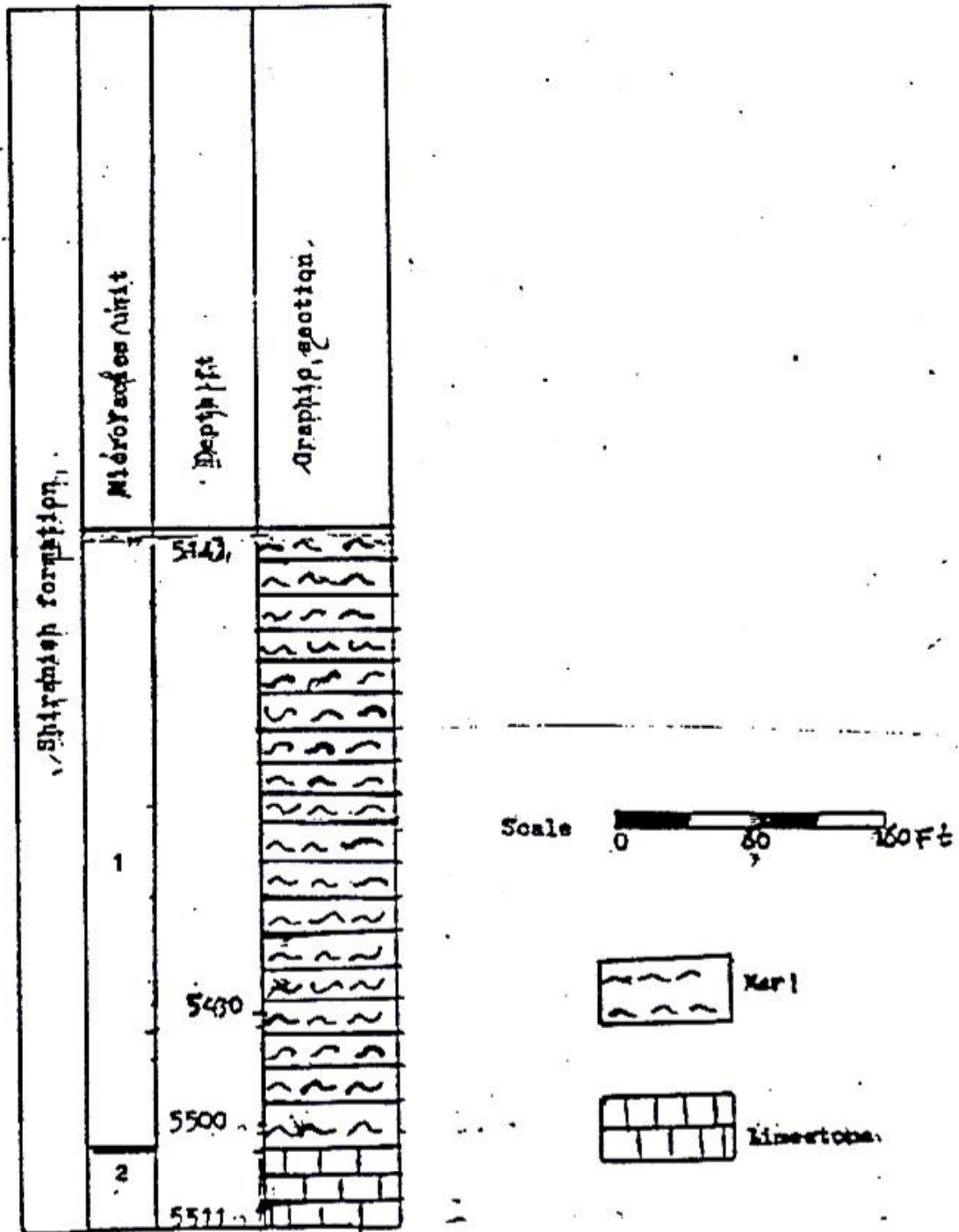


Fig. 3 microfacies chart of Shiranish formation, Demir dach well-1

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Plate 1.

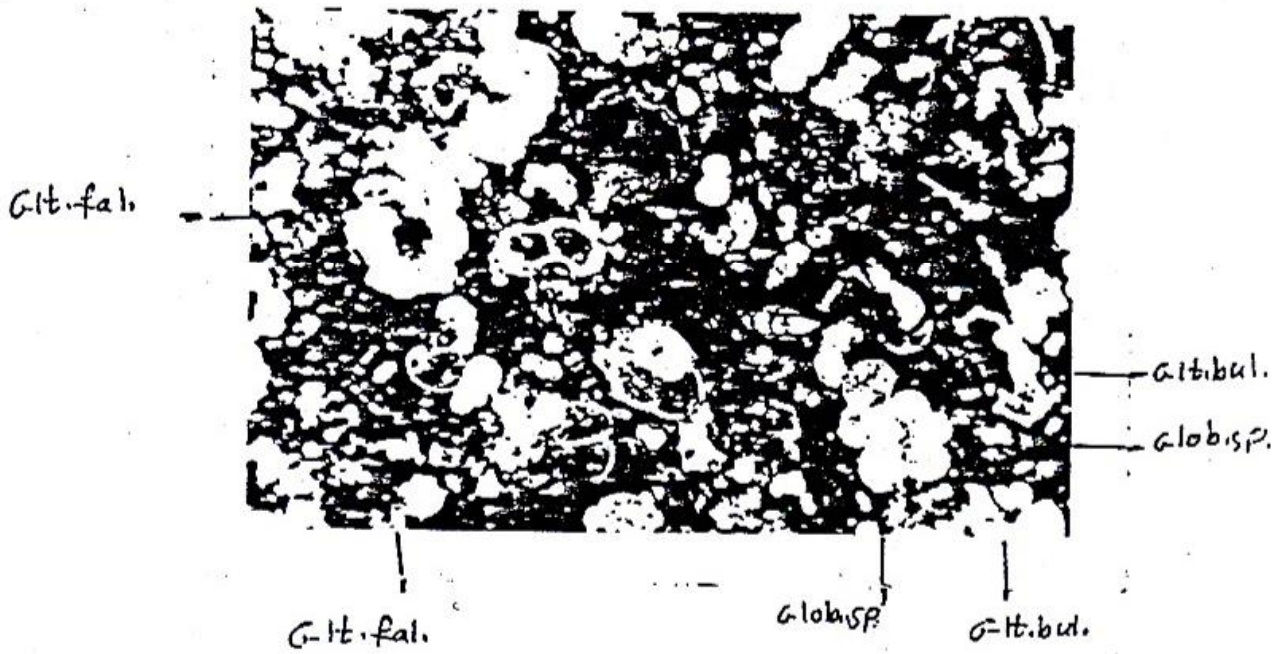


Plate 2

Glob. Conica



Glob. Conica



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Plate 3

