

THE STUDY OF LEPIDOCYCLINA (EULEPIDINA) (FORAMINIFERA) FROM MIDDLE OLIGOCENE TO LOWER MIOCENE OF SOUTH ALBANIA

S. MYFTARI¹, M. BAKO¹, B. MYFTARI¹

ABSTRACT

There are studied too many samples from Ionian Zone (geological outcrops and drilling wells) and Κορυά depression containing Larger Foraminifers, *Lepidocyclina* (*Eulepidina*) subgenus. For their study, determination to species level, biometric and counting measurements known in literature are used. According to proposal (for Mediterranean region) we suggest that in south Albania also can be separated the following species and subspecies:

- *Lepidocyclina*-(*Eulepidina*) *formosoides* DOUVILLE R.
- *Lepidocyclina*-(*Eulepidina*) *dilatata* (MICHELOTTI)
- *Lepidocyclina*-(*Eulepidina*) *dilatata* (MICHELOTTI) var *concentrica* SILVESTRI

For the specimens of microsphaeric generation (B-Form, diameter more than 5 centimeter) maintained the typological concept of classification and were attributed to the species *Lepidocyclina* (*Eulepidina*) *elephantina* LEMOINE and DOUVILLE (1904). They are given briefly the deposition conditions of the shells of this subgenus in flysch (Ionian Zone and mollasic deposits (Κορυά depression) Middle Oligocene- Lower Miocene age. The paper has been accompanied by means 3 plates.

KEY WORDS: Foraminifera *Lepidocyclina* (*Eulepidina*), Middle Oligocene-Lower Miocene, South Albania.

1. INTRODUCTION

In parallel with the study of planktonic foraminifers for biostratigraphic purposes, in many samples from geological outcrops and drilling wells in Ionian zone are encountered Larger foraminifers *Lepidocyclina* (*Eulepidina*) subgenus (MYFTARIS, 1981, 1989, 1998). Also were studied complexes of the same subgenus from Κορυά depression varying from Middle Oligocene to Lower Miocene (Aquitanian) deposits (KUMATI LI., KOROveshi T., VATHI K., MYFTARI S., 1998).(Fig. 1). The isolated Larger foraminifers specimens in the samples remaining after decantation were chipped dyed and photographed according to the published literature (Plate 1, 2) or prepared slides from limestones or detritic clastic sandstones encountered in flysch deposits (Plate 3, fig.1-4). Specimens (over 5 centimeter in diameter) are collected in natural conditions in Valesh (Elbasan) and Plasa (Κορυά) sections (figs. 2, 3). For their determination to species level, biometric and counting measurements known in literature are used (for macrosphaeric generation, A-Form), MATTEUCCI R. et al., (1977), DROOGER CW et al., (1986), LESS G. (1991).

2. RESULTS AND DISCUSSION

In equatorial sections of oriented slides (A Form) there is seen a too large Nukleoconch. The Protoconch is outlined by Deuteroconch in different degree (Plate 1, 2). The degree of outline of Protoconch by Deuteroconch (the "grade of enclosure" also called "Factor-A" by VAN DER VLERK 1963) is different. It varies from those with an obvious tangenciality of Protoconch up to them with small tangenciality or specimens, where the Protoconch has an eccentric or central position (Plate 1,2)

According to DROOGER C.W.et et al., (1986) proposal, for Mediterranean Region, we suggest that in South Albania also can be separated the following species and subspecies:

1. Specimens with the values of "Factor A" around 70 %, to be attributed to species *Lepidocyclina* (*Eulepidina*) *formosoides* DOUVILLE R. These ones are more primitive specimens encountered in South Albania. Their occurrence is rare.
2. Specimens with values of "Factor A" 90-100 % were attributed to *L. (Eulepidina) dilatata* (MICHELOTTI). (Plate 1, figs 3, 4, 6, 7, 10, Plate 2, figs. 1, 2, 3, 4, 5, 8,9,11) These species have more occurrence and more

1. Oil and Gas Institute, Dep. of Paleontology, Fier, Albania

frequency in flych deposits of Middle Oligocene to Lower Miocene (Aquitanian) in Ionian zone and Korça Depression.

3. Specimens with eccentric or central position of Protoconch to Deuteroconch, were attributed to subspecies *L. (Eulepidina) dilatata* (MICHELOTTI)

concentrica SILVESTRI (Plate 2 figs 6, 7, 10, 12, 13). It is the more evolutionary subspecies encountered.

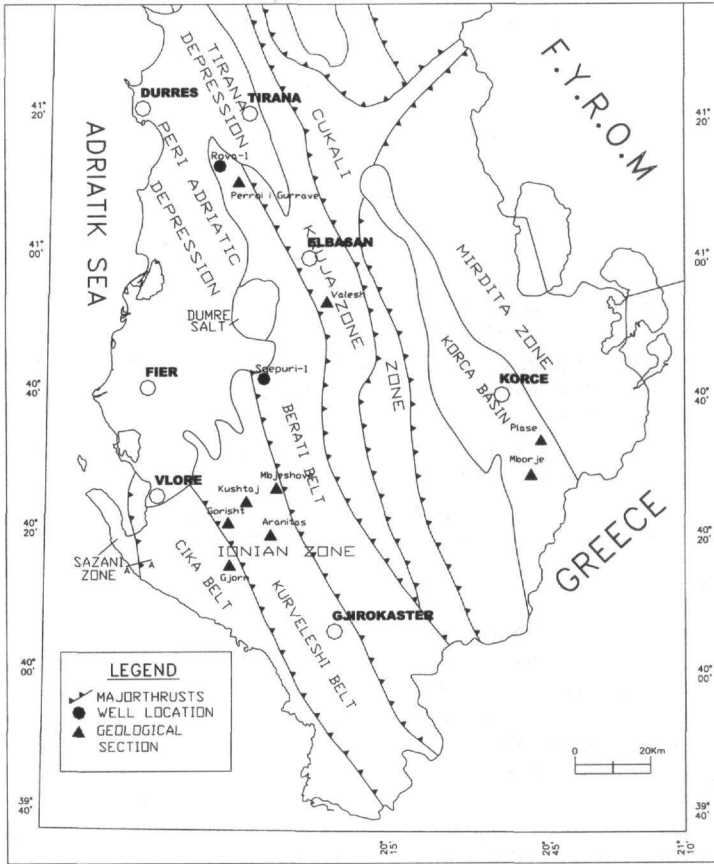


Fig. 1 Location of geological sections and wells

4. The specimens of microsphaeric generation (Fig. 3) (with more than 5 centimeter in diameter) is maintained the typological concept of classification, and were attributed to the species of *Lepidocyclus (Eulepidina) elephantina* LEMOINE and DOUVILLE R., (1904) (after CIZANCOURT M., and CIZANCOURT M., (1931) and ELLIS B., and MESSINA A., (1965) (figs. 2, 3) These specimens have a shell which is lens in form (not inflated in center) (Fig. 2, 3), the evolved equatorial chambers do not differ from those of the A. Forms.

Perhaps these specimens belong to microsphaeric generation (B. Forms) of *Lepidocyclus (Eulepidina) dilatata* (MICHELOTTI) species. These specimens are encountered together with those macrosphaeric generation (A-Form) in Ionian zone (Berati belt). In Eastern part of Ionian zone (Valesh section, Elbasan) and Korça Depression (Plasa section) they form thick biostromes (fig. 2). It is very difficult to determine, in time, the successive evolution of *L. (Eulepidina)* subgenus, compared with the zonal scheme based on planktonic foraminifers. But we can say that in Ionian zone are encountered, in same samples different mixes specimens of *Lepidocyclus (Eulepidina)* subgenus (specimens with different values of "Factor-A") (MYFTARI S. 1981, 1989). The age of these specimens is judged by the coexistence of *Lepidocyclus (Nephrolepidina) praemarginata* DOUVILLE R. (Middle Oligocene for earlier species) and s/g. *Miogypsinoides* and s/g *Miogypsina* for youngest assemblages (Upper Oligocene-Lower Miocene (Aquitanian) and coexistence of planktonic foraminifers. The subgenus is disappeared in the end of Aquitanian that is never found in the lower part of Burdigalian (MYFTARI S., 1981).



Fig. 2 Assemblage with *Lepidocyclina* (*Eulepidina*) in the Middle Oligocene clays Plasa (Korça) section 22, x 1.2.

3. BRIEFLY ON PALEOECOLOGY AND DEPOSITING CONDITIONS

In biostromes (Fig. 2) (generally consisting of specimens of subgenus *Eulepidina*) from Eastern part of Ionian zone (Valesh section) and Korça Depression (Fig. 1) are, encountered also a lot of fossils with animal and plant origin such as Corals, Gastropods, Bivalvia, Bryozoans, Echinodermata etc. The biostromes aren't well cemented and the shells of *Eulepidina* subgenus were setting in biological position (parallel with each other, (Fig. 2)). The facts have pointed out that Larger Foraminifers (s/g *Eulepidina*) lived near the shoreline of the basin, depth to 20-50 meters, in waters with normal salinity, warm waters and rich with Calcium carbonate (CaCO_3). After the living process, fossilization, their large shells have remained in their place ("in situ"). Such a thing is evident from their to regressive phase of Upper Oligocene in periphery of Ionian zone, while in Korça depression to transgressive phase of Middle Oligocene (KUMATI LL, et al. 1998).



Fig. 3 - *Lepidocyclina* (*Eulepidina*) *elephantina* LEMOINE et DOUVILLE 1904. Upper Oligocene. Valesh (Elbasan) section 13 Natural grossiment.

In the Ionian zone (Inner and Middle subzone) we have a full different situation to its above-mentioned: Specimens of *L. (Eulepidina)* subgenus (also complexes Oligocene of Larger Foraminifers) are encountered in horizons of clastic -organogenous limestones and sandstones and slumping masses into Oligocene flysch, setting disorderly manner (Plate 3, Fig. 1, 2, 3) and mixed with planktonic and benthonic foraminifers of depth waters (middle-upper bathyal). Their miscellaneous process and reworking is due to turbidite currents. Through to

submarine canyons Larger Foraminifers have been taken from of basin margins and were transported too long, parallel with syncline axes. During that process they are differentiated to their form and weight, depositing where the energy of turbidite currents has fallen in its minimum. The direction of erosion and transportation has been from East to West, whereas that of transportation has been valley axe (in belts of Ionian zone). In the same manner we can explain the small dimensions of Larger Foraminifers and of specimens of *L. (Eulepidina)* subgenus and their coexistence with planktonic foraminifers. Larger Foraminifers can be used for biostratigraphic and paleogeographic purposes; because of the time difference is disdained.

REFERENCES

- CIZANCOURT M. and CIZANCOURT M. - 1931 - Sur la stratigraphie et la faune Nummulitique du flysch de l'Albanie *Bull.Soc.Geol.France.Ser.4.* (1930) 195-212 Paris.
- DROOGER C.W. and LAAGLAND H.- 1986 -Larger foraminiferal zonation of European-Mediterranean Oligocene. *Proc.Kon.Ned.Ak.Wet.*, 89, 139-140, Utrecht.
- ELLIS B, MESSINA A. -1965- Catalogue of Index Foraminifera Vol I. Lepidocyclinids and Miogypsinids., *Amm.Mus.Nat.History*, New York
- KUMATI LL., KOROVESHI T., VATHI K., MYFTARI S. -1998- The sedimentary Oligo-Miocene Molassic cycle in the Devolli syncline of Korrça Basin (South Eastern Albania). *Bull.Geol.Society of Greece XXXII/2*, 321-327, Patra.
- LESS G. -1991- Upper Oligocene Larger Foraminifers of the Bókk Mountains. *A.M.All.Foqldtani Intezet Evi Jelentese. Az*, 1989, Evrol. 1991, 443-445 Budapest.
- MATTEUCCI R. and SCHIAVINOTTO F. -1977- Studio biometrico di *Nephrolepidina*, *Eulepidina*, *Cycloclypeus* in due Campioni del Oligocene di Monte la Rocca.*Geol. Romana.*,16, 141-171, Roma
- MYFTARI S. -1981- Fosilet e foraminifereve te medha te Hatian-Burdigalianit (perfsshire) ne pjesen JP te zones Jonike. *Bull. "Nafta dhe Gazi"* 1, 63-95, Fier(in Albanian, summary in English).
- MYFTARI S.-1989 - Foraminifere te medha te Oligocenit te mesem-Burdigalianit ne rajonin Tirane-Elbasan-Gramsh. *Buletini I Shkencave Gjeologjike* 3, 109-129, Tirane (In Albanian, summary in English).
- MYFTARI S.- 1998- Larger Foraminifera and Biofacies od Oligocene-Lower Miocene turbidite deposits in Ionian zone (S.W. Albania).*Proc.of.12th International Petroleum Congress and Exhib. Of Turkey* 12-15 October., 249-258, Ankara.
- VLERK VAN DER I. -1963- Biometric research on *Lepidocyclina* - *Micropaleontology*. Vol. 9, Nr. 4., New York.

EXPLANATION OF PLATES

PLATE 1

- Fig. 1, 2 -Surface aspect of Lepidocyclina (Eulepidina). Upper Oligocene. Aranitas (Fier) section 274.x10.*
- Fig. 3, 4, 6, 7, 10- Lepidocyclina (Eulepidina) dilatata (MICHELOTTI) Equatorial sections, (Form A) Upper Oligocene. Gorisht (Vlore) section 7 x 20.*
- Fig. 5, 8, 9 - Lepidocyclina (Eulepidina) - Axial sections (Forma A) Upper Oligocene. Gorisht (Vlore) section 7x20.*

PLATE 2

- Fig. 1, 2, 3, 4, 5, 8, 9, 11 - Lepidocyclina (Eulepidina) dilatata (MICHELOTTI) fragments of Equatorial sections (Form A). Mbjeshove (Fier) section: Sample 1488 x 20.*
- Fig. 6, 7, 10, 12, 13 - Lepidocyclina (Eulepidina) dilatata (MICHELOTTI) var _concentrica (SILVESTRI). Equatorial sections (Form A) Upper Oligocene Aranitas (Fier) section. Sample 274 x 25.*

PLATE 3

- Fig. 1 - Biofacies with Lepidocyclina (Eulepidina) Axial section. Form A. Middle Oligocene. Well Sqepuri-2 (1869-1872) x 23.*
- Fig. 2 - Biofacies with Lepidocyclina (Eulepidina) sp. There are encountered also L.Nephrolepidina, Pararotalia, Operculina, Amphistegina, Rotalidae. Middle Oligocene. Well Rova-1 (839-844) m x 23.*
- Fig.3 -Biofacies with Lepidocyclina (Eulepidina) (Form A+B), L.Nephrolepidina), Pararotalia, Middle Oligocene. Well Rova-1 (839-844) m x 23*
- Fig. 4- Biofacies with Lepidocyclina (Eulepidina). There are encountered also Miogypsinoides , Upper Oligocen, Aranitas (Fier) section. Sample 274 x 23.*

PLATE 1

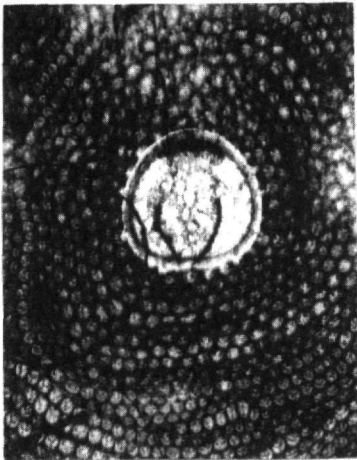
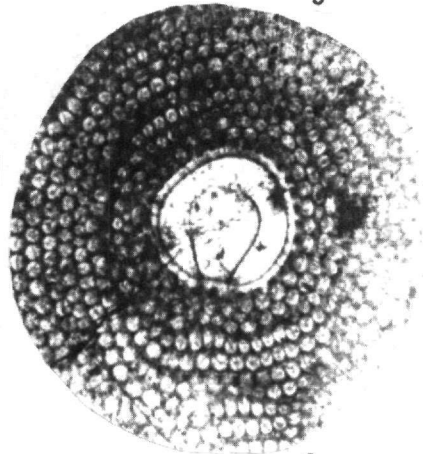
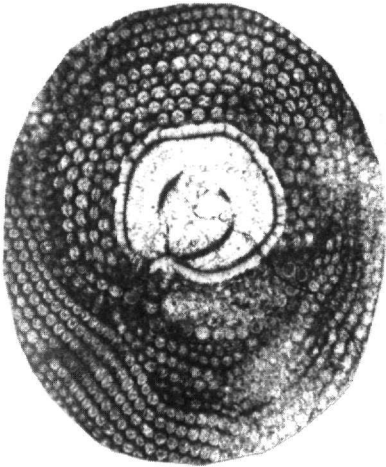
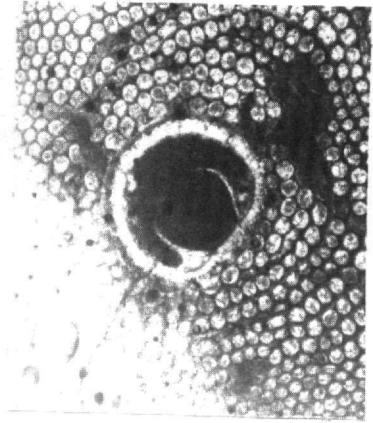
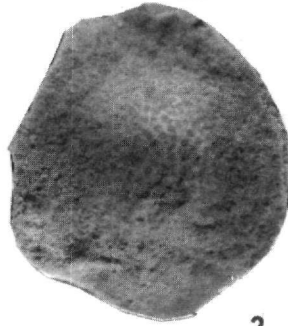
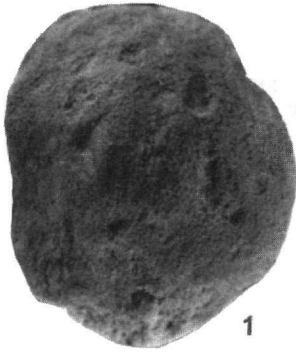
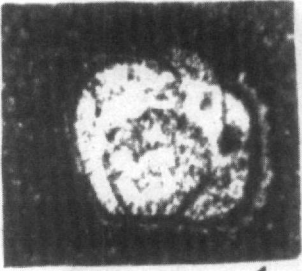
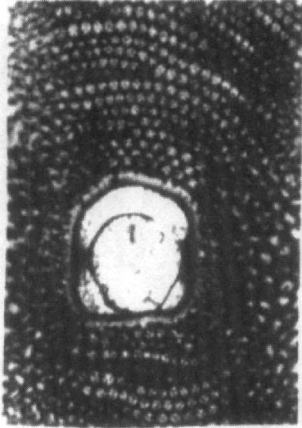


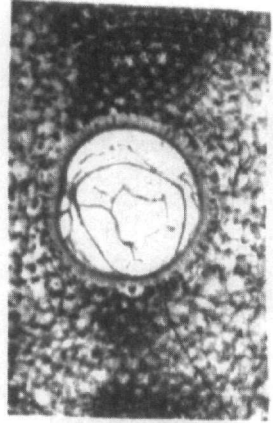
PLATE 2



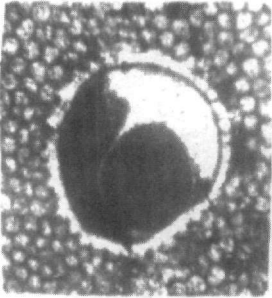
1



2



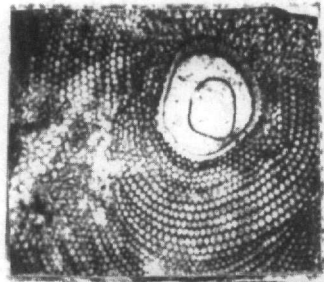
3



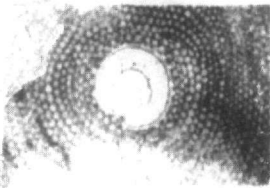
4



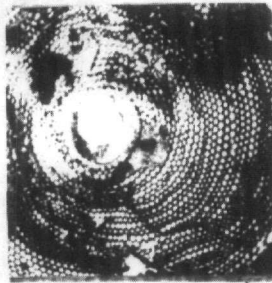
5



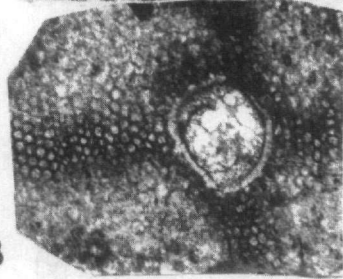
6



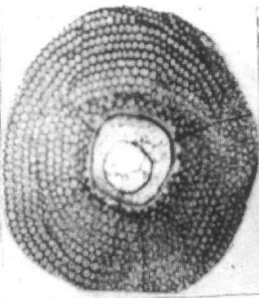
7



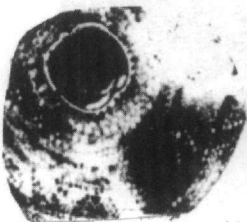
8



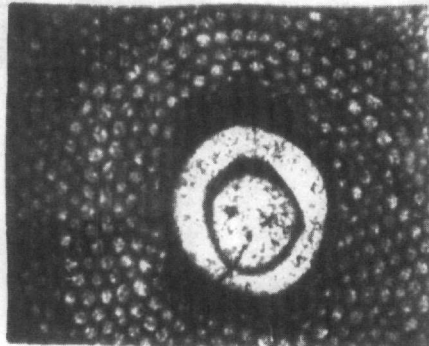
9



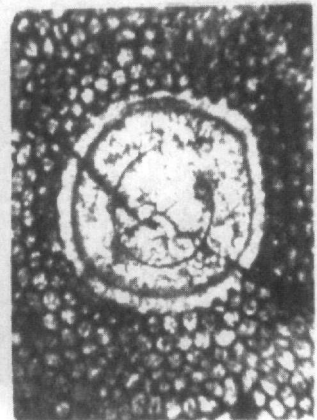
10



11

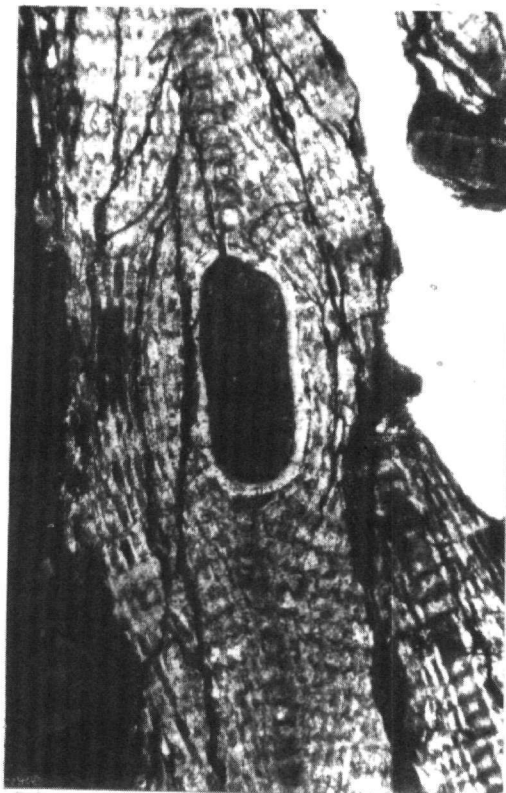


12

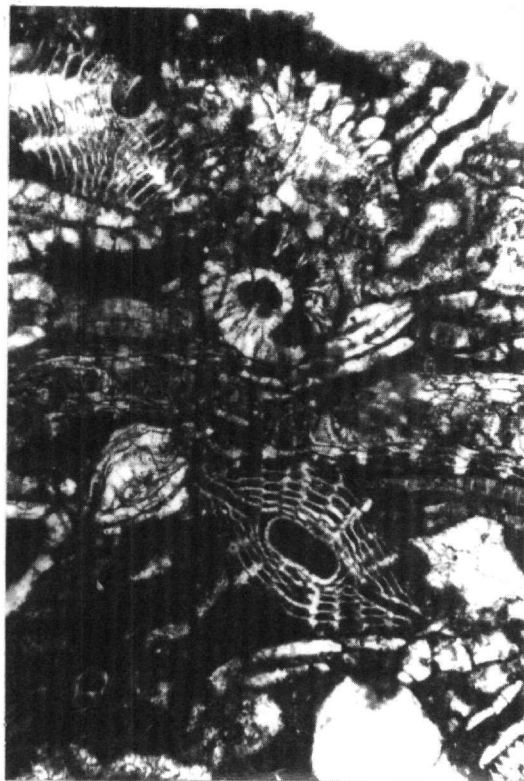


13

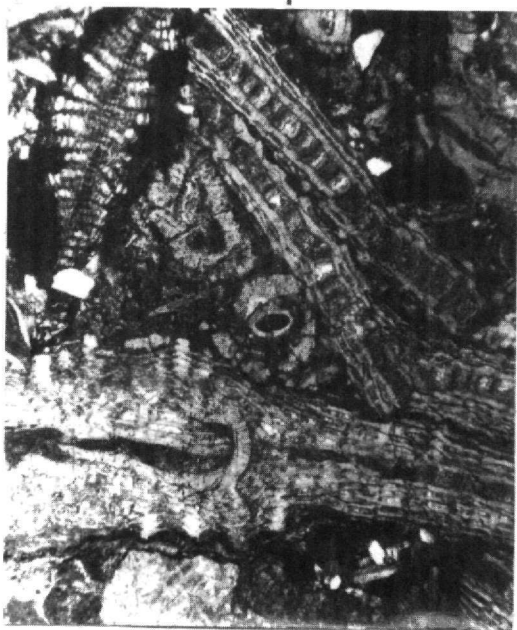
PLATE 3



1



2



3



4