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THEODOR NEAGU

MICROPALEONTOLOGICAL AND STRATIGRAPHICAL STUDY OF THE UPPER CRETACEOUS DEPOSITS BETWEEN THE UPPER VALLEYS OF THE BUZĂU AND RIUL NEGRU RIVERS (EASTERN CARPATHIANS)

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MICROPALEONTOLOGICAL AND STRATIGRAPHICAL STUDY OF THE UPPER CRETACEOUS DEPOSITS BETWEEN THE UPPER VALLEYS OF THE BUZĂU AND RÎUL NEGRU RIVERS (EASTERN CARPATHIANS)[1]

BY

THEODOR NEAGU[2]

Abstract

Part one represents the stratigraphical study of the Cretaceous deposits from the Intorsura Buzăului-Valea Mare-Teliu area. This study offered the possibility to establish the age of the different lithological formations of the Lower internal nappe, beginning with Cenomanian deposits to Lower Maestrichtian ones. Part two presents the paleoecological and microbiostratigraphical considerations. The lithological and microfaunal facies of the Upper Cretaceous in the Intorsura Buzăului-Teliu-Valea Mare area are discussed. The characteristics of the sedimentation basin which included high turbidity and turbulence, as well as rapid deposition, and rapid fluctuation of sea level had a strong influence on the microfaunal association. Following micropaleontological zones have been identified: *Rotalipora-reicheli* zone with Radiolarian biofacies, *Allomorphina cretacea* zone and *Globotruncana arca* zone. In the third part are presented the structural feature of the Intorsura Buzăului-Teliu area. The fourth part contains the relations between the series of Upper Cretaceous deposits in the Intorsura Buzăului-Teliu area and those of the surrounding regions. The fifth part represents the sistematic description of the foraminiferal fauna from the Cenomanian to Lower Maestrichtian deposits from the Lower internal nappe, and of the Lower Cretaceous (Aptian-Albian) from the Upper internal nappe. Six new species are described: *Haplophragmoides herbichi*, *Thalmannamina meandertornata*, *Th. recurvoidiformis*, *Parafissurina lageniformis*, *Pleurostomella dacica*, *P. pseudocurta*, and three new subspecies: *Fissurina orbignyana inornata*, *F. orbignyana bicornis*, *Quadrimorphina allomorphinoides supracamerata*.

INTRODUCTION

The region which is forming the object of this paper may be included, as a whole, within a polygon whose peaks correspond to the localities Vama Buzăului, Sita Buzăului, Boroşneul Mic, Saciova, Valea Dobîrlăului and the railway station Poiana Florilor.

The studied area covering about 182 sq. Km., includes two large orographic units, i.e., a mountainous unit where some heights exceed 750m, and a depressionary one, also known as „Intorsura Buzăului Depression", with an average height of 710 m, and a central position within the investigated perimeter. The later is surrounded on all parts by hills whose altitude may sometimes exeed 900 m.

[1] This study was presented as subject of the Thesis for my doctor 's degree examination to the Scientific Council of the Faculty of Geology-Geography, University of Bucharest, June 11, 1965.

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CASE HISTORY

The main data obtained during the XIX-th century about the geology of the region Întorsura Buzăului-Valea Mare belong to Fr. Herbich. In his monograph "Das Szekerland" published in 1878 this author deal in detail with the geological formations of the area, describing a sequence of several horizons. In the Upper Carpathian sandstones which he assigned to the Upper Cretaceous, Herbich mentioned grey coloured intercalations accompanied by clays and marls with fucoids (this seems to be series of Turonian and Campanian). Even if making some confusions the author has obviously succeeded in recognizing the difference between the deposites of the Lower Cretaceous and the ones of the Upper Cretaceous although, according to his statement, paleontological data were almost inexistent. Recent geological studies have proved that the separation of these two types of deposits as performed by Herbich, is to a great extent acurate. Their cartographic separation-with some small errors, which are permissible for investigation carried on a century ago-is most similar to the one lately achived.

After the first World War, works carried out in 1926 for the construction of the railway tunel between Teliu and Intorsura Buzăului afforded Jekelius the occasion to undertake some investigation in the same area. This rather summary observations published in 1930 offer only an approximate picture of the deposits intercepted by the tunnel.

In 1927, in the Excursion Guidebook for the second meeting of the "Association pour l'avancement de la Geologie des Carpates" held in Bucharest, Macovei stated (p. 72) that" the high mountains strechting between Leaota, Sf. Gheorghe, Tg. Săcuiesc, Comarnic, the confluence of the Teleajen and Telejenel Rivers, and the Upper Buzău Valley, are all formed of Aptian deposits". In the sequence of these deposits he separated the following three horizons: marly-shalley in the lower part, gritty in the middle part, and conglomeratic-gritty in the upper part.

In 1936 Filipescu pointed out that the red Senonian marls occuring in this area are overthrusted by the more internal Cretaceous flysch along the major tectonic line: Crasna-Teliu—Măgheruș.

In 1955, Filipescu and Neagu based on macro- and micropaleontological evidence assigned a Cenomanian age to the red marls outcroping West of Teliu.

In this book on the ' Geology of the Eastern Carpathians" published in 1957, Băncilă based on studies carried out by I. Marinescu, records a series of significant data concerning the same area.

The results of the researches carried out by Marinescu between 1957 and 1960 were published in 1960—1962. The author emphasizes the occurence of Turonian-Senonian inoceramian bearing deposits in the Întorsura Buzăului — Valea Mare sector.

After 1963, several geological crews of the State Geological Commitee mapped the same area, but only partial publications were issued. Thus, M. Ștefănescu and Marina Zamfirescu (1964) described Vraconian and Upper Cretaceous marls cropping out in the Vama Buzăului sector.

PART ONE

STRATIGRAPHY OF THE CRETACEOUS DEPOSITS

The Cretaceous deposits in the Întorsura Buzăului — Valea Mare region may be grouped in two large stratigraphic units, i.e.: Upper Cretaceous deposits (Cenomanian-Lower Maestrichtian) which display the larges development; Lower Cretaceous deposits (Aptian-Albian).

STRATIGRAPHY OF THE UPPER CRETACEOUS DEPOSITS

The Upper Cretaceous deposits represent the Cenomanian, the Turonian and the Senonian.

Cenomanian

Within the Cenomanian deposits two horizons have been recognized: the horizon of the red-brick coloured marly limestones and, the horizon of the marly shales and grey-blackish limestones.

a) The horizon of the red-brick coloured marly limestones with *Neohibolites ultimus* (d'Orbigny) and planctonik foraminifera.

The deposits of this horizon are well exposed in the Teliu-Poiana Florilor—Valea Dobîrlăului area, along the Braşov—Buzău highroad, above the western end of the Teliu—Întorsura Buzăului railway tunnel, behind the Poiana Florilor railway station, along the Canton and Otgonul Creeks, near the confluence of the Cărbunarea and Teliu valleys, from the confluence of the Şopîrlei Creek and Dobîrlău Valley upstream, along the Dobîrlău Valley and finally along the Craca Mare Creek and its tributaries.

In all the places mentioned, these deposits consist of hard sandy, slightly micaceous marly limestones interbedded with compact marly limestones and soft, sandy micaceous, green-stained marls. The colour of the deposits ranges from red-brick to reddisch dark violet. Thin intercalations of micro-breccia (0,5 to 2 cm), including fragments of green, grey and red marly, large mica flakes and quartz.

The macrofauna of this horizon includes abundant specimens of *Neohibolites ultimus* (d'Orbigny). Along the Craca Mare Creek (Dobîrlău Valley) there can be noticed that the deposits of this horizon are interfingering with the grey-blackish marly limestones of the higher horizon.

The deposits included in this lower horizon have yielded a very rich microfaunal assemblege represented by Foraminifera and calcified Radiolarian. The main components of this assemblege are: *Hyperammina grzybowskii* (Dylazanka), *Reophax scorpiurus* (Montfort), *R. minuta* Tappan, *Glomospira charoides* (Jones & Parker), *Ammodiscus incertus* (d'Orbigny), *Lituotuba incerta* Franke, *Ammobaculites problematicus* (Neagu), *Recurvoides* sp., *Spiroplectammina gandolfii* Carbonier, *S. complanata* (Reuss), *Tritaxia gaultina carinata* (Neagu), *Dorothia oxycona* (Reuss), *D. concina* (Reuss), *Quinqueloculina* cf. *moremani* (Cushman), *Spiroloculina cretacea* Reuss, *Lenticulina macrodisca* (Reuss), *L. nuda* (Reuss), *Saracenaria navicula* (d'Orbigny), *Dentalina nana* Reuss, *D. megalopolitana* Reuss, *D. debilis* (Berthelin), *Nodosaria paupercula* Reuss, *Marginulina bullata* (Reuss), *M. cephalotes* (Reuss), *M. grata* Reuss, *Planularia tricarinella* (Reuss), *Astacolus crepidulus* (Fichtel & Moll), *Ramulina globotubulosa* Cushman, *Pleurostomella subnodosa* Reuss, *P. obtusa* Berthelin, *Gyroidinoides mauretanicus* (Carbonier), *Osangularia cretacea* (Carbonier), *Rotalipora appenninica* (Renz), *R. reicheli* Mornod, *R. cushmani* (Morrow), *Praeglobotruncana stephani stephani* (Gandoli), *P. stephani gibba* Klaus, *Cibicides polyraphes* (Reuss).

Slightly different deposits of the same horizon crop out at Întorsura Buzăului, below the 783 m saddle along a tributary of the Argintaru Creek. Within this outcrop a packet of brick coloured, soft, slightly micaceous, bedded marls occurs, underlain by a level of red-violaceous and green clays, and overlain by grey-blackish marls and marly limestones. The underlying red clays contain only agglutinated Foraminifera among which the most important are: *Psammosphaera fusca* Sars, *Pelosina complanata* Franke, *Hyperammina grzybowskii* (Dylazanka), *Glomospira charoides* (Jones & Parker), *G. charoides diffundens* Cushman & Renz, *Lituotuba incerta* Franke, *Reophax minuta* Tappan, *Hormosina ovulum* (Grzybowski), *Ammobaculites problematicus* (Neagu), *Thalmannammina meandertornata* n. sp., *Recurvoides imperfectus* (Hanzlikova), *Plectorecurvoides alternans* (Noth), *Haplophragmoides gigas minor* Nauss, *H. bulloides* (Beisell), *Plectina* sp.

The red-brick coloured marls contain, however, a very rich microfauna which allows an acurate dating. The main elements of this assemblage are the same as at Teliu—Dobîrlău, but here the planktonic foraminifera are more abundant and varied. Among these, of a particular significance for the dating are: *Hedbergella planispira* (Tappan), *Clavihedbergella simplicissima* (Magné & Sigal), *Rotalipora cushmani* (Morrow), *R. evoluta* Sigal, *R. reicheli* Mornod, *R. globotruncanoides* Sigal, *Schackoina cenomana cenomana* (Schacko), *Sch. cenomana gandolfi* (Reichel), *Sch. mul-*

tispinata bicornis (Reichel), *Praeglobotruncana stephani stephani* (Gandolfi), *P. marginaculeata* (Loeblich & Tappan).

According to this assemblage both the Middle Cenomanian and the lowermost Upper Cenomanian are represented.

With the same lithological composition (red marls), the Cenomanian also occurs at the southern end of the perimeter investigated in the area of the Vama Buzăului Parish, on the Prădescu summit (located between the two Buzău rivers), and along the Boul Creek. Both the *Rotalipora* assemblage and the Inoceramian prove the Cenomanian age of these deposits.

b) The horizon of the marly shales and grey-blackish marly limestones with *Mantelliceras mantelli* (Sowerby).

In the region of the Teliu and Dobîrlău Valleys, the red coloured marly limestones are overlain by a complex of about 100 m thickness, consisting of densely alternating grey-blackish shaly, micaceous marls with rare and thin intercalations of calcareous sandstones and hard, dense, grey-whitish marly limestone, as well as grey-reddish marly limestones.

These deposits are exposed on the right bank of the Teliu Valley, along the Brașov—Buzău highroad, on the Canton Creek, Otgon Creek, the Cărbunarea and Dobîrlău Valleys, on the Craca Mare Creek and its tributaries.

In all these outcrops interlayers of blackish micaceous thinly stratified argillaceous shales frequently occur, rich in fish remains (scales, skeleton fragments), plant remains (leafs, twigs), shell of ammonites such as *Mantelliceras mantelli* (Sowerby), *Puzosia planulata* Sowerby, *Acanthoceras rotomagense* Defrance, *Turrilites* cf. *costatus* Lamarck and shels of Inoceramian such as *Inoceramus crippsi* Mantell, *I.* cf. *etheridgei* Woods. This fauna has been found in the outcrops of the Canton Creek. To the listed species P. Dumitrică added *Striaptychus cretaceus* var. cf. *radiosa* Trauth, *Notidanus microdon* Agassiz and *Podozamites* sp.

According to the mentioned faunal elements the beds described are Cenomanian in age.

Micropaleontological analyses have shown a very poor content consisting of rare specimens of planktonic Foraminifera such as *Rotalipora* and *Praeglobotruncana*, and a large lot of Radiolarian.

The upper part of this sequence with Cenomanian fauna amounting to about 20 m thickness consists of red-violaceous, variegated and greenish-whitish sandy clays with aboundant mica flakes. On the Otgonul Creek numerous bioglyphes of the *Zoophycus* type occur in this deposits. Macrofossil remains are lacking, but micropaleontological analyses have shown an important content of agglutinated Foraminifera and, subsidiary, calcareous ones. This assemblege is the richest one in the samples collected on the Canton Creek including: *Glomospira charoides* (Jones & Parker), *G. irregularis* (Grzybowski), *Ammodiscus incertus* (d'Orbigny), *Hormosina ovulum* (Grzybowski), *Ammobaculites problematicus* (Neagu), *Haplophragmoides gigas minor* Nauss, *H.* cf. *concavus* (Chapman), *Reophax minuta* Tappan, *Trochamminoides proteus* (Karrer), *Pseudobolivina variabilis* (Vasicek), *Trochammina umiatensis* Tappan, *Cystammina pauciloculata* (Brady), *Gaudryinella* sp., *Eponides haidingeri* (d'Orbigny), *Gavelinella* cf. *umbonella* (Reuss), *Pleurostomella* sp., *Rotalipora* sp., calcified Radiolarian.

Pseudobolivina variabilis occurs only in this level which therefore can be designated as the "*Pseudobolivina variabilis* level".

According to the listed assemblage, the *Pseudobolivina variabilis* level should be considered as transition between the deposits with Cenomanian ammonites and the overlaying one whose Turonian microfaunal assemblege is quite different.

Remarks concerning the Cenomanian deposits

With regard to the age and lithological composition of the above-discussed deposits, opinions were and still are different.

Thus, Filipescu (in 1955) established on plain paleontological grounds, a Lower Cenomanian age for the lower red marly limestones, and considered that the overlaying deposits (grey-blackish marls) are Upper Cenomanian -Turonian in age; later on (1963) Lower Turonian.

In 1957, Băncilă designated under the name of "Teliu Beds" a sequence composed of greyish sandy marls with *Parahibolites tourtiae* Weigner), red marls with *Neohibolites ultimus* (d'Orbigny) and platy hard marly limestones interbedded with fine sandstones

containing *Puzosia subplanulata* (Schluter). These beds were considered to be Vraconian-Cenomanian in age. Later on Marinescu (1962) recognised the same stratigraphic subdivisions which he also assigned to the Vraconian-Cenomanian. Taking into account that in the overlying series, on the Cîrlanu Creek several specimens of *Inoceramus labiatus* (Schlotheim) have been collected which certify its Lower Turonian age the presence of *Scaphites geinitzi* d'Orbigny (one specimen) mentioned by Filipescu and co-workers in the sequence of grey-blackish marly-limestones seems to be questionable.

Based on the reported paleontological and micropaleontological data, we maintain the opinion that the age of this sequence does not go beyond the Upper Cenomanian.

Turonian

In the area Întorsura Buzăului—Valea Mare, the Turonian is represented by a rather uniform lithological complex of prevailing marly-sandy composition, with scarce intercalations of soft sandstones, sideritic marly limestones and lenses of micaceous red clays.

Thus, overlaying the level of red clays with *Pseudobolivina variabilis* (Vasicek) follows in continuity of sedimentation a marly of grey-blackish, micaceous, shaly marls with thin sandstone intercalations with, here and there, thinly bedded or lenticular layers of hard sideritic marly-limestones overlain by limonitic oxydation crust. The composition of the deposits becomes gradually shaly-gritty, then gritty-shaly due to more frequent sandstone intercalations.

As the gritty-shaly character becomes more obvious, the sideritic intercalations disappear. Interbedded at different levels are layers of up to 20 m thickness of red-brick coloured, bedded, micaceous, sandy clays, and occasionaly there occur one to three intercalations of benthonized tuffites of 5 to 10 cm thickness.

Good exposures of these deposits can be observed on the Cîrlan Creek, Hărcăoaia Creek, Săcuiului Creek, Gurmezea Creek, Dobîrlău Valley, upstream of the confluence with the Craca Mare Creek, on all tributaries on the right side of the Dobîrlău Valley begining with the Răchiții Creek and in the upper part of the Craca Mare Creek.

In the Cîrlanu Valley a sequence of blackish micaceous shaly marls occurs with thin intercalations of dirty-red cherry coloured marls. Upstream, the sandstone intercalations are completly lacking, and the marls display a shaly aspect. At this level, frequent lenticular or stratiform sideritic marly limestone do occur.

The macrofauna of this level is represented by: *Inoceramus labiatus* Schlotheim, *I. sturmi* Andert, *I.* cf. *lamarcki* Parcker. Then the sandstones become more and more frequent until on the upper part they are preavailing over the marls.

The rather poor microfaunal assemblege includes: *Psammosphera fusca* Schultze, *Bathysiphon vitta* Nauss, *Hyperammina grzybowskii* (Dylazanka), *Dendrophrya excelsa* Grzybowski, *Reophax scorpiurus* Montfort, *Spiroplectammina praelonga* (Reuss), *Haplophragmoides bulloides* (Beissel), *Recurvoides* sp., *Thalmannammina meandertornata* n.sp., *Ammobaculites problematicus* (Neagu), *A. coprolithiformis* (Schwager), *A. leuckei* Cushman & Hedberg, *Trochammina umiatensis* Tappan, *Gaudryina* sp., *Plectina* sp., *Uvigerinammina jankoi* Majzon, *Dentalina cylindroides* Reuss, *D. subrecta* Reuss, *D. catenula* Reuss, *Allomorphina cretacea* Reuss, *O-sangularia whitei crassa* Vassilenko, *O. whitei polycamerata* Vassilenko. The feature to be considered as characteristic of this assemblage is difficult to ascertain. The presence of the *Allomorphina cretacea* an important and useful correlation element, whereas the planktonik species and particularly the bicarinate Globotruncanae are lacking. As a matter of fact, this is the single section in the whole region where the Lower Turonian is dated on macro- and micropaleontological grounds.

In the Floroaia Mică Valley, the sequence of Turonian marly deposits contains a layer of red-cherry coloured and green clays of a markedly sandy character, devoid of macrofauna.

Micropaleontological analyses have shown a rich content of agglutinated Foraminifera as dominant feature, completed by rare calcareous species. The main elements are: *Psammosphaera fusca* Schultze, *Glomospira charoides* (Jones & Parker), *G. irregularis* (Grzybowski), *G. gordialis* (Jones & Parker), *Hormosina ovulum* (Grzybowski),

Recurvoides sp., *Thalmannammina meandertornata* n. sp., *Trochammina umiatensis* Tappan, *Dorothia crassa* Marson, *Uvigerinammina jankoi* Majzon, *Praebulimina obtusa* (Brotzen), *P. ventricosa* (Brotzen), *Osangularia whitei whitei* (Brotzen), *Aragonia ouezzanensis* (Ray), *Cibicides ribingi* Brotzen, *Globotruncana lapparenti lapparenti* Brotzen, *Globigerinelloides echeri echeri* (Kaufmann), *G. echeri clavata* (Bolli), *Heterohelix globulosa* Ehrenberg. The assemblage of calcareous foraminifera encountered in these clays are clearly indicating an Upper Turonian age and even the lowermost part of the Lower Coniacian. A little farther southward of this creek, on the Brazilor Creek, the series of Turonian deposits reappears rather well exposed.

An important feature of this outcrop is the fact that there are also red clays interbedded with the grey marls, and particularly to be stressed is the presence of two interlayer of volcanic benthonized tufa.

The occuring macrofauna consist of scarce fragments of Inoceramus shells.

The foraminifera assemblage of this beds includes as proeminent elements: *Psammospheara fusca* Schultze, *Pelosina complanata* Franke, *Ammodiscus incertus* (d'Orbigny), *A. cretaceus* (Reuss), *Glomospira charoides* (Jones & Parker), *G. irregularis* (Grzybowski), *Nodellum velascoensis* Cushman, *Spiroplectammina dentata* (Alth), *Trochammina umiatensis* Tappan, *Cystammina pauciloculata* Brady, *Dorothia crassa* (Marsson), *Plectina* sp., *Arenobulimina truncata* (Reuss), *Osangularia whitei* (Brotzen), *Cibicides eriksdalensis* Brotzen. The fact that planktonic foraminifera of the Globotruncana type are lacking leads us to consider the assemblage as belonging to the Lower Turonian (perhaps its terminal part near the boundary with the Middle Turonian).

On the eastern slope of the Hărcăoaia Hill, the occurences of red clays are quite frequent. These clays show a particularly rich assemblage of agglutinated Foraminifera. Among the more significant elements are to be recorded: *Rhabdammina annulata* (Grzybowski), *R. cylindrica* Glaessner, *Bathysiphon brosgei* Tappan, *Hyperammina grzybowskii* (Dylazanka), *Glomospira charoides* (Jones & Parker), *G. irregularis* (Grzybowski), *G. serpens* (Grzybowski), *G. gordialis* (Jones & Parker), *Ammodiscus cretaceus* (Reuss), *A. incertus* (d'Orbigny), *Hormosina ovulum* (Grzybowski), *Haplophragmoides herbichi* Neagu, *Recurvoides* sp., *Thalmannammina meandertornata* n.sp., *Trochamminoides irregularis* (White), *T. proteus* (Karrer), *T. dubius* (Grzybowski), *Plectorecurvoides alternans* (Noth), *Pseudobolivina* sp., *Trochammina umiatensis* Tappan, *Cystammina pauciloculata* Brady.

A level of red clays of quite similar composition, occuring on the hill of the Brădet Village, includes an assemblage of agglutinated Foraminifera identical to the one previously quoted, and also: *Globotruncana lapparenti lapparenti* Brotzen, and *Glt.* cf. *fornicata* Plummer. As pointed out in many special micropaleontological works, these two species do not occur before the Upper Turonian and their expansion take places in the Lower Senonian. Therefore, from the study of the two assemblages of agglutinated Foraminifera occuring on the eastern slope of the Întorsura Buzăului, it may be interferred that the corresponding deposits are Upper Turonian in age and that the particular composition of these assemblages is related to enviroment conditions which favoured the developement of agglutinated Foraminifera among which are becoming predominantly characteristic the species *Thalmannammina recurvoidiformis* n.sp. and *Th. meandertornata* n.sp., as well as *Haplophragmoides herbichi* Neagu. According to this criterion the corresponding beds may be designated "*Thalmannammina recurvoidiformis* and *Th. meandertornata* clays".

In the Hărcăoaia Valley, the Turonian deposits are developed in the same facies of grey-blackish micaceous marls with scarce interbedded sideritic rocks in which many *Inoceramus* shells were found such as: *Inoceramus lamarcki* Parker and *I. inconstans* Woods, but very poorly preserved owing to tectonizing of the rock. This section likewise includes red clays with agglutinated Foraminifera. The grey-blackish marls have a rather poor microfaunal content, but some elements are of interest for age determination. The proeminent elements of the assemblage are: *Psammosphaera fusca*

Schultze, *Dendrophrya excelsa* Grzybowski, *Glomospira irregularis* (Grzybowski), *Ammodiscus incertus* (d'Orbigny), *Recurvoides* sp., *Uvigerinammina jankoi* Majzon, *Dorothia crassa* (Marsson), *Ellipsoglandulina chilostoma* (Rzehak), *Eponides karsteni* (Reuss), *Valvulineria lenticula* cf. *plummerae* Loeterle, *Globotruncana lapparenti tricarinata* (Querau), *Glt. fornicata* Plummer, *Glt. arca* Cushman. The planktonic Globotruncana species doubtless indicate the Upper Turonian-Lower Coniacian age of the assemblage which is in accordance with the age shown both by the other benthonic clacareous species and the *Inoceramus* remains.

In the sector of the Brădet Village along the tributaries of the Gurmezea Creek, as well as on the slope of the Braşov—Buzău highroad the sequence of grey-blackish deposits offers excellent exposures. In this sector, macrofaunal, remains are missing, but micropaleontological analyses revealed a foraminiferal assemblage that was conclusive with regard to the stratigraphic position. Among the most interesting elements are to be quoted: *Rhabdammina annulata* Grzybowski, *Bathysiphon vitta* Nauss, *B. brosgei* Tappan, *Psammosphaera fusca* Schultze, *Hyperammina grzybowskii* (Dylazanka), *Reophax guttifera* Brady, *R. scorpiurus* Montfort, *Glomospira irregularis* (Grzybowski), *Ammobaculites coprolithiformis* Schwager, *A. lueckei* Cushman & Renz, *A. problematicus* (Neagu), *Haplophragmoides eggeri* Cushman, *Trochamminoides irregularis* White, *Spiroplectammina praelonga* (Reuss), *Tritaxia disjuncta* (Cushman), *Gaudryina cretacea* (Karrer), *Dorothia crassa* (Marsson), *Recurvoides* sp., *Trochammina umiatensis* Tappan, *Dentalina gracilis* Reuss, *D. peracuta* Reuss, *Lagena apiculata* Reuss, *Allomorphina cretacea* Reuss, *A. allomorphinoides* Reuss, *Pleurostomella subnodosa* Reuss, *Ellipsoidella subnodosa* (Guppy), *Globotruncana marginata* (Reuss), *Glt. lapparenti tricarinata* (Quereau), *Glt. lapparenti lapparenti* Brotzen, *Glt. lapparenti angusticarinata* (Gandolfi), *Glt. lapparenti coronata* Bolli, *Glt. lapparenti bulloides* (Brotzen), *Gyroidinoides nitidus* (Reuss), piritized Radiolarian.

On behalf of the afore-mentioned *Globotruncana* species, this assemblage obviously indicates an Upper Turonian-Lower Coniacian age which is in perfect accordance with that of the previously mentioned deposits of the Întorsura Buzăului zone, and which in some sections was also supported by macrofaunal elements.

Along the Dobîrlău Valley, upstream of the confluence with the Craca Mare Creek, the sequence of Turonian grey-blackish marls is very well developed. The outcrops have yieled several specimens of *Inoceramus inconstans* Woods. In this section sideritic and red clays intercalations are frequently met with.

Micropaleontological analyses of the grey marls series have revaled the following foraminiferal content: *Rhabdammina cylindrica* Glaessner, *Psamosphaera fusca* Schultze, *Bathysiphon brosgei* Tappan, *B. vitta* Nauss, *Hyperammina grzybowskii* (Dylazanka), *Reophax guttifera* Brady, *Spiroplectammina praelonga* (Reuss), *Ammobaculites coprolithiformis* Schwager, *Haplophragmoides bulloides* (Beissel), *Recurvoides* sp., *Dorothia oxycona* (Reuss), *Gaudryinella pseudoserrata* (Cushman), *Uvigerinammina jankoi* Majzon, *Dentalina communis* d'Orbigny, *D. megalopolitana* Reuss, *Pleurostomella subnodosa* Reuss, *Allomorphina cretacea* Reuss, *Gavelinella ammonoides* (Reuss), *Gyroidinoides nitidus* (Reuss), *Globotruncana lapparenti lapparenti* Brotzen, *Glt. lapparenti* cf. *concavata* Brotzen, *Globorotalites multisepta* Brotzen. The mentioned assemblage provides numerous elements acurate correlation of these deposits with the ones encountered in the Întorsura Buzăului region of similar Upper Turonian to Lower Coniacian age.

The red clays in the lowermost part of these beds, outcropping in the Dobîrlău Valley, include an assemblage of agglutinated Foraminifera that is somehow different from the ordinary one, and is composed of: *Glomospira irregularis* (Grzybowski), *Haplophragmoides rota* Nauss, *H. bulloides* (Beissel), *Ammobaculites problematicus* (Neagu), *Trochammina umiatensis* Tappan, *Tritaxia gaultina carinata* (Neagu), *Plectina* sp., *Praeglobotruncana stephani stephani* (Gandolfi). This assemblage shows definite affinities with the one of the basal Lower Turonian

of the Canton Creek, type, and on these grounds we consider it to represent the lowermost Turonian in this section. An assemblage similar to that of the grey-blackish marls mentioned before also occur in deposits exposed on the Leacuri Creek (left hand tributary of the Dobîrlău Valley) and in the ones exposed along the tributaries of the Craca Mare Creek. A special an important elements for determining the complet stratigraphical extension of deposits in this zone are red clays shows on the Şopîrlei Creek (right hand tributary of the Dobîrlău Valley) and in the upper zone of the Craca Mare Creek tributaries.

Thus, the red clay interlayer on the Şopîrlei Creek is composed exclusively of agglutinated Foraminifera such as: *Bathysiphon vitta* Nauss, *Hyperammina grzybowskii* (Dylazanka), *Glomospira irregularis* (Grzybowski), *G. charoides* (Jones & Parker), *Ammodiscus cretaceus* (Reuss), *Reophax minuta* Tappan, *Hormosina ovulum* (Grzybowski), *Ammobaculites problematicus* (Neagu), *Haplophragmoides bulloides* (Beissel), *Trochamminoides irregularis* White, *Pseudobolivina variabilis* (Vasicek), *Gaudryinella pseudoserrata* (Cushman), *Tritaxia gaultina carinata* (Neagu), *Plectina* sp., *Gaudryina carinata* Franke, *G. cretacea* (Karrer), *Trochammina umiatensis* Tappan, *Cystammina pauciloculata* Brady.

This assemblage represents a mixture of Cenomanian and Turonian species, a fact which leads to the conclusions that these deposits are not far from the boundary between the two stages (having in view the manner in which the two sorts of components are occuring, the possibility of reworking has been excluded).

The red clays unterlayers on the tributaries of the Craca Mare Creek essentially show a microfaunal assemblage whose features are the same as of the red clays mentioned before, with the only difference that they also include many calcareous Foraminifera, whereas older elements are much less numerous. Thus are to be mentioned: *Pelosina complanata* Franke, *Hyperammina grzybowskii* (Dylazanka), *Glomospira irregularis* (Grzybowski), *G. gordialis* (Jones & Parker), *Ammodiscus incertus* (d'Orbigny), *A. cretaceus* (Reuss), *Lituotuba incerta* Franke, *Hormosina ovulum* (Grzybowski), *Spiroplectammina praelonga* (Reuss), *Trochamminoides irregularis* White, *T. dubius* (Grzybowski), *Haplophragmoides bulloides* (Beissel), *H. gigas minor* Nauss, *Ammobaculites problematicus* (Neagu), *Gaudryina cretacea* (Karrer), *Dorothia oxycona* (Reuss), *Uvigerinammina jankoi* Majzon, *Gaudryinella psudoserrata* (Cushman), *Cystammina pauciloculata* Brady, *Trochammina umiatensis* Tappan, *Allomorphina cretacea* Reuss, *Pleurostomella subnodosa* Reuss, *Ellipsoglandulina chilostoma* (Rzehak), *Eponides haidingeri* (d'Orbigny), *Globorotalites subconicus* (Morrow).

Discussions concerning the Turonian deposits

Turonian deposits have not been yet separated in this region as an independent stratigraphical unit. Previous workers did not make any specification concerning the boundary between the Turonian and the Senonian deposits which were described as a whole. Misindentification of some of the *Inoceramus* remains contributed to creat confusion in the dating of the sequence.

As same of the Turonian deposits are quite similar to the ones of the Aptian marly horizon, many authors assigned the former an Aptian age a fact leading to an erroneous interpretation of the tectonic structure.

By correlating the macrofaunal assemblage with the microfaunal one, the author succeded to ascertain the accurate stratigraphical position of these deposits and even to show the characteristic features by which they may be recognized in the field. The presence of *Inoceramus labiatus* Schlotheim is the main argument pleading for the continuity of sedimentation between the Cenomanian and Turonian deposits thus being invalidated the opinion (I. Marinescu, I. Băncilă) according to which the Lower Turonian is missing in the region as a result of subhercynic movements.

Senonian

a) Upper Coniacian-Santonian. The horizon of massive, coarse sandstones with microconglomeratic levels.

By the development of sandstone intercalation, the horizon of grey Turonian marls grades upwards into a well individualized horizon

which forms the higests parts of the relief. The thickness of these deposits ranges from 350 m to 400 m. Clear exposures are visible on the Creeks : Floroaia Mică, Argintarului (in the Întorsura Buzăului area), Dulce, Răchiţii, Şopîrlei (in the Dobîrlău Valley area) and Saciova, Rădăcinos and Măcicaş (in the Valea Mare area).

This horizon is divisible into two levels, i.e. : a lower well bedded level, and a markedly massive upper one.

The lowermost part of the lower level consists of shaly sandstones whose beds reach 50—80 cm in thickness, and of interlayers of marly-sandy shales.

The essential lithological features of this level are the gritty-marly character and the abundence of mica. Both by its positions and its lithology, the lower level represents the transition beds from the Turonian to the Lower Senonian deposits, as may be seen in the outcrops exposed by the right and tributaries of the Dobîrlău Valley.

The upper level shows a well marked gritty character, and is made up of dense sandstones layers from 2 to 6 m in thickness of grey-bluish hue in the fresh breach or of yellowish colour when weathered. The thickness of this deposits reaches up to 250 m.

The sandstones are composed of quartz grains as dominant element, but there may also be observed calcareous grains, shaly fragments, and a white coloured mica which is secound in frequency after quartz.

In thin sections, a net predominance of angular quartz may be observed besides which rare fragments of quartzites, plagioclastic feldspar, microcline, garnet, staurolite, tourmaline, muscovite, biotite, chlorite also occur. Within these sandstones microconglomeratic levels ranging from 0,50 to 3 m thickness may be frequently observed. These coarser levels are of a very polymictic character showing fragments of : shales, reef-limestone, marls, marly limestone, sandstone, quartz etc. All these elements are well rounded and commonly small in size, measuring 1—3—5 cm in diameter. However, conglomeratic levels with elements of much larger diameter may be encountered.

As organic remains, shell-fragments of Pelecypods (Ostreids, Inoceramian, Radiolitids) have been observed and less frequently fragments of Hexacorals and Echinoids as well as shark teeth.

Clear exposures of these conglomeratic layers occur on the creeks : Floroaia Mică, Argintarului, Pistrugosul, Dulce, Saciova.

Layers of sedimentary breccia consisting of grey marly or marly shale fragments, are also present.

The microconglomerates show the following composition : fragments of crystalline schists (quartzitic, sericitic, chloritic schists), crystalline schists with garnets, mica-schists, gneiss (with microcline), quartz with ondulatory extinction, acid feldspar, garnet, tourmaline, staurolite, muscovite (sometime in aggregates), biotite (rarely), chlorite, rare grains of glauconite.

The age of this gritty horizon as a whole (with both mentioned levels) is rather difficult to ascertain owing to the lack of macrofaunal remains. Taking into account, that they are overlaying with continuity of sedimentation the Turonian-Lower Coniacian deposits, and in their turn are supporting deposits of Campanian age, both dated on macro- and micropaleontological grounds, they might be assigned to the Upper Coniacian — Santonian age.

b) Campanian. The marly-gritty horizon with interbedded red clay and benthonized tuffite, with *Inoceramus balticus* B o e h m and *Belemnitella mucronata* (S c h l o t h e i m).

In the Valea Mare sector, the massive sandstone is conformably overlain by a horizon of about 450—500 m in thickness, consisting of grey micaceous marls and sandstones (the "Valea Mare Beds" proper). On account of an intercalation in this series' lower part of sandy red-cherry coloured clays of about 50 m in thickness with 1 to 5 layers of benthonized volcanic tuffites, the marly-gritty horizon may be subdivided into two levels : the lower one is characterized by the presence of the afore mentioned interbedding of red clays and the upper one is devoid of interbedded red clays and volcanic tuffites.

The lower level is well exposed along the Rădăcinos Creek and Valea Mare Valley. In this sector the massive conglomeratic sandstones overlie a thick layer of argillaceous, micaceous, shaly, bluish-greenish marls which are grading upwards into a sequence of about 50 m in

thickness of red-cherry coloured bedded clays with interbedded argillaceous greenish marls, grey-yellowish marls, friable sandstone, and 5 beds of benthonized tuffites generally including in their lower part a thin layer of greenish silicified marls. The uppermost member consist of blackish and greenish marls with soft sandstone interbedding. In this level no macrofauna has been found, except a shell fragment of *Inoceramus* which cannot be determined specifically.

Micropaleontological analyses carried out both on the grey marls and the red clays, as well as on the other mentioned types of pelitic rocks, have revealed the following microfaunal content: *Pelosina complanata* Franke, *Dendrophrya excelsa* Grzybowski, *Rhabdammina annulata* Grzybowski, *Glomospira irregularis* (Grzybowski), *G. gordialis* (Jones & Parker), *G. charoides* (Jones & Parker), *G. serpens* (Grzybowski), *Ammodiscus incertus* (d'Orbigny), *Lituotuba incerta* Franke, *Hormosina ovulum* (Grzybowski), *Trochamminoides irregularis* White, *Plectina* sp., *Verneuilinoides* cf. *fischeri* Tappan, *Uvigerinammina jankoi* Majzon, *Cystammina pauciloculata* Brady, *Tritaxia* sp., *Goesella carpathica* Liszkova. With regard to this assemblage there should be particularly stressed the first occurence of small sized specimens of *Goesella carpathica*, a species which is only quoted in Campanian deposits. As shown by thin sections the interbedded silicified marls, have a very rich content of Radiolarian and Spongia (by preparing Radiolarian contained in these intercalations, P. Dumitrică confirms on their account the Lower Campanian age of the deposits — personal communication).

With similar lithology this level is also exposed along the tributaries of the Valea Mică Creek, and on the Cerc Hill in the Valea Mică hamlet (Valea Mare).

In the Intorsura Buzăului area this level crops out along Scrădoasa Creek and its tributaries. From the grey-greenish marls of the later area several specimens of *Inoceramus regularis* (d'Orbigny) have been colected by the author, the Campanian age of the deposits being thus undoubtedly proved.

The micropaleontological assemblage of the marls is in no way differing from the one previously mentioned.

The upper level is developed in continuity of sedimentation with the lower one, and its thickness range from about 250 to 300 m. The best outcrops are met with along the Ulveș Creek and the Feneș Creek (Valea Mare area) as well as along the Mădăraș Creek (Întorsura Buzăului area).

In the Ulveș Valley profile a sequence of about 100 m in thickness occurs, composed of grey sandy marls frequently alterning with hard thin-layered, miceous, convoluted sandstones, the later gradually disappearing towards the top.

The macrofauna of this marly-gritty sequence is a very rich one including numerous shells of: *Inoceramus balticus* Boehm, *I. regularis* d'Orbigny, *I. lobatus* Münster, *I. planus* Münster, *I. salisburgensis* Fugger & Kastner, and in addition *Belemnitella mucronata* Schlotheim. This assemblage undoubtedly proves the Middle-Upper Campanian age, of the sequence.

Micropaleontological analyses revealed a very rich foraminiferal assemblage, particularly of benthonic species. Among the more than 130 species of this assemblage identified by the author the most significant ones are: *Rzehakina epigona* (Rzehak), *Ammobaculites* cf. *wazaczi* (Grzybowski), *Cribrostomoides trinitatensis* Cushman, *Textularia plummerae* Lalicker, *Spiroplectammina subhaeringensis* (Grzybowski), *S. flexuosa* (Reuss), *Trochammina bulloidiforme* Grzybowski, *T. quadriloba* Grzybowski, *Trittaxia amorpha* (Cushman), *Goesella carpathica* Liszkowa, *Gaudryina pyramidata* Cushman, *Fissurina laevigata* Reuss, *F. alata* Reuss, *Fissurina orbignyana* Seguenza, *Palmula primitiva* Cushman, *Praebulimina ovulum* (Reuss), *P. carseyae* (Cushman), *Pyramidina szajnochae* (Grzybowski), *P. pseudospinulosa* (Troelsen), *P. cushmani* (Morrow), *Aragonia ouezzanensis* (Rey), *Ellipsoidella pleurostomelloides* Heron Allen & Earland, *Gavelinella clementiana clementiana* (d'Orbigny), *G. clementiana laevigata* (Marie), *G. pertusa* (Marsson), *Eponides praemegastoma* (Vassilenko), *Osangularia florealis* (White), *O. spinea* (Cushman), *O. cordieriana* (d'Orbigny), *Gyroidinoides quadratus* (Cushman), *Cibicides voltzianus* (d'Orbigny),

Gavelinella bembix (Marsson), *Rugoglobigerina rugosa rugosa* (Plummer), *R. rugosa rotundata* Brönnimann, *Globotruncana arca* (Cushman), *Glt. stuarti stuartiformis* (Dalbiez), *Glt. stuarti elevata* (Brotzen), *Glt. rugosa* (Marie), *Glt. havanensis* (Voorwijk), *Heterohelix globulosa* (Ehrenberg), *H. planata* (Cushman).

It is noticeable that towards the top of the sequence the microfaunal content becomes more and more rich in specimens. Among the above mentioned species, special mention must be paide to *Goesella carpathica* Liszkova, among the agglutinated Foraminifera, and of *Pyramidina szajnochae* (Grzybowski) among the calcareous species.

Goesella carpathica occurs very frequently and well developed especially in samples collected at the bottom of the sequence, gradually diminishing both in frequency and size toward the upper part. It's quite the reverse in the case of *Pyramidina szajnochae* which in samples from the bottom occurs very rarely and only as small-sized specimens, but increases in both frequency and size toward the top. This development continues also in the following stratigraphical term where it reaches a maximum in both respects.

The foraminiferal assemblage met with in these deposits wholly confirm the dating according to the macrofauna.

Another cross-section exposing this sequence of deposits is encountered along the Feneș Creek, where as an additional lithological element sideritic hard marly limestones do occur. The deposits outcroping there contain many *Inoceramus* shalls belonging to: *Inoceramus balticus* Boehm, *I. impresus* (d'Orbigny), *I. salisburgensis* Fugger& Kastner, which likewise attest a Campanian age. With regard to this profile if should be emphasized that its basal part with thin interbeddings of benthonized tuffites, red and green clays, corresponds from the stratigraphical viewpoint to the uppermost part of the lower level exposed along the Rădăcinos Creek.

In the profile of the Mădăraș Creek, both the lithologic sequence and the microfaunal assemblage show the same features as on the Ulveș Creek, having the same position and age.

c) Upper Campanian-Lower Maestrichtian. The horizon of the greenish-yellouish and reddish marly limestones and of the sandy, greyish marls.

Along the Ulveș, Mădăraș and Ivanca Creeks, the previously mentioned horizon is normally overlain by a sequence of about 80 to 100 m in thickness of greenish dense marly limestones and gritty marly limestones of the same colour which are gradually grading upwards into better bedded reddish-cherry coloured marly limestones.

In these deposits, the macrofauna is represented by *Inoceramus salisburgensis* Fugger & Kastner and *Lopha semiplana* (Sowerby). Besides these elements, large sized agglutinated Foraminifera (over 5 cm in length) such as *Psammatodendron* (*Dendrophrya*) *dichotomicus* Neagu, *Aschemonella carpathica* Neagu, and *A. moniliformis* Neagu also occur. The profile ends with a layer of about 10—25 m in thickness consisting of softy, grey sandy marls with rare sandstone intercalations, devoid of macrofauna.

The microfaunal assemblage of this horizon is very rich, and the difference between these two levels separated on lithological ground, mainly regards the planktonic components. From a total of about 140 species identified by the author the most proeminent ones are: *Rzehakina epigona* (Rzehak), *Hormosina ovulum gigantea* Geroch, *Textularia plummerae* Lalicker, *Spiroplectammina boudouniana* (d'Orbigny), *S. subhaeringensis* (Grzybowski), *S. dentata* (Alth), *S. flexuosa* (Reuss), *Matanzia varians* (Gleassner), *Fissurina orbignyana orbignyana* Seguenza, *F. orbignyana clathrata* Cushman & Renz, *F. orbignyana bicornis* Neagu, *Guttulina trigonula* Reuss, *Praebulimina ovulum* (Reuss), *P. stokesi* (Cushman & Renz), *Pyramidina szajnochae* (Grzybowski) (large and very large sized), *Eouvigerina cristata* (Marsson), *Bolivina incrassata* Reuss, *Pullenia reussi* Cushman, *Gavelinella pertusa* (Marsson), *G. clementiana clementiana* (d'Orbigny), *G. clementiana laevigata* (Marie), *G. cayeuxi mangyschlakensis* (Vassilenko), *Eponides monterelensis* Marie, *E. bronnimannii* (Cushman & Renz), *Osangularia florealis* (White), *O. cordieriana* (d'Orbigny)

(big size), *Globigerinelloides biforaminatus* (Hofker), *Biglobigerinella* cf. *algeriana* Ten Dam & Sigal, *Rugoglobigerina rugosa penny* Brönnimann, *R. rugosa rugosa* (Plummer), *R. rugosa rotundata* Brönnimann, *R. rugosa subrugosa* (Gandolfi), *Globotruncana ventricosa* White, *Glt. contusa* (Cushman), *Glt. stuarti* (Lapparent), *Glt. caliciformis* (Lappar ent), *Glt. gagnebini* Tilev, *Glt. havanensis* (Voorwijk), *Abatomphalus mayaroensis* (Bolli), *A. intermedia* (Bolli), *Globorotalites* sp., *Heterohelix globulosa* (Ehrenberg), *H. planata* (Cushman), *Pseudotextularia elegans* Rzehak, *Planoguembelina acervulinoides* (Egger), *Racemiguembelina fructicosa* (Egger).

In order to drow acurately the boundary between the Upper Campanian and the Lower Maestrichtian, the author mainly relievied, as mentioned before, on the planktonic species. He therefore proceeded to the statistical studies on samples, concerning the number of individuals for each species of Globotruncana and Rugoglobigerina. The graphical plotting of the results obteined by these statistical studies actually offered the possibility of recognizing the above mentioned boundary. Thus, following up from the statistical view-point the development of Globotruncana species he observed their reduced frequency in the samples taken from the yellowish marly limestone and their sudden development at the boundary between these marls and the overlaying grey ones. Among the Globotruncana species used to this effect the most representative ones are : *Globotruncana arca* (Cushman), *Glt. stuarti* (Lapparent) (with its subspecies), *Glt. havanensis* (Voorwijk), *Glt. contusa* (Cushman), *Abatomphalus intermedia* (Bolli).

By using the system of bilateral diagrams it becomes possible to follow up the small frequency (up to 10 specimens within a sample) for *Globotruncana arca* among the samples of yellowish marly limestones, and the suddenly increase (up to almost 600 specimens) in samples taken at the boundary with the grey marls. In other words an "explosion" in the growth of this species' population takes place. At the same time there is an appreciable increase of individuals belonging to all the other species of the planktonic population. This increase takes place gradually and it is very well set off on the graph where the following order of sequence is clearly visible : *Globotruncana havanensis*, *Glt. stuarti*, *Glt. contusa*, and final *Abatomphalus intermedia*.

It should be emphasized that the same "explosion" in the growth of planktonic population could be also observed in the case of two species of *Rugoglobigerina*, more frequently, *Rugoglobigerina rugosa rugosa* (Plummer), and *R. rugosa rotundata* Brönnimann, an "explosion" which stratigraphically speaking overlaps in all respects that of the *Globotruncana* species (fig. 1, 2). At this event is also followed by a change in lithology together with an important growth of planktonic Foraminifera which are typical for the Maestrichtian such as : *Pseudoguembelina striata* (Ehrenberg), *P. costulata* (Cushman), *Pseudotextularia elegans* Rzehak, *Planoglobulina glabrata* (Cushman), *P. carseyae* (Plummer), *Racemiguembelina fructicosa* (Egger), *Gublerina ornatissima* (Cushman & Church) to which benthonic agglutinated species are added : *Matanzia varians* (Glaessner) and *Textularia plummeare* Lalicker, the author considered that at this level should be placed the boundary between the two members. As, however, the Maestrichtian deposits are very poorly developed the whole Upper Maestrichtian and the upper part of the Lower Maestrichtian are missing, and considering that cartographically they can not be separated but on a very large scale map, they have been represented on the map together with the Upper Campanian deposits.

Discussions concerning the Upper Campanian-Lower Maestrichtian deposits

As mentioned above, within the investigated region the Upper Senonian deposits are obviously delibeated both with regard to their stratigraphical position and their facies characters.

The opinions of previous workers regarding these deposits have been expressed in the preceding chapter, and now we shall deal in more detail with the notion of "Valea Mare Beds" introduced by I. Marinescu, as well as with their paleontological content. This worker confers to the quoted term a wide interpretation, considering together both the Turonian and Senonian deposits merely on

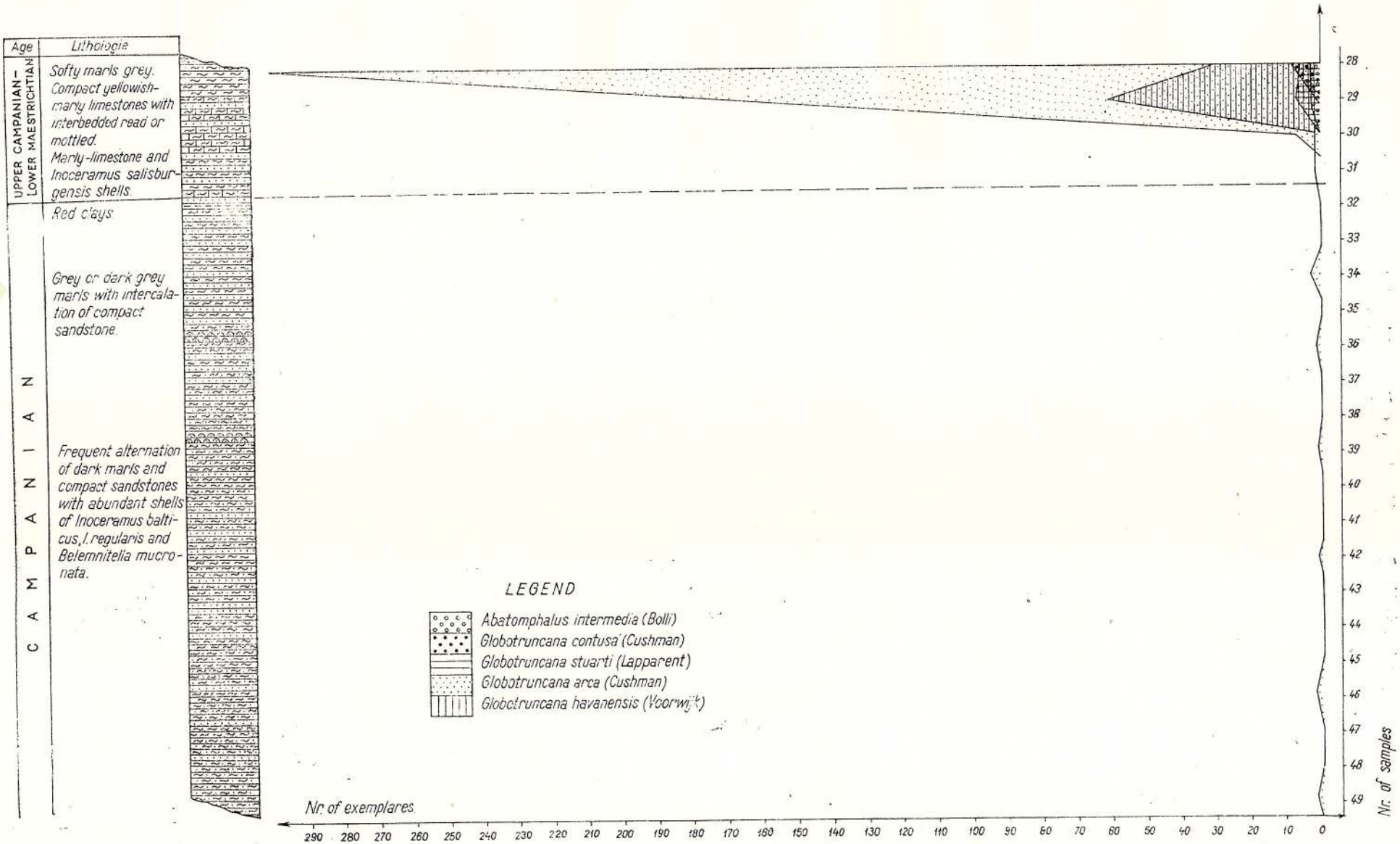

Fig. 1. — Diagram of the quantitative frequence of the principale species of the genus *Globotruncana* in the Ulveș Creek outcrop.

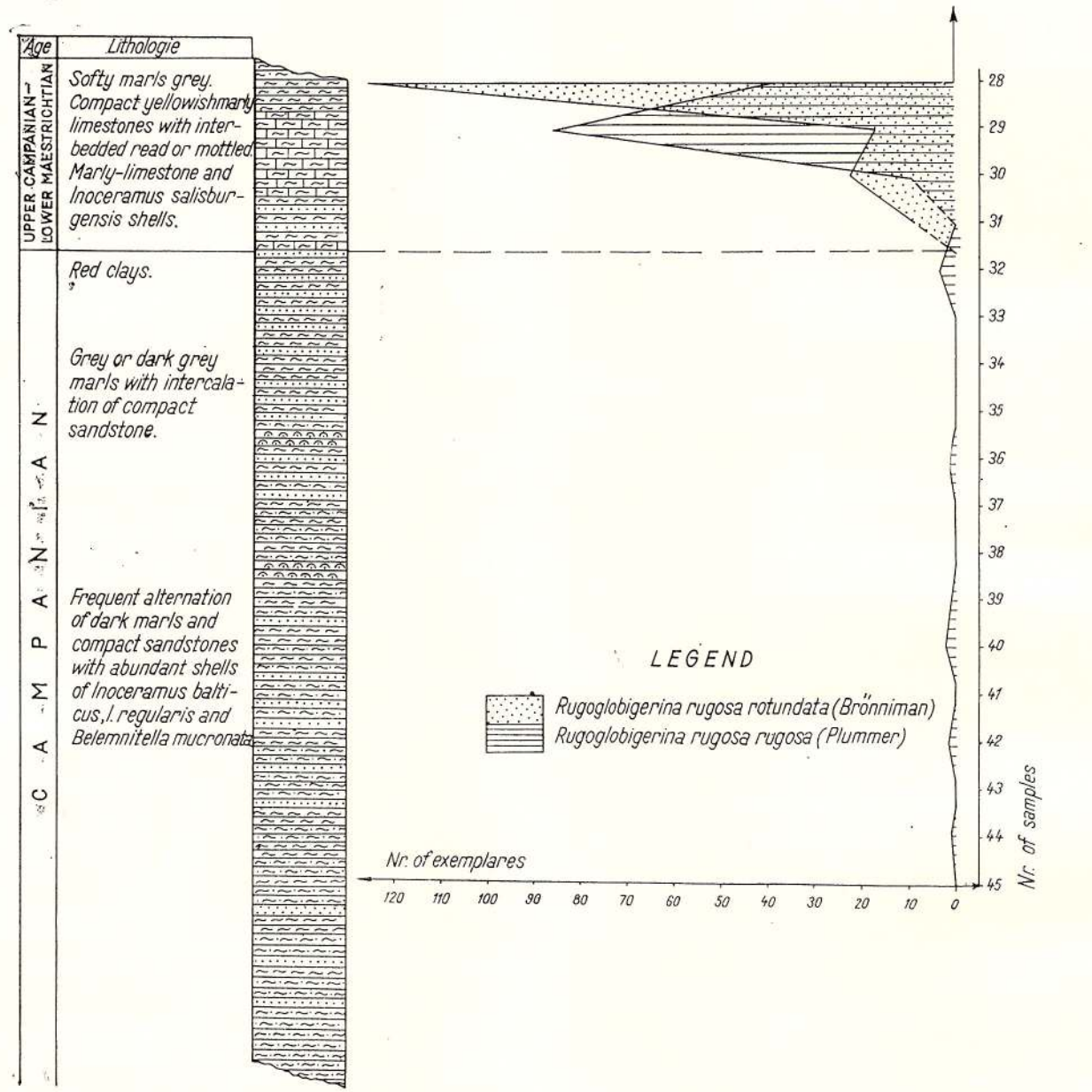

Fig. 2. — Diagram of the quantitative frequence of the principale species of the genus *Rugoglobigerina* in the Ulveş Creek outcrop.

the ground that they posseds a rich *Inoceramus* fauna.

The studies carried out by the author of present work, showed that a clear, accurate and logical subdivision of the entire complex of deposits is possible, begining with the Lower Turonian and ending with the Upper Campanian-Lower Maestrichtian deposits; this subdivision could be very easily reproduced on the map. It results that this very comprehensive term, based only the occurence of *Inoceramus* assemblage whose evolution has not been, however, followed up, and whose determination involved many confusions (*Inoceramus* species of Campanian age have been listed together with Turonian ones, Marinescu, 1963), could not be defended any longer and on no grounds whatsoever.

This was also the reason why not the term has been used in the present work. The separation of different lithological horizons and levels with characteristic faunal and microfaunal assemblage enabling the author to present a detailed stratigraphic column of the Upper Cretaceous deposits, an entirely new picture of their sequence.

STRATIGRAPHY OF THE LOWER CRETACEOUS DEPOSITS

As the Lower Cretaceous formations are included only to a small extent in the area studied, and also due to the fact that they belongt to on other structural units, than the ones which represent the main object of this paper, their investigation has been carried out only as far as was necessary for drawing up a geological map on which geological limits has to be plotted. This explains the rather tangential presentation of these formations.

The Lower Cretaceous deposits (Aptian) are well exposed along the Mînecelului and Carelor Creeks in the surrounding of the Brădet Village.

In this area a sequence of shaly, micaceous, grey marls is developed with interbedding of shaly convoluted hard sandstones, dense marly limestones, micaceous gritty marls, soft marly sandstones and occasionally up to 1,5 m thick beds of marly-gritty, soft tilloid conglomerates (pebble-marls) with small sized rounded pebbles. The grey marl levels include a rather rich fauna of Ammonites including : *Deshayesites consobrinoides* (Sinzow), *Aconeceras trautscholdi* (Sinzow), *Ptychoceras* cf. *puzosianum* (d' Orbigny), *Hamiticeras* sp., which undoubtedly attest their Bedoulian age. The upper part of the deposits shows a gradually increasing gritty character, culminating with massive sandstone which bear plant debris on their bedding planes.

Microfaunal analyses carried out on the ammonitic marly rocks have revealed a rather rich assemblage of Foraminifera composed of : *Recurvoides* sp., *Tritaxia pyramidata* Reuss, *Gaudryina subcretacea* Cushman, & Alexander, *Choffatella decipiens* Schulmberger, *Orbitolina lenticularis* (Blumenbach), *O. conoidea* Gras, *O. discoidea* Gras, *Orbitolinopsis* sp., *Verneuilina* sp., *Lenticulina nodosa* (Reuss), *L. muensteri* (Roemer), *L. gaultina* (Berthelin), *L. praegaultina* Bartenstein, *L. roemeri* (Reuss), *L. collignoni* Espitalié & Sigal, *Saracenaria frankei* Ten Dam, *Citharinella reticulata* (Cornuel), *Trocholina infragranulata* Noth, *T. aptiensis* Iovcheva, *Gavelinella barremiana* Bettenstaedt, *Epistomina ventriosa* Espitalié & Sigal, *E. spinulifera* (Reuss), *E. juliae* Mjatlyuk, *Vidalina carpathica* Neagu & Popescu, which are pointing out the same age as the macrofauna.

The upermost member of the Lower Cretaceous series is represented by massive conglomerates with huge blocks of reeflimestones. These conglomerates are building up the most important heigths in the South such as : Blidaru, Urlătoarea, Piatra Laptele etc.

Lower Cretaceous deposits also occur East of Întorsura Buzăului, but these ones belong to another structural unit. They are mainly represented by bluish massive sandstones with interbedded gritty shales containing plant debris lenses of microconglomerates or conglomerates as well as 30 to 60 cm thick beds of microbreccia predominantly composed of marly material or pebble marls levels with small sized pebbles. In a quarry near Întorsura Buzăului at the foot of the Dealul Stînii Hill, the author collected in the microconglomeratic levels numerous specimens of *Neohibolites minimus* (Lister) a species whose occurence proves the Albian age of this deposits.

Microfaunal analyses carried out in the larger fragments of marls within the sedimentarybreccia have revealed a very rich microfauna which likewise attest the presence of the Albian stage. (This Foraminiferal assemblage is most similar to the Albian one from the Romanian Plain).

Towards Sita Buzăului along the Buzău Valley, the same rock sequence is well exposed, including rather thick conglomeratic intercalations. Near the Sita Buzăului Village another intercalation of sedimentary breccia occur. The later yielded numerous specimens of *Neohibolites minimus* (Lister), together with *Parahibolites tourtiae* (Weigner), and many fragments of Ammonites shells and Pelecypods. The faunal assemblage likewise attest the Albian age of the deposits including the Vraconian as well.

The micropaleontological assemblage of this level is rather poor and mainly composed of : *Arenobulimina macfadyeni* Cushman, *Spiroplectinata anectens* (Jones & Parker), *Dorothia trochus* (d'Orbigny), *Hedbergella planispira* (Tappan), *Gavelinella intermedia* (Berthelin), *Epistomina caracolla* (Roemer), *E. ornata* (Roemer).

Northwards, the Albian deposits well exposed along the Feneș Creek (Valea Mare) contain a

rich macrofaune including : *Neohibolites minimus* (Lister), *Inoceramus anglicus* Woods, *Hoplites* sp., *Puzosia* sp., *Aucellina* sp.

Micropaleontological, this series' feature is here somewat more marly-gritty at the bottom, being characterized by : *Rhabdammina* sp., *Rhizammina* ex. gr. *indivisa* Brady, *Pelosina alexanderi* (Loeblich & Tappan), *Hyperammina depressa* Vasicek, *Hormosina* cf. *ovulum* (Grzybowski), *Glomospira charoides* (Jones & Parker), *Reophax* cf. *minuta* Tappan, *R. scorpiurus* Montfort, *R.* sp., *Trochamminoides irregularis* White, *Ammobaculites* cf. *subcretaceus* Cushman & Alexander, *A.* cf. *euides* Loeblich & Tappan, *Recurvoides* sp. l Geroch, *Spiroplectammina* sp.

PART TWO

PALEOECOLOGICAL AND MICROBIOSTRATIGRAPHICAL CONSIDERATIONS

In order to ascertain the conditions under which the sedimentation of the various formations of the Upper Cretaceous encountered in the region occured, a particular stress was laid on the paleoecological interpretation of the macrofaunal and especially microfaunal data.

In interpreting sedimentary and paleoecological conditions under which the Upper Cretaceous sediments were deposited we must first take into consideration that as a whole the region belonged to the large trough of the East Carpathians with emerged or submersed cordilliera which controlled the distribution and uniformization of fauna, the relations of the basins with the open sea, and the life conditions which were different from one region to another. Thus only may be explained the variation in the development of the fauna, its abundance in some levels, its scarcity in others.

The presence of volcanic cinerites in distinct layers or mixted up with the mass of sediments, are likewise important indices with regard the life conditions.

Speaking particularly of the foraminifera assemblage, of various levels these may appear at first sight to be similar. This remark mainly concerns the assemblages of agglutinated Foraminifera. Nevertheless elements do occur which ensure the possibility of making definite and well founded differenciations between the various associations of this kind. Taking into account the general and particular aspect of each microfaunal assemblage, as well as the lithological features of the deposits in which the assemblages are included, we shall try to formulate some considerations of paleoecological order, and to establish the environments in which these assemblages have lived and in which were formed the various lithological complex.

The Cenomanian series includes two different types of microfaunal assemblages which correspond to two different lithological types.

The lower member of the Cenomanian consists of red-cherry coloured marly limestones containing as macrofaunal elements many rostra of *Neohibolites ultimus* (d'Orbigny). The microfaunal agglutinated Foraminifera, benthonic and planktonic calcareous Foraminifera, as well as Radiolarian. More than 100 species belonging to 46 genera are represented. Among these, of particular significance are, however, the planktonic Foraminifera which represent a large percentage of the assemblage (about one half), although they belong to a restricted number of genera : *Rotalipora*, *Praeglobotruncana*, *Hedbergella*, *Clavihedbergella*, *Schackoina*.

According with general character of this assemblage, as already shown by Carozzi (1952) and Tappan (1962), it may be considered that the environment was that of a largely open sea in which life conditions favoured the development of a vigurous benthos on the basin bottom, and of a rich plankton.

These deposits are overlain, with a lateral change of facies by sequence of grey-blackish, shaly marly limestones with frequent pyrite concretions. In these deposits, the very poor macrofauna is represented by fragmentary shells of : *Mantelliceras mantelli* (Sowerby), *Puzosia planulata* Sowerby, *Turrilites* cf. *costatus* Lamarck, *Inoceramus crippsi* Mantell, debris of *Podozamites* sp., and very frequent fish skeletal remains and scales.

The microfauna of these deposits consists mainly of Radiolarian associated in some instances with badly preserved tests of planktonic Foraminifera.

The lithological and faunal characters mentioned above indicate an environment which was not far of the shore.

The growth within these deposits of Radiolarian assemblage dominantly formed of Spumellariae points out to moderate water depth (Osnovî Paleontologii vol. 1). The presence of pyritic concretions indicates a reducing environment not favouring the growth of a benthonic fauna.

In conclusion, as far as the series of the Cenomanian deposits is concerned, it may be inferred that two different environments of sedimentation were in existence, one blonging to the facies of a largely open sea, the other probably belonging to the internal sublittoral environment (on account the development of pyrite concretions, and the pyritized tests of Radiolarian and Foraminifera).

The top of the Cenomanian and at the bottom of the Turonian is represented by a horizon of micaceous red clays whose rather poor microfauna predominantly consists of agglutinated Foraminifera. According to Carrozzi (1952) and Tappan (1962) this assemblage would indicate a littoral shore environment.

The Turonian series shows a large lithological variety. Its general character is marly-gritty with frequent intercalations of sideritic marly limestones, lens of micaceous red clays, and even thinly bedded volcanic cinerites. The occurence of sphaerosiderites reveals a poorly oxygenated environment (Papiu, 1959). This opinion is reinforced by the presence of pyrite concretions and of pyritized tests of Radiolarian and Foraminifera and thus confirms once more the reducing character of the environment of sedimentation. The occurence of these reducing conditions may be due, according to Tappan (1962), to the turbidity. Considering that sedimentation took place in a geosynclinal area in course of folding, the part played by the last-mentioned factor becomes even more obvious. According to Mayers (in Tappan, 1962), turbulence destroys up to 80 per cent of the foraminiferal fauna on the bottom of the basin and favours pyritization phenomena. If such rather unfavourable conditions are accompanied by volcanic manifestations as shown by the abovementioned cinerite intercalations, the picture of life conditions within this basin is even more complex.

The rather timid occurence of planktonic Foraminifera test, Globotruncana and Globigerinelloides may be ascribed to marine currents which carried them from the sea parts where conditions had been favourable for their growth.

On the other hand, the rather large developement of agglutinated Foraminifera belonging to the Astrorhizidae, Hyperamminidae, Verneuilinidae families, and less frequently of the benthonic calcareous ones such as *Alomorphina cretacea* and some Nodisariidae with pyritized test, confirms the opinion that these deposits were formed in an inner sublittoral environment where turbidity have played an important part as also indicated by the lithological character of the marly-gritty, poorly sorted deposits.

It is noticeable that within the lentiliform red clay intercalations the microfaunal assemblage consists of small and very small sized specimens of: *Uvigerinammina jankoi* Majzon, *Recurvoides*, *Thalmannammina*, *Plectina*, *Astrorhizidae*.

The lower Senonian series is completly devoid of microfauna.

The Upper Senonian deposits which are directly overling the massive sandstone displays a large lithological variety. The microfauna contained within their lower part, formed of red clays and volcanic cinerites, consists of agglutinated Foraminifera and numerous Radiolarian tests (in the silicified intercalations), indicating an inner sublitoral marine environment, rather unfavourable to the development of organisms. A gradual improvement of life conditions take place, the climax of which is reached at the level of the yellowish and red marly limestones and of the upper grey ones as well.

The evolution of the microfaunal assemblage truly reflects the development of environment conditions, from the inner sublittoral one with a poor Foraminifera content, to the outer sublittoral environment with a richer assem-

blage, and finally of the open sea environment with its great abundance of both benthonic and planktonic species and individuals.

The evolution of the faunal and microfaunal assemblages correlated with the lithological one is shown in pl. XLIII.

MICROPALEONTOLOGICAL ZONES (pl. XLI, XLII)

In the Upper Cretaceous deposits, the micropaleontological zonation is based on planktonic Foraminifera of the genera: *Rotalipora*, *Schackoina*, *Praeglobotruncana*, *Globotruncana*, *Rugoglobigerina*, Heterohelicidae, or of benthonic genera such as: *Bolivinoides* or *Neoflabelina*.

The stratigraphic value of the species of such genera is much greater within the epicontinental deposits. In the Flysch one where sedimentation and life conditions were governed by other factors, which hampered or prevented the development of optimum condition for planktonic and benthonic Foraminifera, the utilization of the above mentioned genera becomes quite difficult or even impossible.

Therefore, in establishing the micropaleontological zones within the Upper Cretaceous deposits of the area considered, we used as far as possible the indications offered by these genera, whenever they were encountered, taking particularly into account the species or group of species showing an appreciable frequency and persistence in various lithological series.

Rotalipora reicheli Zone

Within this zone, which is lithologically equivalent to the red marly limestones containing *Neohibolites ultimus* (d' Orbigny) the following microfaunal subzones may be distinguished:

a) The subzone with *Rotalipora cushmani* and *Praeglobotruncana*, which in age corresponds to the upper part of the Lower Cenomanian. The most important elements of this subzone are: *Textularia paralella* Reuss, *Dorothia concia* (Reuss), *Gyroidinoides mauretanicus* (Carbonier), *Rotalipora appenninica* (Renz), *Praeglobotruncana stephani stephani* (Gandolfi), *P. stephani gibba* Klaus, *Cibicides polyraphes polyraphes* (Reuss), *C. polyraphes praeeriksdalensis* (Vassilenko).

b) The subzone with *Rotalipora reicheli*. This subzone corresponds to the lower and median part of the Middle Cenomanian where *Rotalipora reicheli* is well developed both in size and number of individual within the population. In this subzone, *Neohibolites ultimus* (d'Orbigny) is very frequent, and the main microfaunal elements are: *Reophax minuta* Tappan, *Ammobaculites problematicus* (Neagu), *Dorothia oxycona* (Reuss), *D. pupa* (Reuss), *Lenticulina pachinota* (Reuss), *L. navicula* (d'Orbigny), *Dentalina megalopolitana* Reuss, *D. nana* Reuss, *Ramulina globulifera* Brady, *R. globotubulosa* Cushman, *Tristix excavatus* (Reuss), *Pleurostomella subnodosa* Reuss, *P. obtusa* Berthelin, *Gyroidinoides mauretanicus* (Carbonier), *Osangularia cretacea* (Carbonier), *Hedbergella infracretacea* (Glaessner),) *Globorotalites conicus* (Carsey), *Rotalipora appenninica* (Renz), *R. cushmani* (Morrow), *R. reicheli* Mornod, *Praeglobotruncana stephani stephani* (Gandolfi), *P. stephani gibba* Klaus, *Cibicides polyraphes polyraphes* (Reuss), *C. polyraphes praeeriksdalensis* (Vassilenko), *Planularia* cf. *spissocostata* Cushman, calicified Radiolarian.

c) The subzone with *Rotalipora globotruncanoides* and *Schackoina*. This subzone corresponds to the upper part of the Middle Cenomanian and to the Upper Cenomanian. Its basic elements are: *Ammobaculites problematicus* (Neagu), *Haplophragmoides gigas minor* Nauss, *H. bulloides* (Beissel), *Plectorecurvoides alternans* (Noth), *Recurvoides imperfectus* (Hanzlikova), *Spiroplectammina gandolfii* Carbonier, *S. complanata* (Reuss), *Tritaxia gaultina carinata* (Neagu), *Dorothia pupa* (Reuss), *D. concina* (Reuss), *Spiroloculina cretacea* Reuss, *Lenticulina navicula* (d'Orbigny), *Ramulina globulifera* Brady, *Pleurostomella subnodosa* Reuss, *Gyroidinoides mauretanicus* (Carbonier), *Rotalipora appenninica* (Renz), *R. cushmani turonica* (Brotzen), *R. appenninica evoluta* (Sigal), *R. globotruncanoides* (Sigal), *Praeglobotruncana*

stephani stephani (Gandolfi), *P. stephani gibba* Klaus, *Hedbergella planispira* (Tappan), *Schackoina cenomana cenomana* (Schacko), *Sch. cenomana gandolfi* (Reichel), *Sch. multispinata bicornis* (Reichel), *Cibicides polyraphes polyraphes* (Reuss), *C. polyraphes praeeriksdalensis* (Vassilenko).

Radiolarian biofacies

Lithologically, this biofacies corresponds to the shaly grey-blackish marly limestones with *Mantelliceras mantelli* (Sowerby) and *Puzosia planulata* Sowerby. Foraminifera are extremely scarce in these deposits, whereas Radiolarian show a high frequency.

a) The subzone with *Pseudobolivina variabilis*. An upper level of this series, consisting of red clays contains a microfauna mainly composed of agglutinated Foraminifera, similar to the Turonian assemblages. Among the species of this microfauna we mention: *Glomospira charoides* (Jones & Parker), *G. irregularis* (Grzybowski), *Hormosina ovulum* (Grzybowski), *Ammobaculites problematicus* (Neagu), *Haplophragmoides gigas minor* Nauss, *Reophax minuta* Tappan, *Trochamminoides proteus* (Karrer), *Pseudobolivina variabilis* (Vasicek), *Trochammina umiatensis* Tappan, *Cystammina pauciloculata* Brady, *Eponides* sp., *Gavelinella* cf. *umbonella* (Reuss), *Rotalipora* sp., calcified Radiolarian.

Allomorphina cretacea Zone

This zone corresponds to the series of Turonian deposits. Owing to the great lithological variety of these deposits, it was difficult to determine in detail the various microfaunal levels. Only the following levels have been separated:

a) The lower subzone laking bicarinate Globotruncana, in which *Bathysiphon vitta* Nauss and *Haplophragmoides bulloides* (Beissel) play an important part.

This subzone corresponds to the Lower Turonian with *Inoceramus labiatus* (Schlotheim). The main micropaleontological assemblage is composed of: *Saccammina sphaerica* (Sars), *Hyperammina grzybowskii* (Dylazanka), *Bathysiphon vitta* Nauss, *Dendrophrya excelsa* Grzybowski, *Reophax scorpiurus* Montfort, *Spiroplectammina praelonga* (Reuss), *Ammobaculites problematicus* (Neagu), *A. coprolithiformis* (Schwager), *Trochammina umiatensis* Tappan, *Uvigerinammina jankoi* Majzon, *Dentalina cylindroides* Reuss, *D. catenula* Reuss, *Pleurostomella obtusa* Berthelin, *Osangularia whitei crassa* (Vassilenko), *O. whitei polycamerata* (Vassilenko), *Allomorphina cretacea* Reuss.

Begining with this subzone *Allomorphina cretacea* Reuss makes its appearance and will then occur in all the overlaying deposits. Within the Lower Turonian deposits an intercalation of red clays occurs, in which the assemblage is formed only of agglutinated Foraminifera such as: *Rhabdammina* sp., *Bathysiphon vitta* Nauss, *Hyperammina grzybowski* (Dylazanka), *Glomospira irregularis* (Grzybowski), *G. charoides* (Jones & Parker), *Ammodiscus cretaceus* (Reuss), *Rheophax minuta* Tappan, *Hormosina ovulum* (Grzybowski), *Ammobaculites problematicus* (Neagu) (very numerous,) *Haplophragmoides bulloides* (Beissel), *Trochamminoides irregularis* White, *Pseudobolivina variabilis* (Vasicek) (rare), *P. parvissima* n.sp., *Guadryinella pseudoserrata* (Cushman), *Tritaxia gaultina carinata* (Neagu), *Plectina* sp., *Gaudryina carinata* Franke, *Trochammina umiatensis* Tappan, *Cystammina pauciloculata* Brady.

b) The carinate Globotruncana (*Globotruncana lapparenti lapparenti*) subzone, corresponds to the Middle and Upper Turonian. In this subzone, *Allomorphina cretacea* is well developed and forms the common element of all profiles except for the red clay intercalations. The main component of this level are: *Saccammina sphaerica* Sars, *Psammosphaera fusca* (Schultze), *Pelosina complanata* Franke, *Bathysiphon vitta* Nauss, *Hyperammina grzybowski* (Dilazanka), *Ammodiscus cretaceus* (Reuss), *Glomospira irregularis* (Grzybowski), *Reophax guttiferus* Brady, *Spiroplectammina praelonga* (Reuss), *Haplophragmoides bulloides* (Beissel), *Ammobaculites problematicus* (Neagu), *A. corprolithiformis* (Schwager), *Gaudryina carinata* Franke, *Gaudryinella pseudoserrata* (Cushman), *Dorothia crassa* (Marsson), *Uvigerinammina jankoi* Majzon, *Lenticulina ovalis* (Reuss), *Dentalina peracuta* Reuss, *D. megalopoli-*

tana Reuss, *Ellipsoidella solida* (Brotzen), *Ellipsoglandulina chilostoma* (Rzehak), *Pleurostomella subnodosa* Reuss, *Allomorphina cretacea* Reuss, *Gyroidinoides nitidus* (Reuss), *Eponides karsteni* (Reuss), *Globotruncana lapparenti bulloides* (Brotzen), *Glt. lapparenti coronata* Bolli, *Glt. lapparenti tricarinata* (Quereau), *Glt. lapparenti angusticarinata* (Gandolfi), *Globorotalites multiseptus* (Brotzen), *Hedbergella* sp. pyritized Radiolarian.

In the red clay intercalations, the microfaunal assemblage is somewhat different. The basic, dominant elements of this assemblage are: *Recurvoides* sp., *Thalmannamina recurvoidiformis* n.sp., *Th. meandertornata* n.sp., *Plectina* sp., *Uvigerinammina jankoi* Majzon, *Trochamminoides* diff. sp., and *Trochammina umiatensis* Tappan.

In the upper part of the Turonian deposits, a red clay intercalation contains, beside the typical microfauna of these clays, some calcareous Foraminifera which are, however, very small sized. This assemblage is mainly composed of: *Praebulimina obtusa* (Brotzen), *P. ventricosa* (Brotzen), *Quadrimorphina allomorphinoides* (Reuss), *Osangularia whitei whitei* (Brotzen), *Aragonia onezzanensis* (Rey), *Cibicides ribbingi* Brotzen, *Globotruncana lapparenti lapparenti* Brotzen, *Globigerinelloides escheri escheri* (Kaufmann), *Gl. escheri clavata* (Bolli), *Heterohelix globulosa* (Ehrenberg), *H. planata* (Cushman), indicating undoubtedly the upper part of the Turonian and even the lowermost part of the Coniacian.

Goesella carpathica Zone

This zone comprises lower and middle part of the Upper Senonian deposits showing a noticeable lithological variation. Owing to the microfaunal richness and lithological variation, it was possible to separate several microfaunal subzones i.e.;

a) The lower subzone with rare agglutinated Foraminifera corresponding to the basal part of this series and including a very poor assemblage of agglutinated Foraminifera, without calcareous specimens.

b) The subzone containing Radiolaria and spongiae spicules, corresponding to the interval in which these have been deposited volcanic cinerites, and have taken place silicification processes. In this subzone Foraminifera are almost entierly lacking.

c) The upper subzone with agglutinated Foraminifera. Although it is rather poor, the foraminiferal assemblage shows here a tendency of continuous enrichment, of a particular importance being the first *Goesella carpathica* Liszkova specimens. Calcareous Foraminifera have not being found in this subzone, either.

These three mentioned subzones (a—c) correspond to the Lower Campanian.

d) The subzone with *Goesella carpathica* and *Pyramidina szajnochae* of small and middle sized. Stratigraphically, this subzone corresponds to the Middle Campanian. The microfaunal assemblage shows a continuous and steadfast enrichment in benthonic and planktonic species, of which the most important elements are: *Rzehakina epigona* (Rzehak), *Reophax duplex* Grzybowski, *„Nodellum" velascoensis* Cushman, *Hormosina ovulum gigantea* Geroch *Spiroplectammina subhaeringensis* (Grzybowski), *S. flexuosa* (Reuss), *Trochammina bulloidiformis* Grzybowski, *T. quadriloba* Grzybowski, *Goessella carpathica* Liszkova (in various stage of growth), *Lenticulina velascoensis* White, *Fissurina orbignyana* Seguenza, *Kyphopyxa jarvisi* (Cushman), *Guttulina trigonula* Reuss, *Praebulimina ovulum* (Reuss), *Pyramidina szajnochae* (Grzybowski) (small and middle sized ones), *Pleurostomella zuberi* (Grzybowski), *Ellipsoglandulina chilostoma* (Rzehak), *Gavelinella clementiana* (d'Orbigny), *G. pertusa* (Marsson), *Osangularia florealis* (White), *O. spinea* (Cushman), *O. cordieriana* (d'Orbigny), *Rugoglobigerina rugosa rugosa* (Plummer), *Globotruncana arca* (Cushman), *Glt. havanensis* (Voorwijk).

Globotruncana arca Zone

This zone corresponding to the Upper Campanian and the Lower Maestrichtian. It can be divided into two rather well delimineated microfaunal subzones:

a) The subzone with *Aschemonella carpathica*, *Psammatodendron dichotomicus* and *Globotruncana arca*. This subzone corresponds to the Upper

Campanian, yelloish and red marly-limestones of the „Gura Beliei" type. In these marly limestones there are very well developed big sized agglutinated Foraminifera such as: *Aschemonella carpathica*, Neagu, *A. moniliformis* Neagu, *Psammatodendron dichotomicus* Neagu, the macrofauna being represented by *Inoceramus salisburgensis* Fugger & Kastner, and *Lopha semiplana* (Sowerby). From the extemly rich Foraminifera assemblage of this subzone we are quoting: *Rhizammina discreta* Brady, *Glomospira irregularis* (Grzybowski), *Lituotuba incerta* Franke, *Rzehakina epigona* (Rzehak), *Hormosina ovulum gigantea* Geroch, *Textularia plummerae* Lalicker, *Spiroplectammina boudouniana* (d'Orbigny), *S. subhaeringensis* (Grzybowski), *Fissurina orbignyana orbignyana* Seguenza, *F. orbignyana bicornis* Neagu, *Kyphopyxa jarvisi* (Cushman), *Bolivina incrassata* Reuss, *Ellipsoglandulina chiliostoma* (Rzehak), *Pullenia cretacea* Cushman, *Gyroidinoides nitidus* (Reuss), *Gavelinella pertusa* (Marsson), *G. clementiana clementiana* (d'Orbigny), *G. clementiana laevigata* (Marie), *G. cayeuxi mangyschlakensis* (Vassilenko), *Eponides monterelensis* Marie, *E. praemegastoma* Mjatlyuk, *Osangularia florealis* (White), *O. cordieriana* (d'Orbigny), *Rugoglobigerina rugosa rugosa* (Plummer), *R. rugosa rotundata* Brönnimann, *Globotruncana rugosa* (Marie), *Glt. arca* (Cushman), *Glt. havanensis* (Voorwijk), *Globorotalites* sp.

b) The subzone with *Planoguembelina glabrata*, *Racemiguembelina fructicosa* and *Globotruncana contusa*, which corresponds to the lower part of the Maestrichtian, grey soft sandy marls. In this subzone the foraminiferal population is extremely abundant the planktonic species reaching their apogee.

Among the most characteristic elements, we are quoting: *Textularia plummerae* Lalicker, *Matanzia varians* (Glaessner), *Pyramidina pseudospinulosa* (Troelsen), *P. szajnochae* (Grzybowski) (big and very big sized ones), *Bolivina incrassata* Reuss, *Globigerinelloides biforminata* (Hofker), *Globigerinella* sp. cf. *algeriana* Ten Dam & Sigal, *Rugoglobigerina rugosa rugosa* (Plummer), *R. rugosa rotundata* Brönnimann, *R. rugosa penny* Brönnimann, *Globotruncana contusa* (Cushman), *Glt. arca* (Cushman), *Glt. stuarti stuarti* (Lapparent), *Glt. stuarti elevata* (Brotzen), *Glt. stuarti stuartiformis* (Dalbiez), *Glt. caliciformis* (Lapparent), *Glt. gagnebini* Tilev, *Glt. havanensis* (Voorwijk), *Abatomphalus mayaroensis* (Bolli), *A. intermedia* (Bolli), *Globorotalites* sp., *Pseudotextularia elegans* Rzehak, *Planoguembelina glabrata* (Cushman), *Racemiguembelina fructicosa* (Egger), *Heterohelix pulchra* (Brotzen), *H. planata* (Cushman), *H. globosa* Ehrenberg.

PART THREE

STRUCTURAL FEATURE OF THE REGION INTORSURA BUZĂULUI — VALEA-MARE — DOBÎRLĂU — TELIU

The opinions on the tectonical structure of this regions were and still are diverging. From the conception of a simple structure with normal structure with normal contacts between Herbich's (1878) „Obere Kreide Karpaten-Sandstein" and „Neocomer Karpaten-Sandstein" our knowledge has gradually progressed to the present day interpretion according to which the structure is very complex one due to overthrusting.

In the light of the last opinions concerning the tectonic structure advanced by Filipescu (1955, 1963) and Băncilă (1957), the Cretaceous deposits of this area are grouped in two major units, as follows: the upper inner nappe (Filipescu), or West-Inner Unit (Băncilă); the lower inner nappe (Filipescu), or East-Inner Unit (Băncilă).

The overthrust line between these two large tectonic units has been named "the Valea Crasna-Măgura Nebunii-Teliu-Măgheruş-Lutu Roşu Line" by Filipescu, or the „Lutu Roşu Line" by Băncilă. Within the lower inner nappe, which is best developed in the Intorsura Buzăului — Valea Mare sector, Fili-

p e s c u distinguished three structural zones i.e. :

1. A strongly uplifted zone (Poiana Florilor-Dobîrlău) ;

2. A deep sunken zone (The Intorsura Buzăului-Dalnic-Cernatu through) ;

3. A moderately uplifted zone (Tabla Buţii—Sita Buzăului—Toria).

The three zones are separated by major faults. Personal field investigations in the area permitted a clear outlining of the major tectonic contact line between the two nappes starting from the Vama Buzăului sector northwards to the border of the Ţara Bîrsei depresion which is filled up with Neogen deposits. A second important tectonic line which has followed up is that which puts into contact the Senonian deposits with the Lower Cretaceous ones, and which has been named the "Boroşneu-Întorsura Buzăului fault". Along this line, starting from the south, from Dealul Seciului (Vama Buzăului)—Dealul Prădescu, the Cenomanian deposits are in tectonic contact with the Aptian-Albian deposits. Northwards, passing through Dealul Stînii, this line continues to the Feneş Greek (Valea Mare), where it mediates the tectonic contact between the Albian and Senonian deposits, further on it plunges under the Neogene cover of the Ţara Bîrsei depression. The region investigated is actually emplaced between these two major tectonic lines. As a whole, this area appear as a large syncline whose western flank is much uplifted and overthrust by the upper inner nappe, while the eastern flank is more sunken down and in abnormal contact with the Albian deposits.

Within the large syncline with Upper Cretaceous deposits there, several fault of minor importance have been identified such as : the Berţu Mare—Hărăcoaia fault which affects the tectonic contact between the Campanian and Turonian or Lower Senonian deposits. The Dobîrlău Valley-Cîrlanului Creek fault shows a slanting transverse character with regard to the general strike of the structure. It is probably this fault which allowed the strong uplifting of the Teliu-Dobîrlău sector, in which the Campanian-Maestrichtian deposits were probably eroded.

The Dobîrlău—Poiana Florilor fault emplaced between the Cenomanian and the Turonian deposits, caused the overthrusting of the Cenomanian deposits on the Turonian ones. All these tectonic disturbance are illustrated the attached cross sections (fig. 3).

The more important structural subunits are :

The Valea Mare—Valea Scrădoasa Syncline filled up with Campanian deposits containing many cinerite intercalations and silicification.

The Valea Mare—Valea Ivanca—Valea Scrădoasa Syncline filled up with Campanian and Maestrichtian deposits whose axis corresponds to the line of maximum down sintring of the area.

The Dobîrlău Valley anticline, with SW—NE to N—S strike and core built up of the Cenomanian deposits.

A second, slightly better developed anticline consisting of Turonian deposits only, begins in the Cîrlanului Creek and reaches the Predeal summit with a NE-SW strike. Owing to pressure caused by the upper inner nappe it appears as an eastward overthrown anticline. From the Predeal summit, the strike changes to N-S with a plunge under the sheet deposits.

Interesting from a structural view-point is the contact line between the two large nappes.

In 1962, M a r i n e s c u identified in the Teliu area the so-called „Teliu semiwindow" on account of the fact that on the Culmea Vîrşae these appears a series of large block of conglomerate, *Orbitolina* sandstones and whitish marly limestones similar to those found in the Comarnic Beds encountered in the Culmea Cocoanelor (somewhat more southward). Thus are again taken into consideration, in a newer interpretation, the data presented by F i l i p e s c u in 1936, who also in his more recent papers (1955, 1963) considers that the marly deposits with sphaerosiderites in the Predeal—Valea Dobîrlăului Pass are Aptian in age. On this assumption, the pressence of Comarnic Beds in the axis of some anticlines is quite natural. According to the fact that the marly deposits belong to the Turonian the interpretation mentioned above cannot be supported any longer.

In our opinion, the formations of the Teliu sandstone—Comarnic Beds type occuring in the two places on Culmea Vîrşae are only small covering patches left behind by erosion from the upper inner nappe. In support of

this opinion also pleads the fact that on the 902 summit the Turonian deposits may be clearly seen in the above-mentioned facies and that on the very summit, sandstone blocks with *Orbitolina*, conglomerates as well as Comarnic Beds do occur.

The folding in this area probably started during the first mezo-Cretaceous phases, and became more and more marked towards the end of the Upper Cretaceous. With the folding are probably also related the volcanic manifestations that furnished the cinerites which in the Turonian are rare, in Campanian very frequently encountered.

The complete exondation of the area occured at the end of the Upper Cretaceous as a result of the Laramic orogenesis, after which the region was no more invaded by sea waters as no younger deposits were encountered than those of the Lower Maestrichtian.

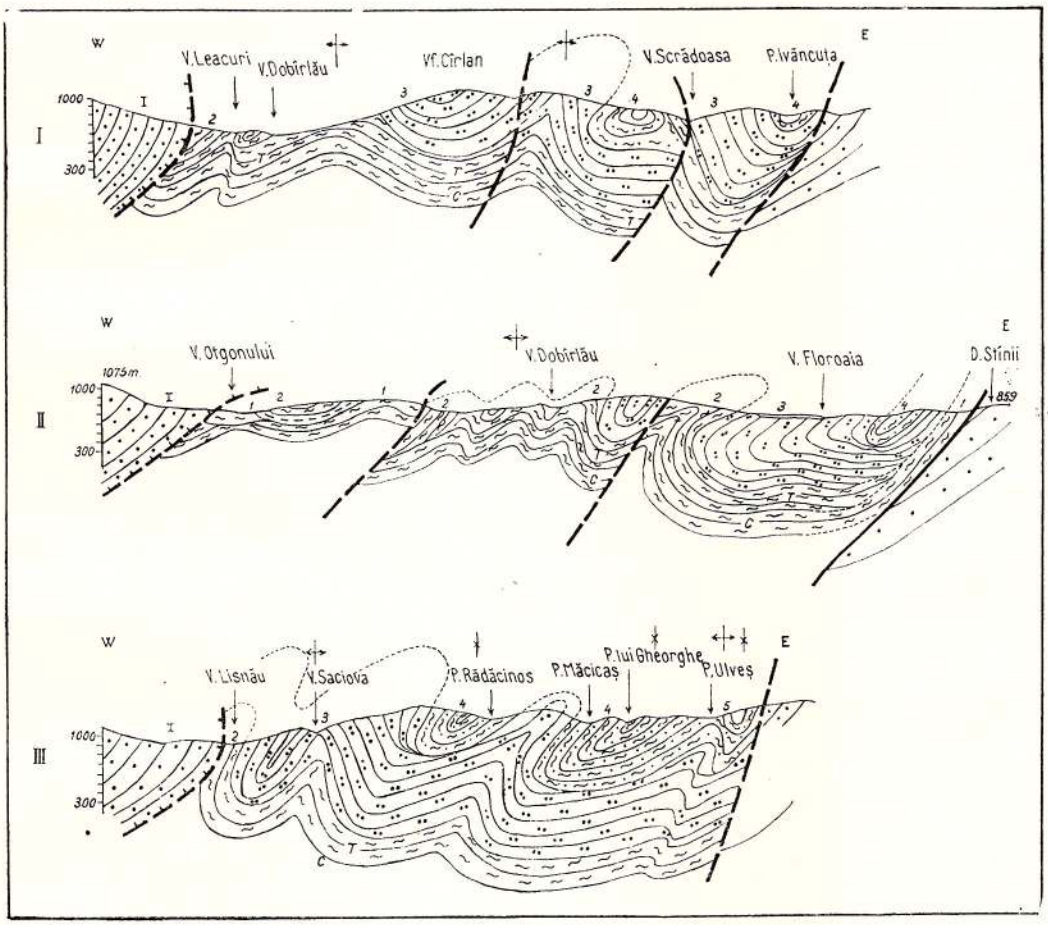

Fig. 3. — I. Cross section between Piliska Hil and Ivăncuța Creek; II, Cross section between Piliska Hill and Stînii Hill; III, Cross section between Lisnău Valley and Ulveș Creek. 1, Cenomanian; 2, Turonian; 3, Lower Senonian; 4, Campanian; Lower Maestrichtian.

PART FOUR

THE RELATIONS BETWEEN THE UPPER CRETACEOUS DEPOSITS OF THE INTORSURA BUZĂULUI—VALEA MARE AREA AND THOSE OF THE SURROUNDING AREAS

Based on the lithological composition of the deposits, on their macro- and micropaleontological content, as well as on literature data concerning deposits of the same age in the surrounding areas, it is possible to make some observations with regard to correlation.

Thus, the facies of red marly limestones with *Neohibolites ultimus* and *Rotalipora*, can be folowed from Măgura Nebunii, eastwards, and than northwards through the Teleajen Valley, Mănăstirea Cheia, the Teleajen sources, the Boncuța Pass, Vama Buzăului, Dealul Prădescu, Dealul Stînii (Întorsura Buzăului).

A second series of outcrops of the same deposits begins at the western end of the Măgura Nebunii peak, passes slightly to the north of the first

one, attains the Teleajen Valley at its confluence with the Pridvaria Valley, and can be followed further on towards the north Mănăstirea Cheia. As indicated by Filipescu and Popescu, these deposits are plunging here under the Ciucaş conglomerates.

On the northern slope the Ciucaş massif, Filipescu and Iliescu mention the occurence of the same deposits within a tectonic window in Valea Popii. These deposits reach their largest development in the area of the Teliu and Dobîrlău Valleys. The overlaying grey-blackish marls, also belonging to the Cenomanian, exactly follows the former complex.

The development of these deposits considered as a whole suggests a wide syncline having a well developed eastern flank.

The Turonian-Senonian sequence of deposits filling up this bif syncline appears to be well developed in the Măgura Nebunii—Teleajen area, and is tapering out to a larger extent in the area of confluence of the Dălghiu Valley with the Buzău River, being afterwards strongly developed northwards in an area mesuring of 22 Km in length and 10 Km in width between Brădet and Valea Mare.

The Campanian deposits occur in the Măgura Nebunii—Valea Mare region only in small areas namely in the Boncuţa Pass ("Gura Beliei" facies of red marls), and in Valea Mare (the facies of yellowish-greenish and red marly limestones). An even more reduced development show the Maestrichtian deposits. In the Zăganu zone, Popescu (1958) mentions the occurence of grey-sandy marls with *Pachidiscus* sp., in the Zăganu Valley. These deposits occuring also crop out further to the North as small patches in the Valea Mare area where they have been dated on micropaleontological grounds, the macrofauna being absent (fig. 4).

The lithologic and faunal characters of the deposits both north and south of the Boncuţa Pass enable us to interprete them as belonging to the same zone of sedimentation.

The geographical distribution of *Belemnitella mucronata* offers likewise interesting information on the evolution and probable relations of the Intorsura Buzăului zone to its surroundings. In may thus be ascertained (fig. 5) that the distribution area of this species is localized, for the Carpathian Flysch zone, in the area comprised between the Dîmboviţa Valley in the west and at Tohanul Vechi in the northwest.

Within this area, it is also quite interesting to follow up the lithofacial changes of the Upper Cretaceous deposits. It may thus be found

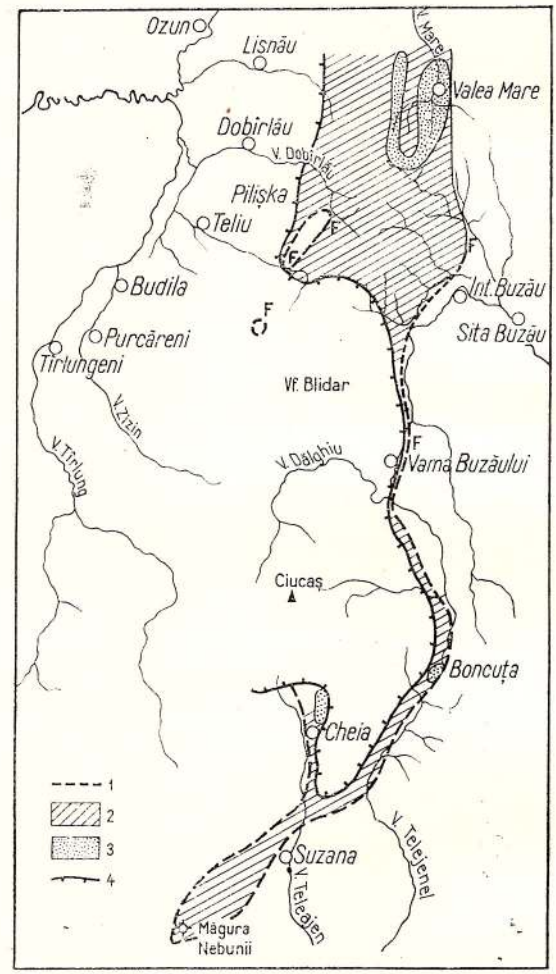

Fig. 4. — Map showing the distribution of the Upper Cretaceous deposits from the lower inner nappe from Syncline Măgura Nebunii—Boncuţa—Întorsura Buzăului—Valea Mare—Teliu

1, Cenomanian deposits; 2, Turonian-Lower Senonian deposits; 3, Upper Senonian deposits; 4, the boundary between the lower and inner nappes.

that in its western part (Dîmboviţa and Ialomiţa Valleys) the facies of red marly limestones begins in the Cenomanian and continues with slight changes into the Senonian. The more we are advancing eastward, the more the situation changing. Thus, the Cenomanian deposits are also begining by a level of red marly limestones, but in the upper part these are grading into grey-blackish marly limestones. The Turonian stage is represented there by grey sandy marls with red clay intercalations, whereas in the Lower Senonian there occurs a markedly

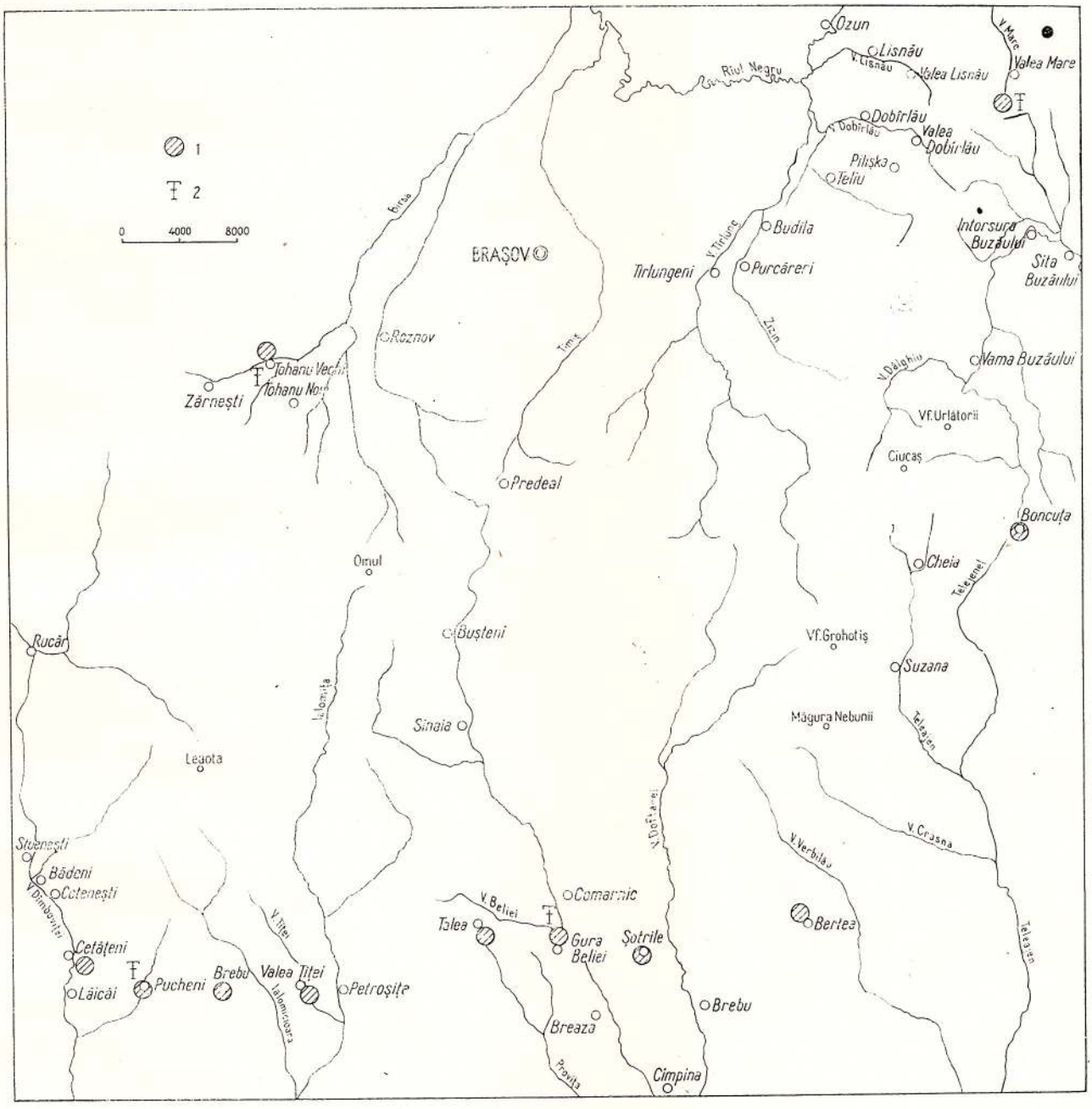

Fig. 5. — Map showing the distribution of the red marly limestones, „type Gura Beliei" in the area: Dîmbovița Valley and Riul Negru Valley

1, outcrop of red marly limestones (type of Gura Beliei); 2, fossiliferous outcrops with *Belemnitella mucronata*.

coarse microconglomeratic facies (the Teleajen—Valea Mare zone). In the Upper Senonian there is recurrence of the finer facies of the yellowish-greenish and red marly limestones. In the sector east of the Boncuța Pass, these deposits are known under the name of „Gura Beliei Marls" and include as macrofauna rostrums of *Belemnitella mucronata*.

In the sector north of Boncuța Pass, the installing of the "Gura Beliei Marls" facies takes stratigraphically place somewhat later, the *Belemnitella* rostrums are being encountered in the basal grey marls (Valea Mare and Tohanul Vechi) which are overlain by the marls of "Gura Beliei" type.

From the paleogeographical view-point it is most obvious that the facies of the "Gura Beliei Marls" gradually migrated east-westwards and south-northwards, finally installing itself in the northern part of the area, after

the moment of growth of the *Belemnitella mucronata* species. This fact confirms the opinion that in the Cretaceous times these two basins were in close relation with each other permitting both the faunal migration and the lithological-facial one. The slight local changes cannot, however, enrich in any way on this phenomenon as a whole, which should be classified in this region at the scale of a basin of the geosyncline type, whose evolution was in perfect accordance with that of the Carpathian geosyncline as a whole.

The possibility of establishing common elements, correlation elements offered both by lithology and the macro and microfauna, are proofs supporting the opinion that the Intorsura Buzăului—Valea Mare region is only the northern end of a big basin of sedimentation, Măgura Nebunii—Cheia—Cernatu, in which local changes are only slightly hiding the features is has in common with the other deposits of the Carpathian Flysch sea east of the Curvature.

PART FIVE

SISTEMATIC DESCRIPTIONS

Subphyllum SARKODINA Hertwih & Lesser 1874
Class RHIZOPODEA von Sielbold 1845
Subclass GRANULORETICULOSIA de Saedelleer 1934
Order FORAMINIFERIDA Eichwald 1830
Suborder **TEXTULARIINA** Delage & Hérouard 1896

Superfamily AMMODISCACEA Reuss 1862
Family ASTRORHIZIDAE Brady 1881
Subfamily ASTRORHIZINAE Brady 1881
Genus **Rhabdammina** M. Sars, in Carpenter 1869

Rhabdammina discreta Brady
Pl. I, fig. 1

Rhabdammina discreta Brady-Brady 1881, Challenger Rept. Zoology, vol. 9, p. 268, pl. 22, figs. 11—13; Cushman 1910, U.S. Nat. Mus., Bull. 71, pt., p. 27, text-fig. 13; Cushman and Jarvis 1932, idem, Proc. vol. 80, art. 14, p. 4, pl. 1, figs. 1—2; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 14, pl. 1, figs. 1—2; Cushman and Renz 1946, Cush. Labor. Foram. Research, Spec. Publ., no. 18, p. 12, pl. 1, fig. 11.

Occurence: Upper Campanian-Lower Maestrichtian, Ivăncuța Creek.
Dimensions: Length 1,20 mm—1,68 mm; thickness 0,29 mm — 0,39 mm.
Hypotypes: L.P.B. 5210, 5506 to 5511.

Subfamily RHIZAMMININAE Rhumbler 1895
Genus **Bathysiphon** M. Sars in G. O. Sars 1872

Bathysiphon brosgei Tappan
Pl. I, figs. 3—4

Bathysiphon brosgei Tappan 1957, U.S. Nat. Mus., Bull., 215, p. 202, pl. 65, figs. 1—5; 1962, U.S. Geol. Survey, Prof. Paper, 236—C, part. 3, p. 128, pl. 29 figs. 1—5.

This species is very abundant in the Turonian deposits and rare in those of the Senonian.
Occurence: Turonian, Leacuri Creek; Campanian, Feneș Creek, Ivăncuța Creek.
Dimensions: Length 1,70 mm—0,84 mm; thickness 0,43 mm—0,21 mm.
Hypotypes: L.P.B. 5718—5720, 5916—5937.

Bathysiphon dubius (White)
Pl. I, fig. 2

Kalamopsis dubius White 1928, Jour. Pal., vol. 2, no. 3, p. 185, pl. 27, fig. 3.
Bathysiphon (?)*dubia* (White)-Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 120, pl. 1, fig. 1.

This species differs from *B. brosgei* Tappan by the bigger size, the thickness of the wall, and the aspect more rough of its; from *B. vitta* Nauss differs by the aspect more rough of the test.
Occurence: Campanian; Ulveș Creek, Ivăncuța Creek, Mădăraș Creek.
Dimensions: Length 1,89 mm —1,20mm : thickness 0,60 mm — 0,43 mm.
Hypotypes: L.P.B. 5722—5731, 5770—5772.

Subfamily HYPPOCREPININAE Rhumbler 1895

Genus **Hyperammina** Brady 1878

Hyperammina gaultina Dam

Pl. I, fig. 8

Hyperammina gaultina Dam 1950, Soc. Geol. Fr. Mem. n. ser., no. 63, p. 5, pl. 1, fig. 2; Huss 1957, Acta Geol. Polon., vol. 7, pl. 1. fig. 2 (2); 1966, Polsk. Akad. Nauk. Komis. Nauk. Geol., prace geol. no. 34, p. 13, pl. 1, fig. 23–24; Hanzlikowa 1966, Acta Mus. Moraviae, vol. 51, pl. 100, pl. 1, fig. 1; Geroch 1966, Soc. Geol. Pologn., Ann., vol. 36, fasc. 4, p. 435, pl. 6, fig. 14–18.

Hyperammina elongata Brady-Neagu 1960, Acad. Rom. Stud. Cercet. Geol., vol. 7, no. 1, p. 55, pl. 1, fig. 5.

Bathysiphon D_2 Hecht 1938, Senckenberg, naturf. Gess., Abh,. 443, pl. 2b, fig. 57–60, pl. 4b, fig. 18–19, pl. 6a.

Occurence: Turonian, Brazilor Creek; Campanian, Ulveş Creek, Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,79 mm — 0,58 mm; thickness 0,39 mm — 0,096 mm.

Hypotypes: L.P.B. 5211, 5721, 5781.

Subfamily DENDROPHRYINAE Haeckel 1894

Genus **Dendrophrya** T. S. Wright 1861

Dendrophrya dichotomica (Neagu)

Pl. I, fig. 7

Psammatodendron dichotomicum Neagu 1964, Soc. Geol. Pologn., Ann, vol. 34, fasc. 4, p. 580, text-fig. 1–4, pl. 26, fig. 1–4.

Occurence: Campanian, Ulveş Creek, Feneş Creek, Ulveş Hill, Ivanca Creek.

Dimensions: Length not determined (length of specimens examined varies from 2 cm to 15 cm); thickness 0,9 mm — 1,1 mm.

Holotype: L.P.B. 5003.

Paratypes: L.P.B. 5388.

Family SACCAMMINIDAE Brady 1884

Subfamily PSAMMOSPHAERINAE Haeckel 1894

Genus **Psammosphaera** Schultze 1875

Psammosphaera fusca Schultze

Pl. I, fig. 10

Psammosphaera fusca Schultze-Grzybowski 1896, Akad. Um. Krakow, Rozpr. vol. 31, p. 270, pl. 8, fig. 14; Cushman 1910, U.S. Nat. Mus., Bull., 71, p. 35, text-fig. 25–28; 1918, idem, Bull., 104, p. 34, pl. 13, fig. 1–6; Neagu 1962, Acad. Rom. Stud. Cercet. Geol., vol. 7, no. 1, p. 53, pl. 1, fig. 3; Huss 1966, Polsk. Akad. Nauk, Komis. Nauk. Geol., prace geol. no. 34, p. 15, pl. 1, fig. 1–3.

Occurence: Turonian, Brazilor Creek, Floroaia Mică Creek, Leacuri Creek, Cîrlanului Creek; Campanian, Ulveş Creek, Feneş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 0,82 mm — 0,55 mm.

Hypotypes: L.P.B. 5206, 5504, 5674–5678, 5774–5776, 5787, 5876–5877.

Subfamily SACCAMMININAE Brady 1884

Genus **Pelosina** Brady 1879

Pelosina complanata Franke

Pl. I, fig. 9

Pelosina complanata Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 10, pl. 1, fig. 6; Cushman and Jarvis 1932, U.S. Nat. Mus., Proc., vol. 80, art. 14, p. 5, pl. 1. fig. 4–6; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 15, pl. 1, fig. 9–11.

Proteonina complanata (Franke)-Glaessner 1937, Moskow Univ., Pal. Labor. Probl., vol. 2–3, p. 355, pl. 1, fig. 3; Subbotina 1950, Mikrofauna SSSR n. ser., vol. 4, no. 51, p. 68, pl. 1, fig. 7–9; Maslakowa 1955, Mater. Biostratig. Ukrain. SSR, p. 38, pl. 1, fig. 10; Neagu 1962, Acad. Rom. Stud. Cercet. Geol., vol. 7, no. 1, p. 52, pl. 1, fig. 4.

Occurence: Turonian, Leacuri Creek; Campanian, Rădăcinos Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,53mm — 0,26mm; thickness 0,17 mm — 0,072 mm.

Hypotypes: L.P.B. 5207, 5505, 5663, 5797–5801.

Family AMMODISCIDAE Reuss 1862

Subfamily AMMODISCINAE Reuss 1862

Genus **Ammodiscus** Reuss 1862

Ammodiscus cretaceus (Reuss)

Pl. II, fig. 1

Ammodiscus cretaceus (Reuss)-Marie 1941, Mem. Mus. Hist. Nat., n. ser., vol. 12, fasc. 1, p. 18, pl. 1, fig. 5–6; Cushman 1946, U.S. Geol. Survey, Prof, Paper 206, p. 17, pl. 1, fig. 35; Hagn 1953, Paläontographica vol. 104, Abt. A, p. 4, pl. 1, fig. 3; Frizzell 1954, Bur. Econ. Geol., Univ. Texas, Rept. Invest. no. 22, p. 58, pl. 1, fig. 15; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 120, pl. 1, fig. 4; Belford 1960, Bur. Min. Res. Geol. and Geophys., Bull., no. 57, p. 22, pl. 6, fig.1; Tappan 1962, U. S. Geol. Survey Prof. Paper 236–C, part. 3, p. 130, pl. 30, fig. 1–2; Graham and Church 1963, Stanford Univ., Public. Geol. Sci. vol. 8, no. 1, p. 17, pl. 1, fig. 17; Huss 1966, Polsk. Akad. Nauk, Komis. Nauk. Geol., prace geol. no, 34, p. 16, pl. 2, fig. 13–16.

Occurence: Turonian, Brazilor Creek, Hărcăoaia Hill, Leacuri Creek, Craca Mare Creek, Şopîrlei Creek; Campanian-Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Diameter 0,91mm — 0,65mm.

Hypotypes: L.P.B. 5221, 5480—5485, 5738.

Genus **Glomospira** Rzehak 1885

Glomospira irregularis (Grzybowski)

Pl. I, fig. 11

Ammodiscus irregularis Grzybowski 1897, Akad. Um. Krakow, Rozpr., vol. 33, p. 285, pl. 11, fig. 2—3; 1901 idem, vol. 41, p. 273.

Glomospira irregularis (Grzybowski)-Glaessner 1937, Moskow Univ., Pal. Labor. Prob. vol. 2—3, p. 359, pl. 1, fig. 7; Maslakowa 1955, Mater. Biostratig. Ukrain. SSR, p. 45. pl. 3, fig. 3; Neagu 1962, Acad. Rom. Stud. Cercet. Geol., vol 7, no. 1, p. 57, pl. 4, fig. 54, pl. 6, fig. 85—86; Hanzlikowa 1966, Acta Mus. Moraviae, vol. 51, p. 102, pl. 2, fig. 3—4.

Occurence: Cenomanian, Teliu; Turonian, Gurmezea Creek, Brazilor Creek, Floroaia Mică Creek, Hărcăoaia Creek, Hărcăoaia Hill, Şopîrlei Creek; Campanian, Ivanca Creek, Ulveş Creek, Rădăcinos Creek.

Dimensions: Length 1,32mm — 0,82mm.

Hypotypes: L.P.B. 5217, 5521—5524, 5741, 5791, 5845.

Glomospira gordialis (Jones & Parker)

Pl. I, fig. 12

Ammodiscus gordialis (Jones & Parker) — Grzybowski 1896, Akad. Um., Krakow., Rozpr., vol. 30, p. 284, pl. 8. fig. 44—45.

Glomospira gordialis (Jones & Parker) Cushman 1918, U.S, Nat. Mus., Bull. 104, p. 99, pl, 36, fig. 7—8; White 1932, Jour. Pal., vol. 2, no. 3, p. 187, pl. 22, fig. 8; Cushman and Jarvis 1932, U.S. Nat. Mus., Proc. vol. 80, art. 14, p. 9. pl. 2, fig. 6—7; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 18, pl. 1, fig. 38—40.

Occurence: Turonian, Hărcăoaia Hill; Campanian, Ivăncuţa Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 0,58 mm — 0,24 mm.

Hypotypes: L.P.B. 5215, 5514—5515, 5744—5745.

Glomospira gordialis diffundens Cushman & Renz

Pl. I, fig. 13

Glomospira goraialis diffundens Cushman & Renz 1946, Cush. Labor. Foram. Researches, Spec. Public. no. 18, p. 15, pl. 1, fig. 30; Geroch 1957, Soc. Geol. Pologn., Ann., vol. 26, fasc. 4, p. 313, pl. 31, fig. 1; 1960, Instyt. Geol., Bull. 153, Geol. researches Carpath., vol. 5, p. 46, pl. 4. fg. 1.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 0,72 mm — 0,29 mm.

Hypotypes: L.P.B. 5216, 5517—5520.

Glomospira serpens (Grzybowski)

Pl. I, fig. 14

Ammodiscus serpens Grzybowski 1898, Akad. Um., Krakow, Rozpr., vol. 33, p. 286, pl. 10, fig. 31—33; 1901 idem, vol. 41, pl. 9, fig. 17.

Glomospira serpens (Grzybowski) — Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24, fasc. 1, p. 51; Geroch 1960, Instyt. Geol., Bull., 153, Geol. researches Carpath., vol. 5, p. 47, pl. 4, fig. 13; Neagu 1962, Acad. Rom., Stud. Cercet. Geol., vol. 7, no. 1, p. 58, pl. 1, fig. 13—14.

Occurence: Turonian, Hărcăoaia Hill; Campanian, Rădăcinos Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Length 1,23 mm — 0,72 mm; breadth 0,43 mm — 0,26 mm.

Hypotypes: L.P.B. 5220, 5529, 5478—5479, 5810.

Subfamily Tolypammininae Cushman 1928

Genus **Lituotuba** Rhumbler 1895

Lituotuba incerta Franke

Pl. I, fig. 15

Lituotuba incerta Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 15, pl. 1, fig. 11; Neagu 1962, Acad. Rom., Stud. Cercet. Geol. vol. 7, no. 1, p. 58, pl. 4, fig. 62—63.

Occurence: Turonian, Leacuri Creek; Campanian, Ivanca Creek, Ulveş Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 1,32 mm — 0,84 mm.

Hypotypes: L.P.B. 5218, 5525—5528, 5633.

Superfamily Lituolacea de Blainville 1825

Family Hormosinidae Haeckel 1894

Subfamily Aschemonellinae Eimer & Fickert 1899

Genus **Aschemonella** Brady 1879

Aschemonella carpathica Neagu

Pl. II, figs. 2—3

Aschemonella carpathica Neagu 1964, Soc. Geol. Pologn. Ann., vol; 34, fasc. 4, p. 582, text-fig. 1/5—8, 2/2—4, 3/1—3, 4/166, pl. 27, fig. 1—3.

Occurence: Campanian, Ivanca Creek, Ulveş Creek, Ulveş Hill.

Dimensions: Length not determined (in the specimens examined the length varies from 2—to 7 cm), tchickness 1—3 mm.

Hollotype: L.P.B. 5002.

Paratypes L.P.B. 5009, 5389.

Genus **Kalamopsis** de Folin 1883

Kalamopsis grzybowskii (Dylazanka)

Pl. I, figs. 5—6

Hyperammina grzybowskii Dylazanka-Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24,

fasc. 1, p. 37, p.. 5, fig. 1 a—e; Bukowy and Geroch 1967, idem, vol. 26, fasc. 4, p. 314, pl. 30, fig. 11; Geroch 1960, Instyt. Geol., Bull., 153, Geol. researches Carpath., vol. 5, p. 39, pl. 1, fig. 22—23; Neagu 1962, Acad. Rom., Stud. Cercet. Geol., vol. 7, no. 1, p. 55, pl. 1, fig. 6, pl. 3, fig. 38—39.

Kalamopsis grzybowskii (Dylazanka)-Geroch 1966, Soc. Geol. Pologn. Ann., vol. 36, fasc. 4, p. 438, pl. 6, fig. 27—29.

Occurence: Turonian, Gurmezea Creek, Cîrlanului Creek, Dobîrlău Valley, Leacuri Creek, Craca Mare Creek, Şopîrlei Creek; Campanian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Length 0,96 mm — 0,58 mm.

Hypotypes: L.P.B. 5212, 5512—5513.

Subfamily Hormosininae Haeckel 1894

Genus **Hormosina** Brady 1879

Hormosina ovulum (Grzybowski)

Pl. II, fig. 11

Reophax ovulum Grzybowski 1896, Akad. Um. Krakow, Rozpr., vol 30, p. 267, pl. 8, fig. 19—21; 1901 idem, vol. 41, p. 268, pl. 7, fig. 3.

Hormosina ovulum (Grzybowski) Glaessner 1937, Moskow Univ., Pal. Labor. Probl., vol. 2—3, p. 357, pl. 1, fig. 5; Geroch and Gradzinski 1955, Soc. Geol. Pologn., Ann., vol. 24, fasc. 1, p. 38, pl. 5, fig. 3; Bukowy and Geroch 1937, idem, vol. 26, fasc. 4, p. 313, pl, 31, fig. 1—4; Geroch 1960, Instyt. Geol., Bull., 153. Geol. researches Carpath., vol. 5, p. 43, pl. 2, fig. 20—22; Neagu 1962, Acad. Rom. Stud. Cercet. Geol., vol. 7, no. 1, p. 58, pl. 6, fig. 92; Geroch 1966, Soc. Geol. Pologn. Ann., vol. 36, fasc. 4, p. 438, pl. 6, fig. 30—33.

Occurence: Cenomanian, Teliu; Turonian, Hărcăoaia Hill, Brazilor Creek, Floroaia Mică Creek; Campanian, Scrădoasa Valley, Ivăncuţa Creek, Ulveş Creek, Rădăcinos Creek.

Dimensions: Length 0,43 mm — 0,29 mm; thickness 0,24 mm — 0,36 mm.

Hypotypes: L.P.B. 5228, 5500—5503, 5746—5750, 5782—5784.

Hormosina ovulum gigantea Geroch

Pl. II, fig. 13

Hormosina ovulum (Grzybowski) Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24, 24, fasc. 1, pl. 5, fig. 3 a—b.

Hormosina ovulum gigantea Geroch 1960, Instyt. Geol., Bull. 153, Geol. researches Carpath., vol 5, p. 43, pl. 2, fig. 18—19.

Occurence: Campanian-Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek, Feneş Creek.

Dimensions: Length 0,82 mm — 0,70 mm; thickness 0,62 mm — 0,72 mm.

Hypolypes: L.P.B. 5229, 5531—5533, 5878—5879.

Hormosina excelsa (Dylazanka)

Pl. II, figs. 14—15

Hormosina excelsa (Dylazanka-Geroch 1955, Soc. Geol. Pologn. Ann., vol. 26. fasc. 4, p. 314, pl. 31, fig, 5—6.

Occurence: Turonian, Gurmezea Creek; Campanian, Ivăncuţa Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,96 mm — 0,40 mm; thickness 0,19 mm — 0,17 mm.

Hypotypes: L.P.B. 5227, 5494, 5534.

Hormosina velascoensis (Cushman)

Pl. II, fig. 16

Nodosinella velascoensis Cushman 1926, Am. Assoc. Petrol. Geol., Bull, vol. 10, p. 583, pl. 20. fig. 9.

Nodellum velascoensis (Cushman)-Cushman and Jarvis 1932, U.S. Nat. Mus. Proc., vol. 80, art. 14, p. 8. pl. 1, fig. 15—17; Glaessner 1937, Moskow Univ., Pal. Labor. Probl., vol. 2—3, p. 358, pl. 1, fig. 6; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 17, pl. 1, fig. 28—31; Cushman and Renz 1946, Cush. Labor. Foram. Researches, Spec. Publ. no. 18, p. 14, pl. 1, fig. 20—24; Geroch 1960, Instyt. Geol., Bull, 153, Geol. researches Carpath. vol. 5, p. 44, pl. 3, fig. 4—7.

Occurence: Campanian, Ulveş Creek, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Length 1,34 mm — 1,03 mm.

Hypotypes: L.P.B. 5226, 5494—5498, 5880.

Genus **Reophax** Montfort 1808

Reophax minuta Tappan

Pl. II, fig. 4

Reophax minuta Tappan 1940, Jour. Pal., vol. 14, no. 2, p. 94, pl. 14, fig. 4; 1943 idem, vol. 17, no. 5, p. 480, pl. 77, fig. 4; Frizzell 1954, Bur. Eco. Geol., Rept. Imvest., no. 22, p. 57, pl. 1, fig. 11; Tappan 1962, U.S. Geol. Survey Prof. Paper 236—C, part. 3, p. 132, pl. 30, fig. 10: Hanzlikowa 1966, Acta Mus. Moraviae, vol. 51, p. 103, pl. 1, fig. 15—16; Geroch 1966, Soc. Geol. Pologn. Ann., vol. 36, fasc. 4, p. 439, pl. 7, fig. 7—17; Huss 1966, Polsk. Akad. Nauk Kommis, Nauk geol., prace geol., no. 34, p. 21, pl. 1, fig. 26—30.

Occurence: Turonian, Şopîrlei Creek, Cantonului Creek.

Dimensions: Length 0,55mm — 0,46mm.

Hypotypes: L.P.B. 5234, 5544 — 5548.

Reophax pilulifer Brady

Pl. II, figs. 6, 9—10

Reophax pilulifer Brady, Bartenstein, Bettenstaedt, Bolli 1957, Eclogae Geol. Helv., vol.

50, no. 1, p. 15, pl. 1, fig. 4–5; Liszkowa 1959, Instyt. Geol Bull., 131, Geol. Carpath., voi. 2, pl. 3, fig. 2.

Reophax pilulifera Brady, Huss 1966, Polsk. Akad. Nauk, Komis. Nauk. Geol., prace geol., no. 34, p. 22, pl. 2, fig. 1–12.

Occurence: Campanian, Ulveş Creek, Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 1,41 mm — 1,8 mm.

Hypotypes: L.P.B. 5531, 5335–5538.

Reophax duplex Grzybowski

Pl. II, fig. 12

Reophax duplex Grzybowski 1896, Akad. Um., Krakow, Rozpr., vol. 30, p. 276, pl. 8, fig. 23–25.

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 0,96 mm — 0,82 mm.

Hypotypes: L.P.B. 5233, 5540–5542.

Reophax splendidus Grzybowski

Pl. II, fig. 5

Reophax splendidus Grzybowski 1898, Akad. Um., Krakow, Rozpr., vol. 33, p. 278, pl. 10, fig. 16; Glaessner 1937, Moskow Univ., Pal. Labor. Probl., vol. 2–3, p. 356, pl. 1, fig. 4; Neagu 1962, Acad. Rom., Stud. Cercet. Geol., vol. 7, no. 1, p. 59, pl. 5, fig. 74.

Occurence: Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 1,56 mm — 0,84 mm.

Hypotypes: L.P.B. 5230, 5543.

Reophax dentalinoides (Reuss)

Pl. II, fig. 7

Haplostiche dentalinoides Reuss 1874, Paläontographica, vol. 20, pt. 2, p. 121, pl. 24, fig. 4–6.

Reophax dentalinoides (Reuss) Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 16, pl. 1, fig. 24–25.

Occurence: Turonian, Gurmezea Creek.

Dimensions: Length 1,44 mm.

Hypotype: L.P.B. 5232.

Reophax clavulinus (Reuss)

Pl. II, fig. 8

Haplostiche clavulina Reuss 1874, Paläontographica, vol. 20, pt. 2, p. 121, pl. 24, fig. 7–8.

Reophax clavulinus (Reuss) Cushman 1946, U.S. Geol. Survey, Prof. Paper, 206, p. 16, pl. 1, fig. 23.

Occurence: Turonian, Gurmezea Creek.

Dimensions: Length 0,74 mm.

Hypotype: L.P.B. 5335.

Family Rzehakinidae Cushman 1933

Genus **Rzehakina** Cushman 1927

Rzehakina epigona (Rzehak)

Pl. I, figs. 16–18

Silicina epigona Rzehak 1895, Ann. Naturhist. Hofmus., Wien, vol. 10, p. 214, pl. 6, fig. 1.

Rzehakina epigona (Rzehak) White 1928, Jour. Pal., vol. 2, no. 3, p. 186, pl. 27. fig. 6; Noth 1951, Austria. Geol. Bundesanst., Jb. Sonderband 3, p. 40, pl. 6, fig. 27; Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24, fasc. 1, pl. 7 a–d; Bukowy and Geroch 1957, idem, vol. 26, fasc. 4, p. 314, pl. 31, fig. 7; Geroch 1960, Instyt. Geol., Bull., 153, Geol. researches Carpath., vol. 5, p. 63, pl. 4, fig. 14–16.

Occurence: Campanian, Ivanca Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,72 mm — 0,48 mm; breadth 0,48 mm — 0,40 mm.

Hypotypes: L.P.B. 5236, 5549–5552.

Rzehakina epigona lata Cushman & Jarvis

Pl. I, figs. 20–22

Rzehakina epigona (Rzehak) var. *lata* Cushman and Jarvis 1932, U.S. Nat.Mus., Proc., vol. 80 art. 14, p. 20, pl. 6, fig. 1; Cushman 1946, U.S. Geol. Survy, Prof. Paper, 206, p. 47, pl. 14, fig. 1–3; Frizzell 1954, Texas Univ. Bur. Econ. Geol., Rept. Invest., no. 22, p. 76, pl. 6, fig. 29.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek.

Dimensions: Length 0,48 mm — 0,40 mm; breadth 0,14 mm — 0,12 mm.

Hypotypes: L.P.B. 6496–6508.

Rzehakina inclusa (Grzybowski)

Pl. I, figs. 21, 23

Spiroloculina inclusa Grzybowski 1901, Akad. Um., Krakow, Rozpr., vol. 41, p. 260, pl. 7, fig. 20.

Rzehakina inclusa (Grzybowski) Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24, fasc. 1, pl. 5, fig. 6; Geroch and Bukowy 1957, idem, vol. 26, fasc. 4, p. 314, pl. 31, fig. 8; Geroch 1960, Instyt. Geol. Bull., 153. Geol. researches Carpath., vol. 5, p. 63, pl. 4. fig. 11.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,72 mm — 0,55 mm; breadth 0,48 mm — 0,36 mm; thickness 0,19 mm — 0,14 mm.

Hypotypes: L.P.B. 6587–6589.

Rzehakina fissistomata (Grzybowski)
Pl. I, fig. 19

Spiroloculina fissistomata Grzybowski 1901, Akad. Um. Krakow. Rozpr., vol. 41, p. 261, pl. 7, fig. 22–24.
Rzehakina fissistomata (Grzybowski) Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24, fasc. 1, pl. 5, fig. 8; Geroch 1960, Instyt. Geol., Bull., 153, Geol. researches Carpath., vol. 5, p. 63, pl. 4, fig. 1.

Occurence: Campanian, Ivanka Creek.
Dimensions: Length 0,55 mm — 0,50 mm; breadth 0,26 mm — 0,24 mm; thickness 0,07.
Hypotypes: L.P.B. 6599–6600.

Family Lituolidae de Blainville 1825
Subfamily Haplophragmoidinae Maync 1952
Genus **Haplophragmoides** Cushman 1910
Haplophragmoides gigas minor Nauss
Pl. III, figs. 1–2

Haplophragmoides gigas minor Nauss 1947, Jour. Pal., vol. 21, no. 4, p. 338, pl. 49, fig. 10; Geroch 1966, Soc. Geol. Pologn. Ann., vol. 36, fasc. 4, p. 441, pl. 10, fig. 1–3.

Occurence: Cenomanian, Stînii Hill, Teiu Valley.
Dimensions: Diameter 0,36 mm; thickness 0,24 mm.
Hypotypes: L.P.B. 5253, 5669.

Haplophragmoides bulloides (Beissel)
Pl. III, figs. 3–4

Haplophragmium bulloides Beissel 1891, Preuss. Geol. Landensanst., Abh., n. ser., vol. 3, p. 17, pl. 4, fig 24–30.
Haplophragmoides bulloides (Beissel) Huss 1966, Polsk. Akad. Nauk, Komis. Geol. Nauk, prace Geol. no. 34, p. 23, pl. 3, fig. 17–24.

Occurence: Cenomanian, Stînii Hill; Turonian, Craca Mare Creek, Şopîrlei Creek, Leacuri Creek.
Dimensions: Diameter 0,29 mm — 0,24 mm.
Hypotypes: L.P.B. 5627, 5650–5666.

Haplophragmoides herbichi Neagu[3]
Pl. IV, figs. 13–16

Test free, small, discoidal, planispiral; peripharal margin rounded; 8–10 in the final whorl; a small umbilicus on each side; sutures straight, distinct, radial with a hyalin aspect, wall finely agglutinated, surface smoothly finished; the aperure a low interiomarginal arch.
Occurence: Turonian, Şopîrlei Creek, Hărcăoaia Hill.
Dimensions: diameter, holotype 0,29 mm; paratypes 0,29 mm — 0,34 mm; thickness, holotypes 0,17 mm; paratypes 0,12mm — 0,17mm.
Remarks: This species differs from *Haplophragmoides gigas minor* Nauss in having 8–10 chambers in the final whorl and in the aspect of the chambers and the sutures. It is named in honor of F. Herbich, first paleontologist and geologist to work on this region in the last part of the nineteen century.
Holotype: L.P.B. 9009.
Paratypes: L.P.B. 9010–9015.

Haplophragmoides eggeri Cushman
Pl. III, figs. 5–6

Haplophragmoides eggeri Cushman 1926, Am. Assoc. Petrol. Geol., Bull., vol. 10, p. 583, pl. 15, fig. 1; Cushman and Jarvis 1932, U.S. Nat. Mus., Proc. vol. 80, art. 14, p. 12, pl. 3, fig. 2; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 20, pl. 2, fig. 9–10; Said and Kenawy 1956, Micropaleontology vol. 2, no. 2, p. 121, pl. 1, fig. 3.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Diameter 1,08 mm — 0,70 mm; thickness 0,60 mm — 0,39 mm.
Hypotypes: L.P.B. 5268, 5452, 5667–5668.

Genus **Cribrostomoides** Cushman 1910
Cribrostomoides trinitatensis Cushman & Jarvis
Pl. III, figs. 7–8

Cribrostomoides trinitatensis Cushman and Jarvis 1932, U.S. Nat. Mus., Proc., vol. 80, art. 14, p. 12, pl. 3, fig. 3: Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 22, pl. 3, fig. 3; Noth 1951, Austria. Geol. Bundesanst., Jb., Sonderband 3, p. 30, pl. 6, fig. 17; Huss 1966, Polsk. Akad. Nauk, Komis. Geol. Nauk, prace geol. no. 34, p. 30, pl. 5, fig. 5–7.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Diameter 0,50 mm; thickness 0,46 mm.
Hypotypes: L.P.B. 5342, 5454.

Genus **Trochamminoides** Cushman 1910
Trochamminoides irregularis (White)
Pl. II, fig. 17

Trochammina irregularis White 1928, Jour. Pal., vol. 2, no. 3, p. 307, pl. 42, fig. 1.
Trochamminoides irregularis (White) Glaessner 1937, Moskow Univ., Pal. Labor., Probl., vol. 2–3,

[3] All the species with this asterisk was described as new species in: Th. Neagu, Biostratigraphy of Upper Cretaceous deposits in the southern Easter Carpathians near Braşov, Micropaleontology 14/2 during the present paper was in press.

p. 360, pl. 1, fig. 9 a–b; Geroch 1960, Instyt. Geol., Bull. 153, Geol. researches Carpath., vol. 5, p. 49; Neagu 1962, Acad. Rom., Stud. Cercet. Geol., vol. 7, no. 1, p. 59, pl. 4, fig. 65.

Occurence: Cenomanian, Stînii Hill; Turonian, Întorsura Buzăului, Şopîrlei Creek; Campanian, Ivanca Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 1,15 mm — 0,40 mm.

Hypotypes: L.P.B. 5245, 5577–5578, 5580–5581.

Trochamminoides dubius (Grzybowski)

Pl. II, fig. 20

Ammodiscus dubius Grzybowski 1901, Akad. Um., Krakow, Rozpr., vol. 41, p. 274, pl. 8, fig. 12–14.

Occurence: Cenomanian, Hărcăoaia Hill; Campanian, Ivanca Creek, Ulveş Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Diameter 0,67 mm — 0,53 mm.

Hypotypes: L.P.B. 5246, 5583–5585.

Trochamminoides irregularis heteromorpha (Grzybowski)

Pl. 18, fig. 18

Trochammina heteromorpha Grzybowski 1898, Akad. Um. Krakow, Rozpr., vol. 33, pl. 286, pi. 11, fig. 16; 1901 idem, vol. 41, pl. 9, fig. 6–8.

Having the last part of the test uncoiled this subspecies differs from *T. irregularis* (White).

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 0,77 mm; diameter 0,65mm.

Hypotypes: L.P.B. 5244, 5563.

Trochamminoides proteus (Karrer)

Pl. II, fig. 19

Trochammina proteus Karrer 1865, Akad. Wiss. Wien. Math-naturw., Cl., Sitzber., vol. 52, no. 9, p. 464, pl. 1, fig. 8 (non fig. 1–7).

Trochamminoides proteus (Karrer) Thalmann 1932, Eclogae Geol. Helv., vol. 25, p. 100; Liszkowa, 1959, Instyt. Geol., Bull., 131, Geol. Karpat., vol 2, p. 57, pl. 3, fig. 6.

Occurence: Turonian, Hărcăoaia Hill; Campanian, Ulveş Creek, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 0,98 mm — 0,60 mm.

Hypotypes: L.P.B. 5247, 5587, 5589–5590, 5849.

Genus **Recurvoides** Earland 1934

Recurvoides imperfectus (Hanzlikowa)

Pl. XXXIX, figs. 16–18

Recurvoides imperfectus Hanzlikowa 1953, Sbornik Ustr., ust. geol., vol. 20, pl. 9, fig. 1 a–d (nomen nudum).

Haplophragmoides imperfectus Hanzlikowa 1966, Acta Mus. Moraviae, vol. 51, p. 111, pl. 5, fig. 1–8.

Recurvoides imperfectus Hanzlikowa-Geroch 1966, Soc. Geol. Pologn. Ann., vol. 36, fasc. 4, p. 443, pl. 10, fig. 4–5.

Occurence: Cenomanian, Stînii Hill.

Dimensions: Diameter 0,43 mm — 0,34 mm.

Hypotypes: L.P.B. 9050.

Genus **Thalmannammina** Pokorny 1951

Thalmannammina recurvoidiformis Neaguet Tocorjescu n.sp.

Pl. IV, figs. 1–12; pl. XL, figs. 10–15

Test globulous, small-sized, closely coiled, 5–7 chambers on the last whorl, rectangular-elongated in aspect, sutures moderately depressed or flat, hyaline and slight curved. The umbilical side shows only the chambers of the last whorl, with a slight zigzag-like aspect; on the sipral side are visible the last chambers of the anterior whorl. The interiomarginal aperture is disposed at the basis of the apertural face of the last formed chamber. Wall aglutinate smooth finished is formed from fine quartz grains.

Remarks: The latero-oral view show a *Recurvoides* aspect of the test but the zigzag-like disposition of the chambers and the interic-marginal aperture are the characters of the genus *Thalmannammina*. *T. recurvoidiformis* differ from *Th. neocomiensis* Geroch, in having a more regular aspect in the disposition of the chambers, a rectangular-elongated aspect of these and more accentuated hyaline curved sutures. From *R. imperfectus* (Hanzlikowa) the bigg differences are in the aspect and form of the chambers, the coiling and the position of the aperture.

Occurence: Turonian, Intorsura Buzăului; Lower Campanian, Rădăcinos Creek.

Dimensions: Diameter (holotype) 0,29 mm; (paratypes) 0,34 mm — 0,26 mm.

Holotype: L.P.B. 9058.

Paratypes: L.P.B. 9059–9064.

Thalmannammina maeandertornata Neaguet Tocorjescu n.sp.

Pl. III, figs. 9–15; pl. XL, figs. 1–9

Test medium-sized, closely-coiled, globulous, with the meander-like or zigzag-like whorls disposed in various plans. Last-formed whorl with 7–9 uniform chambers; sutures straight and more and less falt. The wall agglutinated,

composed of medium grains of quartz and a bigg quantity of silicious ciment. Surface rough. Aperture situate at the base of the last-formed chamber.

Remarks: This species differs from *Recurvoides turbinatus* (Brady) in having the globulous aspect of the test, and meander-like aspect of the whorls; from *Th. neocomiensis* Geroch, differs in having a very clear meander-like whorls, smaller and uniform chambers.

Occurence: Turonian, Întorsura Buzăului, Şopîrlei Creek, Brădet Hill, Lower Campanian, Rădăcinos Creek.

Dimensions: Diameter (holotype) 0,29 mm, (paratypes) 0,29 mm — 0,26 mm.

Holotype: L.P.B. 9052.

Paratypes: L.P.B. 9053—9057.

The name of this species derive from the Latin words: maeander-winding, convolution and, torno-are, avi, atum, to turn, to revolve.

Subfamily CYCLAMMININAE Marie 1941

Genus **Choffatella** Schlumberger 1905

Choffatella decipiens Schlumberger

Pl. VI, 14—17

Choffatella decipiens Schlumberger 1904, Soc. Geol. Fr., Bull. vol. 4, ser. 4, p. 763, pl. 18, fig, 1—6; Tobler 1928, Ecl. Geol. Helv., vol. 19, no. 1, p. 214, pl. 24, fig. 4—6; Henson 1948, British Mus. (Nat. History) Mon., p. 14, pl. 11, fig. 1.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 1,40 mm—0,82 mm; thickness 0,3 mm—0,10 mm.

Hypotypes: L.P.B. 9065—9066.

Subfamily LITUOLINAE de Blainville 1825

Genus **Ammobaculites** Cushman 1910

Ammobaculites problematicus (Neagu)

Pl. VI, figs. 1—5

Ammobaculites sp. Geroch and Gradzinski 1955, Soc. Geol. Pologn. Ann., vol. 24, fasc. 1, pl. 5, fig. 2.

Ammobaculites agglutinans problematicus Neagu 1962, Acad. Rom., Stud. Cercet. Geol., vol. 7, no. 1, p. 61, pl. 2, fig. 22—24.

Haplophragmium aequicameratum Huss 1966, Polsk. Akad. Nauk, Komis. Nauk Geol., prace Geol. no. 34, p. 32, pl. 9, fig. 10—25.

Remarks: *A. problematicus* differs from *A. fragmentarius* Cushman, in having the gracile aspect of the test and from the last chambers which develop gradualy in size. Its is also different from *A. ficheri* Crespin by the same gracil aspect of the test, the slight sutures, the early stage closely coiled and the aspect of the chambers. *Haplophragmium aequicameratum* Huss is a junior synonym of *A. problematicus* (Neagu), because in our material there are specimens which have an early stage planispiral rolling up, but, and many others with early stage more and less irregular rolling up. Only this character is not enough, if we take in consideration the indications of the International Code of Zoological nomenclature (1964), for to give a new names.

Occurence: Cenomanian, Stînii Hill, Teliu; Turonian, Gurmezea Creek, Leacuri Creek, Şopîrlei Creek, Craca Mare Creek.

Dimensions: Length 0,67 mm—0,21 mm; thickness 0,19 mm—0,09 mm.

Hypotypes: L.P.B. 5591—5593, 5660—5662, 5817—5833.

Ammobaculites junceus Cushman & Applin

Pl. V, figs. 1—3

Ammobaculites junceus Cushman and Applin 1946, Cush. Labor. Foram. Researches, Contrib., vol. 22, no. 3, p. 72, pl. 13, fig. 2; Frizzell 1954, Texas Univ. Bur. Econ. Geol., Rept. Invest. no. 22, p. 62, pl. 2, fig. 22.

Occurence: Campanian, Ivanca Creek.

Dimensions: Length: 0,96 mm—0,72 mm; thickness 0,39 mm—0,29 mm.

Hypotypes: L.P.B. 5690—5707.

Ammobaculites gratus Cushman & Applin

Pl. VI, fig. 12

Ammobaculites gratus Cushman and Applin 1947 Cush. Labor. Foram. Researches, Contrib., vol. 23, no. 3, p. 54, pl. 13, fig. 4; Frizzell 1954, Texas Univ., Bur, Econ. Geol. Rept.Invest., no. 22, p. 62, pl. 2, fig. 21.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek.

Dimensions: Length 1,10 mm—0,72 mm; thickness 0,77 mm—0,55 mm.

Hypotypes: L.P.B. 5248, 5696—5699.

Ammobaculites coprolithiformis (Schwager)

Pl. VI, fig. 13

Ammobaculites coprolithiformis (Schwager)-Cushman and Jarvis 1932, U.S. Nat. Mus., Proc., vol. 80, art. 14, p. 13, pl. 3, fig. 4; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 3, p. 328, pl. 50, fig. 2; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 22, pl. 3, fig. 7—9.

Occurence: Turonian Cîrlanului Creek, Gurmezea Creek.

Dimensions: Length 1,10 mm—0,72 mm; thickness 0,50 mm—0,40 mm.
Hypotypes: L.P.B. 5249, 5713, 5714, 5717.

Ammobaculites lueckei Cushman & Hedberg
Pl. VI, figs. 6—11

Ammobaculites lueckei Cushman and Hedberg 1941, Cush. Labor. Foram. Researches, Contrib., vol. 17, no. 4, p. 83, pl. 21, fig. 4.
Occurence: Turonian, Cîrlanului Creek; Campanian, Mădăraş Creek, Ivanca Creek.
Dimensions: Length 1,39mm—0,84mm; thickness 1,03mm—0,43 mm.
Hypotypes: L.P.B. 5700—5702, 5733.

Family Textulariidae Ehrenberg 1838
Subfamily Spiroplectammininae Cushman 1927
Genus **Spiroplectammina** Cushman 1927
Spiroplectammina praelonga (Reuss)
Pl. V, figs. 4—6

Textularia praelonga Reuss 1854, Denck, Ak. Wiss., Wien, Math-natur., Cl., vol. 7, p. 72, pl. 26, fig. 8; Franke 1928, Preuss. Geol. Landesanst, Abh. n. ser., vol. 111, p. 149, pl. 13, fig. 20.
Spiroplectammina praelonga (Reuss) - Tollmann 1960, Jb. Geol. B.A., vol. 103, p. 154, pl. 9, fig. 1—3; Huss 1966, Polsk. Akad. Nauk, Komis. Nauk Geol, prace Geol., no. 34, p. 38, pl. 6, fig. 1—6.
Occurence: Turonian, Gurmezea Creek, Craca Mare Creek, Cîrlanului Creek.
Dimensions: Length 0,65 mm—0,53 mm; thickness 0,16 mm—0,09 mm.
Hypotypes: L.P.B. 5222, 5486—5487, 5539, 5594—5596, 5683—5684.

Spiroplectammina subhaeringensis (Grzybowski)
Pl. V, figs. 10—12

Textularia subhaeringensis Grzybowski 1896, Akad. Um. Krakow, Rozpr., vol. 30, pl. 9, fig. 16.
Spiroplectammina subhaeringensis (Grzybowski)-Huss, 1966, Polsk. Akad. Nauk, Komis. Nauk Geol., prace Geol., no. 34, p. 39, pl. 6, fig. 15—17.
Occurence: Campanian, Ulveş Creek, Ivanca Creek.
Dimensions: Length 1,20 mm — 0,19 mm; breadth 0,86 mm — 0,26 mm.
Hypotypes: L.P.B. 5240, 5567—5572.

Spiroplectammina boudouniana (d'Orbigny)
Pl. V, figs. 7—8

Textularia boudouniana d'Orbigny 1840, Soc. Geol. France., Mem., vol. 4, p. 46, pl. 4, fig. 29—30; Egger 1899, k. Bayer. Ak. Wiss., Münehen, Math. Phys. Cl. Abh., vol. 21, no. 1, p. 24, pl. 2, fig. 10—11; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol·111, p. 135, pl. 12, fig. 12.
Spiroplectammina boudouniana (d'Orbigny) Hofker 1957, Beih., Geol. Jb., vol. 27, p. 60, text-fig. 57; Tollmann 1960, Jb. Geol. B. A., vol. 103, p. 155, pl. 9, fig. 4—5.
non Spiroplectammina boudouniana d'Orbigny-Cushman 1946, U.S. Geol. Survey Prof. Paper, 206, p. 27, pl. 5, fig. 12.
Occurence: Campanian, Ulveş Creek, Ivanca Creek; Lower Maestrichtian Ulveş Creek.
Dimensions: Length (microspheric specimens) 1,03 mm — 0,62 mm; thickness 0,40 mm — — 0,29 mm; (megalospheric specimens) length 1,08 mm — 0,46 mm; thickness 0,53 mm — — 0,26 mm.
Hypotypes: L.P.B. 5239, 5559—5562.

Spiroplectammina flexuosa (Reuss)
Pl. V, fig. 9

Textularia articulata Reuss 1851, Haidinger's Naturw., vol. 4, p. 45, pl. 4, fig. 14; Egger 1899, k. Bayer. Ak. Wiss. München, Math-Physik., Cl. Abh., vol. 21, no. 1, p. 24, pl. 22, fig. 40—42.
Textularia flexuosa Reuss 1860, k. Akad., Wiss., Wien, Math-Naturw. Cl. Sitzber., vol. 40, p. 235.
Spiroplectoides flexuosa (Reuss)-Marie 1941, Mus. Hist. Nat., Mem., n. ser. vol. 12, fase. 1, p. 180, pl. 28, fig. 265.
Occurence: Campanian, Ulveş Creek, Ivanca Creek; Lower Maestrichtian, Ivanca Creek.
Dimensions: Length 0,79 mm — 0,46 mm; breadth 0,29 mm — 0,13 mm
Hypotypes: L.P.B. 5238, 5554—5558.

Spiroplectammina dentata (Alth)
Pl. IV, fig. 21

Textularia dentata Alth 1850, Haidinger's Naturw. Abh., vol. 3, p. 262, pl. 13, fig. 13.
Spiroplectammina dentata (Alth)-Cushman and Jarvis 1932, U.S. Nat. Mus. Proc., vol. 80, art. 14, p. 14, pl. 3, fig. 7; Cushman 1946, U.S. Geol. Survey, Prof. Paper, 206, p. 27, pl. 5, fig. 11; Liszkowa 1959, Instyt. Geol., Bull., 131, Geol. Karpath., vol. 2, p. 58, pl. 3, fig. 11; Huss 1966, Polsk. Akad. Nauk, Komis. Nauk Geol., prace Geol., no. 34, p. 34 pl. 5, fig. 13—15.
Occurence: Turonian, Brazilor Creek; Lower Campanian, Feneş Creek.
Dimensions: Length 0,86 mm — 0,40 mm; breadth 0,53 mm — 0,36 mm.
Hypotypes: L.P.B. 5777—5779, 5869—5875.

Spiroplectammina semicomplanata (Carsey)
Pl. VI, figs. 19–20

Spiroplectammina semicomplanata (Carsey Frizzel[1] 1954, Univ. Texas, Bur. Econ. Geol., Rep. Invest., no. 22, p. 67, pl. 4, fig. 18; Graham and Church 1963, Stanford Univ., Public. Geol. Scienc., vol. 8, no. 1, p. 23, pl. 1, fig. 11–12.

Occurence: Campanian, Ulveş Creek; Upper Campanian, Ivanca Creek.

Dimensions: Length 0,79 mm — 0,55 mm; breadth 0,48 mm — 0,39 mm.

Hypotypes: L.P.B. 5458, 5564–5566.

Subfamily Textulariinae Ehrenberg 1838
Genus **Textularia** Defrance in de Blainville 1824
Textularia pulmmerae Lalicker
Pl. IV, figs. 17–18

Textularia plummerae Lalicker 1935, Cush. Labor. Foram. Researches, Contrib., vol. 11, no. 2, p. 50, pl. 6, fig. 10; Liszkowa 1959, Instyt. Geol. Bull., 131, Geol. Karpath., vol. 2, pl. 8, fig. 2.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian Ivăncuţa Creek.

Dimensions: Length 0,96 mm — 0,62 mm; thickness 0,26 mm — 0,16 mm.

Hypotypes: L.P.B. 5224, 5488–5493.

Subfamily Pseudobolivininae Wiesner 1931
Genus **Pseudobolivina** Wiesner 1931
Pseudobolivina variabilis (Vasicek)
Pl. V, figs. 13–16

Bigenerina variabilis Vasicek 1947, Statnino Geol. Ustav., Vestn, Praha, Roczn., vol. 22, p. 246, pl. 1, fig. 10–12.

Ours specimens are not identical with the Vasicek's species, esspecially in the last part of the test which become more irregular uniserial.

Occurence: Upper Cenomanian-Lower Turonian boundary, Cantonului Creek, Şopîrlei Creek.

Dimensions: Length 0,72 mm — 0,39 mm; breadth 0,29 mm — 0,14 mm.

Hypotypes: L.P.B. 5223, 6040–6055, 6067–6074.

Pseudobolivina parvissima Neagu n. sp.
Pl. XXIV, figs. 16–20

Test small, gracil, elongated; early stage biserial represents until 1/3 from the length of the test; later stage irregular uniserial, is formed by inflated chambers gradually increasing in size; sutures oblique and depressed; wall finelly agglutinated, smoothly finished; aperure a terminal slit.

Remarks: This species differ from *P. variabilis* (Vasicek) in having a smalest size and an uniserial later stage well developed.

Occurence: Lower Turonian, Şopîrlei Creek.

Dimensions: Length (holotype) 0,48 mm; thickness 0,12 mm; length (paratypes) 0,46 mm — — 0,26 mm; thickness 0,12 mm — 0,07 mm.

Holotype: L.P.B. 5241.

Paratypes: L.P.B. 9034.

Subfamily Plectorecurvoidinae Loeblich & Tappan 1964
Genus **Plectorecurvoides** Noth 1952
Plectorecurvoides alternans Noth
Pl. XXXIX, figs. 12–15

Plectorecurvoides alternans Noth 1952, Verh. Geol. Bundesanst., vol. 3 p. 117, text- fig. 1–2; Geroch 1959, Palaont. Z., vol. 33, no. 1–2, p. 118 pl. 12, fig. 13–14; 1960, Instyt. Geol., Bull., 153, Geol. researches Carpath., vol. 5, p. 54, pl. 7, fig. 4; 1962, Soc. Geol. Pologn., Ann., vol. 32, fasc. 2, p. 296, pl. 3, fig. 11,15; Hanzlikowa 1966, Acta Mus., Moraviae, vol. 51, p. 117, pl. 7, fig. 1–7.

Globovalvulinella grossheimi Bukalowa 1957, Akad. Nauk. SSSR, Doklady, vol. 114, no. 1, p. 185, text-fig. 1–2.

Occurence: Cenomanian, Teliu, Stînii Hill.

Dimensions: Diameter 0,48 mm — 0,26 mm.

Hypotypes: L.P.B. 9051.

Family Trochamminidae Schwager 1877
Subfamily Trochammininae Schwager 1877
Genus **Trochammina** Parker & Jones 1859
Trochammina umiatensis Tappan
Pl. V, figs. 20–21

Trochammina umiatensis Tappan 1957, U.S. Nat. Mus., Bull., 215, p. 214, pl. 67, fig. 27–29; 1962, U.S. Survey, Prof. Paper., 236–C, pt. 3, p. 156, pl. 38, fig. 5–8.

Occurence: Cenomanian, Stînii Hill, Teliu; Turonian, Hărcăoaia Hill, Gurmezea Creek, Floroaia Mică Creek, Şopîrlei Creek, Craca Mare Creek, Leacuri Creek; Lower Campanian, Rădăcinos Creek, Scrădoasa Valley.

Dimensions: Diameter 0,40 mm — 0,24 mm; thickness 0,34 mm — 0,21 mm.

Hypotypes: L.P.B. 5243, 5573–5576, 6061–6065, 6075–6079.

Trochammina bulloidiforme Grzybowski
Pl. V, fig. 17

Haplophragmium (Reussina) bulloidiforme Grzybowski 1896, Akad. Um., Krakow, Rozpr., vol. 30, p. 278, pl.8, fig. 32–33.

Trochammina bulloidiformis (Grzybowski)-Huss 1966, Polsk. Akad. Nauk, Komis. Nauk Geol, prace Geol., no. 34, p. 42, pl. 8, fig. 18–21.

Occurence: Campanian, Ivanca Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Breadth 1,15 mm — 0,67 mm; thickness 1,00 mm — 0,55 mm.

Hypotypes: L.P.B. 5261, 5634—5638.

Trochammina quadriloba (Grzybowski)

Pl. V, figs. 18–19

Haplophragmium (Reussina) quadrilobum Grzybowski 1896, Akad. Um. Krakow, Rozpr., vol. 30, p. 278, pl. 8, fig. 31.

Trochammina quadriloba (Grzybowski)-Geroch 1960, Instyt. Geol. Bull., 153, Geol. researches Carpath., vol. 5, p. 64, pl. 7, fig. 1.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Breadth 0,91 mm — 0,62 mm; thickness 0,79 mm — 0,50 mm.

Hypotypes: L.P.B. 5260, 5630—5632.

Genus **Cystammina** Neumayr 1889

Cystammina pauciloculata (Brady)

Pl. VI, figs. 20–21

Trochammina pauciloculata Brady-Brady 1884, Report Challenger, vol. 9, p. 344, pl. 41, fig. 1–2.

Cystammina pauciloculata (Brady) Geroch 1960, Instyt. Geol. Bull., 153, Geol. researches Carpath., vol. 5, p. 66, pl. 7, fig. 5.

Occurence: Cenomanian, Teliu, Cantonului Creek; Turonian, Brazilor Creek; Hărcăoaia Hill, Şopîrlei Creek, Craca Mare Creek.

Dimensions: Diameter 0,29 mm — 0,17 mm.

Hypotypes: L.P.B. 5262, 6056—6060.

Family Ataxophragmiidae Schwager 1877

Subfamily Verneuilininae Cushman 1911

Genus **Gaudryina** d'Orbigny, in de la Sagra 1839

Gaudryina subcretacea Cushman

Pl. VI, figs. 18–19

Gaudryina cretacea Cushman-Cushman 1937, Cush. Labor. Foram. Researches Spec. Publ., no. 7, p. 35, pl. 4, fig. 12; Tappan 1943, Jour. Pal., vol. 17, no. 5, p. 490, pl. 78, fig. 28–29; Frizzell 1954, Texas Univ., Bur. Econ. Geol., Rept. Invest., no. 22, p. 71, pl. 5, fig. 22; Tappan 1962, U.S. Geol. Survey, Prof. Paper 236–C, pt. 3, p. 149, pl. 3, fig. 5–6.

Occurence: Lower Aptian (Bedoulian), Carelor Creek.

Dimensions: Length 0,78 mm; thickness 0,26 mm.

Hypotype: L.P.B. 9067.

Gaudryina cretacea (Karrer)

Pl. VII, figs. 1–4

Gaudryina cretacea Karrer-Cushman 1937, Cush. Labor. Foram. Researches Spec. Publ. no. 7, p. 40, pl. 6, fig. 7–9; Hagn 1953, Palaeontographica vol. 104, pt. A, p. 14, pl. 1, fig. 15; Ebensberger 1962, idem pt. A, vol. 120, p. 18, pl. 7, fig. 12, pl. 12, fig. 6.

Occurence: Turonian, Şopîrlei Creek; Campanian, Rădăcinos Creek, Ulveş Creek, Ivanca Creek.

Dimensions: Length 0,79 mm — 0,48 mm; thickness 0,50 mm — 0,34 mm.

Hypotypes: L.P.B. 5263, 5459, 5863, 5865—5868.

Gaudryina bentonensis (Carman)

Pl. VI, figs. 24–27

Gaudryina bentonensis (Carman)-Cushman 1937, Cush. Labor. Foram. Researches, Spec. Publ. no. 7, p. 42, pl. 6, fig. 21–22; 1946, U.S. Geol. Survey, Prof. Paper 206, p. 33, pl. 7, fig. 15–16; Cushman and Renz 1946, Cush Labor. Foram. Researches, Spec. Publ. no. 18, p. 21, pl. 2, fig. 19; Graham and Church 1963, Stanford Univ., Public. Geol Scienc, vol. 8, no. 1, p. 19, pl. 1, fig. 3.

Gaudryina (Gaudryina)bentonensis (Carman)-Frizzell 1954, Texas Univ., Bur. Econ. Geol., Rept. Invest., no. 22, p. 70, pl. 5, fig. 14.

Occurence: Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,79 mm — 0,46 mm; thickness 0,19 mm — 0,14 mm.

Hypotypes: L.P.B. 5451, 5938—5939.

Gaudryina carinata Franke

Pl. VI, fig. 23

Gaudryina carinata Franke-Brotzen 1936, Sver. Geol. Unders., ser. C, 396 p. 35, pl. 1, fig. 5.

Gaudryina (Siphogaudryina) carinata (Franke)-Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public. no. 7, p. 76, pl. 11, fig. 12–14.

Occurence: Turnonian, Şopîrlei Creek, Gurmezea Creek.

Dimensions: Length 0,53 mm — 0,40 mm; breadth 0,31 mm — 0,24 mm.

Hypotypes: L.P.B. 5853—5862, 5864.

Genus **Gaudryinella** Plummer 1931

Gaudryinella pseudoserrata Cushman

Pl. VII, figs. 6–12

Gaudryinella pseudoserrata Cushman 1932, Cush. Labor. Foram. Researches vol. 8, pt. 2, p. 99, pl. 11, fig. 20–21; 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 7, p. 105, pl. 14, fig. 6–22; 1946, U.S. Geol. Survey, Prof. Paper 206, p. 36, pl. 8, fig. 15–21.

Occurence: Turonian, Craca Mare Creek, Şopîrlei Creek.

Dimensions: Length 0,84 mm — 0,46 mm; thickness 0,36 mm — 0,19 mm.
Hypotypes: L.P.B. 5456—5457, 5895—5913.

Genus **Tritaxia** Reuss 1860

Tritaxia pyramidata Reuss

Pl. VII, figs. 14—15

Tritaxia pyramidata Reuss 1862, k. Akad. Wiss. Wien, Math-naturw. Cl., Sitzber., vol. 46, 32, pl. 1, fig. 9; Berhelin 1880, Soc. Geol. France., Mem., ser. 3, vol. 1, p. 25, pl. 1, fig. 4; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 138, pl. 12, fig. 18; Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 7, p. 22, pl. 2, fig. 21—24, pl. 3, fig. 1—8; Bartenstein, Bettenstaedt, Bolli 1957, Eclogae Geol. Helvet. vol. 50, no. 1, p. 29, pl. 2, fig. 37; Neagu 1965, Micropaleontology vol. 11, no. 1, p. 5, pl. 1, fig. 9—10.

Occurence: Lower Aptian (Bedoulian), Carelor Creek.
Dimensions: Length 1,17mm; thickness 0,57 mm
Hypotype: L.P.B. 9068.

Tritaxia clavata (Cushman)

Pl. VIII, fig. 18

Clavulina clavata Cushman 1926, Am. Assoc. Petrol. Geol., Bull., vol. 10, p. 589, pl. 17, fig. 4.
Pseudoclavulina clavata (Cushman)-Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 7, p. 108, pl. 15, fig. 1—13; Frizzell 1943, Jour. Pal., vol. 17, no. 4, p. 340, pl. 55, fig. 14; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 4, p. 330, pl. 50, fig. 15—17; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 36, pl. 8, fig. 22—31, pl.9, fig. 1—2; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 125, pl. 1, fig 28.

Occurence: Campanian, Ulveș Creek; Lower Maestrichtian, Ivăncuța Creek.
Dimensions: Length 0,84 mm — 0,82 mm; thickness 0,31 mm — 0,26 mm.
Hypotypes: L.P.B. 5265, 5646.

Tritaxia amorpha (Cushman)

Pl. VII, fig. 13

Clavulina amorpha Cushman 1926, Am. Assoc. Petrol. Geol. Bull., vol. 10, p. 589, pl. 17, fig. 3; White 1928, Jour. Pal., vol. 2, no. 4, p. 315, pl. 42, fig. 12.
Pseudoclavulina amorpha (Cushman)-Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 7, p. 109, pl. 15, fig. 14—15; 1946, U.S. Geol. Survey, Prof. Paper 206, p. 37, pl. 9, fig. 3—4; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 125, pl. 1, fig. 32.
Tritaxia amorpha (Cushman)-Huss 1966, Polsk. Akad. Nauk, Komis. Nauk. Geol. prace Geol. no. 34, p. 47, pl. 7, fig. 7—13.

Occurence: Campanian, Ulveș Creek, Mădăraș Creek, Ivăncuța Creek.
Dimensions: Length 1,32 mm — 0,48 mm; thickness 0,60 mm — 0,40 mm.
Hypotypes: L.P.B. 5469, 5629, 5648—5649.

Tritaxia amorpha subparisiensis (Grzybowski)

Pl. VIII, figs. 11—17

Clavulina subparisiensis Grzybowski 1996, Akad. Um. Krakow, Rozpr., vol. 30, p. 289, pl. 9, fig. 30.
Tritaxia subparisiensis (Grzybowski)-Huss 1966, Polsk. Akad. Nauk, Komis Nauk Geol., prace Geol. no. 34, p. 49, pl. 7, fig. 20—26.

Occurence: Campanian, Mădăraș Creek.
Dimensions: Length 1,32 mm — 0,48 mm; thickness 0,40 mm — 0,58 mm.
Hypotypes: L.P.B. 5637—5645.

Genus **Uvigerinammina** Majzon 1943

Uvigerinammina jankoi Majzon

Pl. VIII, figs. 1—2

Uvigerinammina jankoi Majzon 1943, Jb. kgl Ung. Geol. Anst., Mitt., no. 1, p. 158, pl. 2, fig. 15; Geroch 1957, Soc. Geol. Polong., Ann., vol. 25, fasc., 3, p. 232, pl. 14, fig. 1—10, pl. 15, fig. 1—16; Neagu 1962, Acad. Rom., Stud. Cercet. Geol., vol. 7, no. 1, p. 65, pl. 6, fig. 87—90.

Occurence: Cenomanian, Teliu; Turonian, Leacuri Creek, Hărcăoaia Hill, Floroaia Mică Creek, Scrădoasa Valley; Lower Campanian, Feneș Creek, Rădăcinos Creek.
Dimensions: Length 0,53 mm — 0,26 mm; thickness 0,31 mm — 0,26 mm.
Hypotypes: L.P.B. 5455, 5751—5767, 5792—5796, 5850—5852, 5881—5885.

Genus **Verneuilina** d'Orbigny, in de la Sagra 1839

Verneuilina sp.

Pl. VI, fig. 22

Test triserial, pyramidal, with the sides flat or slightly concave, chambers slightly inflated increasing gradually in size, sutures distinct, wall medium-agglutinated, surface slightly roughened, aperture an arch at the inner face of final chamber.

Ours only specimen found in the Lower Aptian deposits, in a general aspect, is similar to *V. anglica* Cushman, but the differences consist in the aspect more inflated of the last-formed chambers, more robust aspect of the test and the lateral sides.

Occurence: Lower Aptian (Bedoulian) Carelor Creek.
Dimensions: Length 0,60 mm; thickness 0,48 mm.
Hypotype: L.P.B. 9069.

Subfamily GLOBOTEXTULARIINAE Cushman 1927

Genus **Arenobulimina** Cushman 1927

Arenobulimina macfadyeni Cushman

Pl. VIII, figs. 5–6

Arenobulimina macfadyeni Cushman-Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 8, p. 35, pl. 4, fig. 13–14; Neagu 1965, Micropaleontology, vol. 11, no. 1, p. 10, pl. 2, fig. 7–8.
Occurence: Albian, Buzăului Valley (Sita Buzăului).
Dimensions: Length 0,48 mm — 0,24 mm; thickness 0,24 mm — 0,17 mm.
Hypotypes: L.P.B. 9070.

Arenobulimina truncata (Reuss)

Pl. VIII, fig. 3

Bulimina truncata Reuss — Perner 1893, Kgl. Bohm. Gess., Wiss., Prag. Sitzber., p. 40; Franke 1928, Preuss. Geol. Landensanst., n. ser., vol. 111, p. 158, pl. 14, fig. 17.
Arenobulimina truncata (Reuss) Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 8, p. 40, pl. 4, fig. 15–16.
Occurence: Campanian, Ulveş Creek, Mădăraş Creek, Ivăncuţa Creek.
Dimensions: Length 0,43 mm; thickness 0,39 mm.
Hypotypes: L.P.B. 5254, 5597.

Arenobulimina preslii (Reuss)

Pl. VIII, fig. 4

Bulimina preslii Reuss-Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser. vol. 111, p. 156, pl. 14, fig. 15.
Arenobulimina preslii (Reuss)-Cushman 1937, Cush. Labor. Foram. Researches, Spec. Public., no. 8, p. 39, pl. 4, fig. 5–8; Brotzen 1936, Sver. Geol. Under. Ser. C, 396, p. 41, pl. 2, fig. 4,
Occurence: Campanian, Ulveş Creek, Ivanca Creek, Feneş Creek.
Dimensions: Length 0,58 mm — 0,36 mm; thickness 0,43 mm — 0,29 mm.
Hypotypes: L.P.B., 5256, 5598–5600, 5892–5894.

Genus **Dorothia** Plummer 1931

Dorothia oxycona (Reuss)

Pl. VIII, fig. 7

Gaudryina oxycona Reuss 1860, k. Akad. Wiss. Wien, Math-naturw. Cl., Sitzber., vol. 40, p. 229, pl. 12, fig. 3; Egger 1899, k. Bayer. Akad. Wiss., München, Math-Physick. Cl. Abh., vol. 21, p. 38, pl. 4, fig. 1–3; Franke 1928, Pressuss Geol. Landesanst., Abh., ser., vol. 111, p. 143, pl. 13, fig. 8; Cushman and Jarvis 1932, U. S. Nat. Mus., Proc., vol. 80, art. 14, p. 18, pl. 5, fig. 1–2.
Marsonella oxycona (Reuss)-Cushman 1937, Cush. Labor. Foram. Researches Spec. Public., no. 8, p. 56, pl. 5, fig. 27–29, pl. 6, fig. 1–17; Loetterle 1937, Nebraska Geol. Survey, Bull., ser. 2, vol. 12, p. 59, pl. 10, fig. 7; Frizzell 1943, Jour. Pal., vol. 17, no. 3, p. 340, pl. 55, fig. 15; Cushman 1946, U. S. Geol. Survey Prof. Paper, 206, p. 44, pl. 12, fig. 3–5; Hagn 1953, Paläontographica vol. 104, pt. A, p. 23, pl. 1, fig. 28; Hofker 1957, Beih. Geol. Jb., vol. 27, p. 85, text-fig. 86–90; Belford 1960, Bur. Min. research, Geol. and Geophys., Bull., no. 57, p. 16, pl. 4, fig. 1–3; Ebensberger 1962, Paläontographica, vol. 120 A, no. 1–3, p. 22, pl. 1, fig. 1, pl. 12, fig. 10.
Occurence: Turonian, Craca Mare Creek, Gurmezea Creek; Campanian, Ulveş Creek, Ivanca Creek.
Dimensions: Length 1,80 mm — 0,34 mm; thickness 1,32 mm — 0,26 mm.
Hypotypes: L.P.B. 6080–6085.

Dorothia crassa (Marsson)

Pl. VII, figs. 22–24

Gaudryina crassa Marsson 1878, Mitt. Nat. Neuvorpom. v. Rügen, vol. 10, p. 158, pl. 3, fig. 27; Egger 1899, k. Bayer, Akad. Wiss., München, Math-Physyc. Cl., Abh, vol. 21, no. 1, p. 36, pl. 4, fig. 25–26; Franke 1928, Preuss. Geol. Landesanst., Abh., n.ser., vol. 111, p. 144, pl. 13, fig. 9.
Gaudryina crassa var. *trochoidea* Marsson 1878, Mittt. Nat. Neuvorpom. v. Rugen, vol. 10, p. 159, pl. 3, fig. 27; Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 144.
Gaudryina trochoidea Marsson-White 1928, Jour. Pal., vol. 2, no. 3, p. 314, pl. 42, fig. 11.
Dorothia trochoides (Marsson) Cushman 1937, Cush. Labor. Foram. Researches Spec. Public., no. 7, p. 79, pl. 8, fig. 25–27.
Marssonella crassa (Marsson)-Geroch 1957, Soc. Geol. Pologn., Ann., vol. 26, fasc. 4, p. 325, pl. 30, fig. 1–4.
Dorothia crassa (Marsson)-Huss 1966, Polsk. Akad. Nauk, Komis. Nauk, Geol. prace Geol. no. 34, p. 45, pl. 8, fig. 6–9.
Occurence: Turonian, Brazilor Creek, Floroaia Mică Creek; Campanian, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Length 0,96 mm — 0,29 mm; thickness 0,72 mm — 0,12 mm.
Hypotypes: L.P.B. 5258, 5601–5607.

Dorothia trochus (d'Orbigny)

Pl. VIII, figs. 8–9

Textularia trochus d'Orbigny 1840, Soc. Geol. France, Mem., vol. 4, pt. 1, p, 45, pl. 4, fig. 25–26; Egger

1899, k. Bayer. Akad. Wiss., München, Mat. Math-Physic. Cl., Abh., vol. 21, no. 1, p. 28, pl. 14, fig. 27–28; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser. vol. 111, p. 138, pl. 12, fig. 2.

Marsonella trochus (d'Orbigny)-Bartenstein, Bettenstaedt and Bolli 1957, Ecl. Geol. Helv., vol. 50, no. 1, p. 20, pl. 3, fig. 44–45; Neagu 1965, Micropaleontology, vol. 11, no. 1, p. 8, pl. 1, fig. 14–16.

Occurence: Albian — Sita Buzăului (Buzăului Valley).

Dimensions: Length 0,46 mm; breadth 0,50 mm.

Hypotype: L.P.B. 9071.

Subfamily VALVULININAE Berthelin 1880

Genus **Goesella** Cushman 1933

Goesella carpathica Liszkowa

Pl. VII, figs. 25–30

Goesella carpathica Liszkowa 1959, Instyt. Geol., Bull., 131, Geol. Carpath., vol. 2, p. 60, pl. 3, fig. 9 a–f; Huss 1966, Polsk. Akad. Nauk, Komis Nauk Geol., prace Geol. no. 34, p. 51, pl. 8, fig. 10–17.

Occurence: Campanian, Ulveş Creek, Rădăcinos Creek, Mădăraş Creek.

Dimensions: Length 1,12 mm — 0,72 mm; thickness 0,62 mm — 0,48 mm.

Hypotypes: L.P.B. 5259, 5608–5623.

Genus **Plectina** Marsson 1878

Plectina sp. cf. *P. taylleuri* (Tappan)

Pl. VII, figs. 16–21

Test small, to medium sized, elongate, sides nearly parallel, chambers numerous, low, early portion with more than 3 chambers on the whorl, with a bulbous aspect forming 1/6 to 1/4 from the test; later portion well developed become biserial with 5 to 10 pairs of nearly equal and low sized chambers; sutures may be somewhat obscure in the early portion, leter ones horizontal, distinct and stright depressed; wall finelly agglutinated roughly finished with a bigg quantity of siliceous ciment; aperture has a textularoid aspect but the lateral lobes unite by ciment becoming more and less circulare.

Remarks: Our material differ from *Gaudryina taylleuri* Tappan in having a clear multiserial early portion with a bulbous aspect a higher number of biserial chambers, and the aperture is not typical textularoid; from *Plectina lens* (Grzybowski) differ in having a more elongate test with the early portion no more than 1/4 from the total length of the test; from *Guadryina oblonga* Zaspelowa differs in having an early multiserial portion, the nearly equal and lowe sized chambers of the last portion and the aperture.

Occurence: Turonian, Şopîrlei Creek, Cantonului Creek, Hărcăoaia Hill, Brădet village, Floroaia Mică Creek.

Dimensions: Length 0,62 mm — 0,29 mm; thickness 0,14 mm — 0,12 mm.

Hypotypes: L.P.B. 6107–6137.

Subfamily ATAXOPHRAGMIINAE Schwager 1877

Genus **Matanzia** Palmer 1936

Matanzia varians (Glaessner)

Pl. VIII, fig. 10

Textulariella? varians Glaessner 1937, Moskow Univ., Pal. Labor., Probl., vol. 2–3, p. 366, pl. 2, fig. 15 a–c.

Occurence: Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Length 1,32 mm — 0,48 mm; thickness 0,48 mm — 0,40 mm.

Hypotypes: L.P.B. 5264, 5624–5628, 6091–6103.

Suborder **ROTALIINA** Delage & Hérouard 1896

Superfamily NODOSARIACEA Ehrenberg 1838

Family NODOSARIIDAE Ehrenberg 1838

Subfamily NODOSARIINAE Ehrenberg 1838

Genus **Nodosaria** Lamarck 1812

Nodosaria filiformis Reuss

Pl. IX, fig. 1

Dentalina filiformis (Reuss)-Reuss 1860, k. Akad. Wiss., Wien, Math.-naturw. Cl., Sitzber., vol. 40, p. 188, pl. 3, fig. 8; Franke 1928, Preuss-Geol. Landesanst. Abh., n. ser., vol. 111, p. 29, pl. 2, fig. 19.

Nodosaria filiformis Reuss-Egger 1899, k. Bayer. Akad. Wiss., München, Math.-Physick., Cl., Abh, vol. 21, no. 1, p. 67, pl. 6, fig. 28–30; Hofker 1957, Beih Geol. Jb., vol. 27, p. 139, text — fig. 161 b; Graham and Church 1963, Stanford Univ., Public. Geol. Science, vol. 8, no. 1, p. 42, pl. 4, fig 21.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek, Ivăncuţa Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 1,60 mm — 0,72 mm; thickness 0,17 mm.

Hypotypes: L.P.B. 5283, 6214–6216, 6255–6262.

Nodosaria limbata d'Orbigny
Pl. VIII, figs. 28–29

Nodosaria limbata d'Orbigny 1840, Soc. Geol. France. Mem. ser. 1, vol. 4, p. 12, pl. 1, fig. 1; Cushman 1926, Am. Assoc. Petrol. Geol., Bull., vol. 10, p. 595, pl. 18, fig. 14; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 42, pl. 3, fig. 27-28; Cushman and Jarvis 1932, U.S. Nat. Mus., Proc., vol. 80, art. 14, p. 32, pl. 10, fig. 5; Cushman 1946, U. S. Geol. Survey Prof. Paper, 206, p. 74, pl. 27, fig. 1–2.

Occurence: Campanian, Mădăraș Creek, Ivanca Creek.

Dimensions: Length 0,79 mm — 0,67 mm; thickness 0,36 mm — 0,29 mm.

Hypotypes: L.P.B. 6459, 6465–6466.

Nodosaria prismatica Reuss
Pl. IX, fig. 2

Nodosaria prismatica Reuss 1860, k. Akad. Wiss. Wien, Math-naturw. Cl., Sitzber., vol. 40, p. 180, pl. 2, fig. 2; 1862 idem, vol. 46, p. 36, pl. 2, fig. 7; Egger 1899, k. Bayer. Akad. Wiss., München, Math. Physick. Cl., Abh., vol. 21, no. 2, p. 77, pl. 8, fig. 8 (non fig. 5); Franke 1928, Preuss. Geol. Landensanst., Abh.n. ser. vol. 111, p. 48, pl. 4, fig. 11; Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 88, pl. 5, fig. 17–18; Pozaryska 1957, Paleont. Polon., no. 8, p. 70, pl. 11, fig. 2.

Occurence: Lower Maestrichtian, Ivăncuța Creek.

Dimensions: Length 2,57 mm; thickness 0,26 mm.

Hypotype: L.P.B. 5281.

Nodosaria aspera Reuss
Pl. IX, fig. 3

Nodosaria aspera Reuss, Cushman and Jarvis, 1932, U.S. Nat. Mus., Proc., vol. 80, art. 14, p. 35, pl. 11, fig. 5; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 72, pl. 26, fig. 6; Hagn 1953, Palaeontographica, vol. 104, A, p. 49, pl. 4, fig. 28; Frizzell 1954, Texas Univ., Bur., Econ. Geol. Rept. Invest. no. 22, p. 90, pl. 10, fig. 9; Pozaryska 1957, Paleont. Polon., no. 8, p. 65, pl. 7, fig. 3; Graham and Church 1963, Stanford Univ., Public. Geol. Scienc., vol. 8, no. 1, p. 41, pl. 4, fig. 17–18.

Stilostomella aspera (Reuss) Bellford 1960, Bur. Min. Ress. Geol. Geophys Bull., no. 17, p. 69, pl. 19, fig. 1–2.

Occurence: Campanian, Ulveș Creek, Ivăncuța Creek.

Dimensions: Length 1,50 mm — 1,00 mm; thickness 0,40 mm — 0,36 mm.

Hypotypes: L.P.B. 5282, 6217, 6244, 6245.

Nodosaria latejugata Gümbel
Pl. IX, fig. 4

Nodosaria latejugata Gümbel- Pozaryska 1957, Paleont. Polon., no. 8, p. 67, pl. 9, fig. 11–12, text-fig. 11.

N. latejugata difeer from *N. affinis* Reuss in having the sutures more depressed and the chambers more globulous.

Occurence: Lower Maestrichtian, Ivăncuța Creek.

Dimensions: Length 1,39 mm; thickness 0,50 mm.

Hypotype: L.P.B. 6273.

Nodosaria cylindrica (Alth)
Pl. X, figs. 3–5

Glandulina cylindrica Alth 1850, Haindinger's Naturw. Abh., vol. 3, no. 2, p. 271, pl. 13, fig. 30.

Glandulina paralella f. *cylindrica* (Alth)-Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 51, pl. 4, fig. 17.

Pseudoglandulina paralella (Marsson)-Cushman and Jarvis 1932, U.S. Nat. Mus., Proc., vol. 80, art. 14, p. 36, pl. 11, fig. 9; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, pl. 27, fig. 35.

Pseudoglandulina cylindrica (Alth)-Pozaryska 1957, Paleont, Polon., no. 8, p. 92, pl. 9, fig. 6.

Occurence: Campanian, Ulveș Creek, Ulveș Hill, Ivanca Creek, Mădăraș Creek.

Dimensions: Length 1,27 mm — 0,82 mm; thickness 0,48 mm — 0,29 mm.

Hypotypes: L.P.B. 5303, 6172–6175, 6470.

Genus **Astacolus** de Montfort 1808
Astacolus cretaceus (Cushman)
Pl. XI, fig. 11

Marginulina cretacea Cushman 1937, Cush. Labor. Foram. Researches, Contrib., vol. 13, pt. 2, p. 94, pl. 13, fig. 12–15; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 4, p. 332, pl. 51, fig. 5; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 61, pl. 21, fig. 16–20, 39; Frizzell 1954, Texas Univ., Bur. Econ. Geol., Rept. Invest, no. 22, p. 84, pl. 8, fig. 37–39.

Astacolus cretaceus (Cushman)-Pozaryska 1957, Paleont. Polon., no. 8, pl. 98, pl. 11, fig. 11–12, pl. 13, fig. 13, text-fig. 21–22.

Occurence: Campanian, Mădăraș Creek.

Dimensions: Lenght 0,89 mm; breadth 0,36 mm.

Hypotype: L.P.B. 6572.

Genus **Citharina** d'Orbigny in de la Sagra 1839
Citharina reticulata (Cornuel)
Pl. XI, fig. 6

Planularia reticulata Cornuel 1848, Soc. Geol. France, ser. 2, vol. 3, pt. 1, p. 253, pl. 2, fig. 1–4.

The specimens from the Aptian of Valea Carelor Creek (Întorsura Buzăului) are a little

different from Cornuel's species in having a small periferal keel on the external side.
Occurence: Lower Aptian (Bedoulian) Valea Carelor Creek.
Dimensions: Length 1,09; breadth 0,17 mm; thickness 0,07 mm.
Hypotypes: L.P.B. 9071.

Genus **Dentalina** Risso 1826

Dentalina pseudochrysalis Reuss
Pl. IX, figs. 5–6

Dentalina pseudochrysalis Reuss 1862, k. Akad. Wiss. Wien, Math.-naturw. Cl., Sitzber., vol. 46, p. 40, pl. 2, fig. 12; Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 34, pl. 3, fig. 8; Ebensberger 1962, Paläontographica vol. 120, A, p. 49, pl. 3, fig. 17.
Occurence: Campanian, Ivanca Creek, Ulveş Creek.
Dimensions: Length 2,04 mm — 0,96 mm; thickness 0,55 mm — 0,31 mm.
Hypotypes: L.P.B. 6223–6226, 6244.

Dentalina constricta (Franke)
Pl. IX, fig. 10

Glandulina cylindracea f. *constricta* Franke 1928, Preuss. Geol. Landensanst., Abh., n. ser., vol. 111, p. 52, pl. 4, fig. 22.
Dentalina constricta (Franke)-Ebensberger 1962, Paläontographica, vol. 120 A, p. 46, pl. 8, fig. 17.
Occurence: Campanian, Ivanca Creek, Ulveş Hill.
Dimensions: Length 1,34 mm — 0,94 mm; thickness 0,50 mm — 0,34 mm.
Hypotypes: L.P.B. 6461–6464.

Dentalina cylindroides Reuss
Pl. IX, figs. 7–9

Dentalina cylindroides Reuss 1860, k. Akad. Wiss. Wien, Math. naturw., Cl., Sitzber., vol. 40, p. 185, pl. 1, fig. 8; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 28, pl. 2, fig. 14; Brotzen 1936, Sver. Geol. Unders., ser. C, 396, p. 73, pl. 5, fig. 1; Marie 1941, Mus. Hist. Nat., Mem., n. ser., vol. 12, fasc. 1, p. 90, pl. 12, fig. 136; Hagn 1953, Paläontographica vol. 104 A, p. 44, pl. 4, fig. 9; Belford 1960, Bur. Min. Res. Geol. Geophys., Bull., no. 57, p. 26, pl. 7, fig. 8–12; Graham and Church 1963, Stanford Univ., Public. Geol. Sciences, vol. 8, no. 1, p. 28, pl. 2, fig. 13.
Occurence: Campanian, Ulveş Creek, Ulveş Hill, Ivanca Creek.
Dimensions: Length 2,04 mm — 1,62 mm; thickness 0,48 mm — 0,36 mm.
Hypotypes: L.P.B. 5288, 6229–6231.

Dentalina catenula Reuss
Pl. IX, figs. 12–15

Dentalina catenula Reuss 1860, k. Akad. Wiss. Wien, Math.-naturw. Cl., Sitzber., vol. 40, p. 185, pl. 3, fig. 6; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 67, pl. 23, fig. 27–32.
Occurence: Turonian, Cîrlanului Creek, Campanian, Ivăncuţa Creek.
Dimensions: Length 1,26 mm — 0,96 mm; thickness 0,65 mm — 0,34 mm.
Hypotypes: L.P.B. 5297, 6264–6268.

Dentalina concinna (Reuss)
Pl. IX, fig. 16

Nodosaria concina Reuss 1860, k. Akad. Wiss., Mat.-naturw. Cl., Sitzber. vol. 40, p. 178, pl. 1, fig. 3; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 25, pl. 2, fig. 12; Ebensberger 1962, Paläontographica vol. 120 A, p. 46, pl. 3, fig. 10.
Occurence: Campanian, Ulveş Creek.
Dimensions: Length 0,48 mm; thickness 0,29 mm.
Hypotype: L.P.B. 6227.

Dentalina commutata Reuss
Pl. IX, fig. 22

Dentalina commutata Reuss 1860, k. Akad. Wiss. Wien, Math.-naturw. Cl. Sitzber. vol. 40, p. 183, pl. 2, fig. 4.
Occurence: Campanian, Ulveş Creek.
Dimensions: Length 2,16 mm; thickness 0,60 mm.
Hypotype: L.P.B. 5289.

Dentalina peracuta (Reuss)
Pl. IX, fig. 17

Nodosaria peracuta Reuss 1874, Palaeontographica, vol. 20, no. 2, p. 86, pl. 20, fig. 21.
Occurence: Turonian, Gurmezea Creek.
Dimensions: Length 1,27 mm — 0,24 mm.
Hypotype: L.P.B. 5290.

Dentalina acuminata Reuss
Pl. IX, fig. 18

Dentalina acuminata Reuss 1860, k. Akad. Wiss. Wien, Math.-naturw. Cl., Sitzber., vol. 40, p. 181, pl. 1, fig. 7.
Occurence: Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Length 1,53 mm; thickness 0,34 mm.
Hypotype: L.P.B. 5296.

Dentalina gracilis d'Orbigny
Pl. IX, fig. 29

Dentalina gracilis d'Orbigny 1840, Soc. Geol. France., Mem., ser. 1, vol. 4, p. 14, pl. 1, fig. 5; Franke 1928,

Preuss. Geol. Landesanst., Abh., n. ser. vol. 111, p. 29, pl. 2, fig. 22; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 65, pl. 23, fig. 3–6.

Occurence: Lower Maestrichtian, Ulveş Creek.
Dimensions: Length 1,02 mm; thickness 0,14 mm.
Hypotype: L.P.B. 5285.

Dentalina guttifera d'Orbigny

Dentalina guttifera d'Orbigny 1846, Foram. fossil, bas. Wien., p. 49, pl. 2. fig. 1–12; Pozaryska 1957, Paleont. Polon., no. 8, p. 80, pl. 7, fig. 4.

Occurence: Campanian, Ulveş Hill.
Dimensions: Length 1,00–0,72 mm; thickness 0,29 mm.
Hypotypes: L.P.B. 6228, 6234.

Dentalina monile (Hagenow)

Pl. IX, fig. 27

Dentalina monile (Reuss)-Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser, vol. 111, p. 31, pl. 2, fig. 27; Ebensberger 1962, Paläontographica vol. 120 A, p. 48. pl. 3, fig. 11–14.

Nodosaria monile Hagenow-Cushman and Jarvis 1932, U.S. Nat. Mus., Proc. vol. 80, art. 14, p. 33, pl. 10, fig. 9; Cushman 1946, U.S. Geol. Survey Prof. Paper, 206, p. 75, pl. 27, fig. 9; Hofker 1957, Beih. Geol. Jb., vol. 27, p. 140, text-fig. 157, 161 a.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.
Dimensions: Length 2,01 mm — 0,89 mm; thickness 0,48 mm — 0,34 mm.
Hypotypes: L.P.B. 5284, 6219–6221, 6263.

Dentalina megalopolitana Reuss

Pl. IX, fig. 24

Dentalina megalopolitana Reuss 1855, Deutsch. Geol. Gesel., Zeitschr., vol. 7, p. 257, pl. 8, gih. 10; Cushman and Jarvis 1932, U.S. Nat. Mus. Poroc., vol. 80, art. 14, 29, pl. 9. fig. 5; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 4, p. 332, pl. 51, fig. 8; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 67, pl. 23, fig. 24–26; Pozaryska 1957, Paleont. Polon., no. 8, p. 84, pl. 7, fig. 12–13, text-fig. 17; Belford 1960, Bur. Min. Resch., Geol. Geophys., Bull. no. 57, p. 26, pl. 7, fig. 6–7; Ebensberger 1962, Paläontographica vol. 120 A, p. 48, pl. 3, fig. 22.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek, Ivăncuţa Creek.
Dimensions: Length 1,92 mm — 1,18 mm; thickness 0,43 mm — 0,26 mm.
Hypotypes: L.P.B. 5292, 6236–6238, 6270.

Dentalina basiplanata Cushman

Pl. IX, figs. 25–26

Dentalina basiplanata Cushman-Cushman and Deaderick 1944, Jour. Pal. vol. 18, no. 4, p. 333, pl. 51, fig. 17–18; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 68, pl. 24, fig. 1–6; Frizzell 1954, Texas Univ., Bur. Econ. Geol., Rept. Investig., no. 22, p. 86, pl. 9, fig, 32–33; Said and Kenawy 1956, Micropaleontology vol. 2, no. 2, p. 132, pl. 2, fig. 29; Pozaryska 1957, Paleont. Polon., no 8, p. 75, pl. 7, fig. 6; Belford 1960, Bur. Min. Research. Geol. Geophys. Bull., no. 57, p. 25, pl. 7, fig. 1–5; Tappan 1962, U.S. Geol. Survey Prof. Paper 236 C, pt. 3, p. 174, pl. 45, fig. 17.

Dentalina annulata Cushman (not Reuss) 1931, Tennesse Div, Geol., Bull. no. 41, p. 28, pl. 3, fig. 3.

Occurence: Campanian, Ulveş Creek, Ivanca Creek, Mădăraş Creek, Ivăncuţa Creek.
Dimensions: Length 1,87 mm — 1,08 mm; thickness 0,39 mm — 0,19 mm.
Hypotypes: L.P.B. 5286, 6181, 6190–6195, 6197–6198, 6235, 6272.

Dentalina tenuicollis Reuss

Pl. IX, fig. 34

Dentalina tenuicollis Reuss 1855, Deutsch. Geol. Gesel., Zeitschr., vol. 7, p. 267, pl. 8, fig. 11; Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 34, pl. 3, fig. 6.

Occurence: Campanian, Ulveş Creek, Ulveş Hill, Mădăraş Creek.
Dimensions: Length 1,21 mm — 0,67 mm; thickness 0,24 mm — 0,19 mm.
Hypotypes: L.P.B. 5298, 6185–6189, 6233.

Dentalina lilli Reuss

Pl. IX, fig. 23

Dentalina lilli Reuss 1851, Haidinger's Naturw. vol. 4, no. 1, p. 25, pl. 1, fig. 11; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 32, pl. 2. fig. 30.

Nodosaria lilli (Reuss)-Egger 1899, k. Bayer. Akad. Wiss., München, Math. Physick. Cl., Abh, vol. 21, no. 1, p. 57, pl. 7, fig. 4, pl. 24, fig. 18.

Occurence: Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Length 1,82 ; thickness 0,55 mm.
Hypotypes: L.P.B. 5291, 6271.

Dentalina marcki Reuss

Pl. IX, fig. 32

Dentalina marcki Reuss 1860, k. Akad. Wiss. Wien, Math.-naturw.; Cl., Sitzber., vol. 40, p. 188, pl. 2, fig. 7; Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 37, pl. 3, fig. 16–17; Brotzen 1936, Sver. Geol. Unders., ser. C. 396, p. 80, pl. 5, fig. 27; Pozaryska 1957, Paleont. Polon. no. 8, p. 83, pl. 8, fig. 2.

Nodosaria marcki (Reuss)-Egger 1899, k. Bayer. Akard. Wiss., München, Math.-Physick. Cl., vol. 21, no. 1, p. 71, pl. 25, fig. 32.

Occurence: Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Length 2,16 mm; thickness 0,48 mm.
Hypotype: L.P.B. 5294.

Dentalina steenstrupi Reuss
Pl. XII, fig. 35

Dentalina steenstrupi Reuss 1855, Deutsch. Geol. Gesel. Zeitschr., vol. 7, p. 268, pl. 8, fig. 14; Egger 1899 k. Bayer. Akad. Wiss., München, Math.-Physik. Cl. vol. 21, no. 1, p. 70, pl. 7, fig. 27; Franke 1928, Preuss. Geol. Landesants., Abh., n. ser., vol. 111, p. 38, pl. 3, fig. 15; Brotzen 1936, Sver. Geol. Unders., ser. C. 396, p. 80, pl. 5, fig. 26; Pozaryska 1957, Paleont. Polon., no. 8, p. 79, pl. 8, fig. 9.

Occurence: Campanian, Ulveş Creek.
Dimensions: Length 2,90 mm; thickness 0,29 mm.
Hypotype: L.P.B. 6274.

Dentalina raristriata Chapman
Pl. IX, fig. 31

Dentalina raristriata Chapman-Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol 111, p. 37, pl. 3, fig. 22; Marie 1941, Mus. Nat. Hist. Natur., Mem., n. ser., vol. 12, fasc. 1, p. 93, pl. 12, fig. 150; Pozaryska 1957, Paleont. Polon. no. 8, p. 87, pl. 7, fig.7–8.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek; Lower Maestrichtian Ivăncuţa Creek.
Dimensions: Length 1,70 mm — 1,29 mm; thickness 0,36 mm — 0,29 mm.
Hypotypes: L.P.B. 5293, 6176, 6182–6184, 6239–6242.

Dentalina velascoensis (Cushman)
Pl. IX, fig. 35

Nodosaria fontannesi Berthelin var. *velascoensis* Cushman 1926, Am. Assoc. Petrol. Geol., Bull., vol. 10, p. 504, pl. 18, fig. 12.

Nodosaria velascoensis (Cushman)-Cushman and Jarvis 1932, U. S. Nat. Mus. Proc., vol. 80, art. 14, p. 35, pl. 11, fig. 1–4; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 73, pl. 26, fig. 27–30.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek.
Dimensions: Length 1,36 mm — 1,20 mm; thickness 0,36 mm — 0,26 mm.
Hypotype: L.P.B. 6177–6180.

Genus **Kyphopyxa** Cushman 1929

Kyphopyxa jarvisi (Cushman)
Pl. XII, fig. 4

Flabellina interpuncta Cushman and Jarvis (non Marck) 1932, U. S. Nat. Mus., Proc., vol. 80, art. 14, p. 38, pl. 12, fig. 1.

Palmula jarvisi (Cushman) 1946, U. S. Geol. Survey, Prof. Paper, 206, p. 85 pl. 31, fig 18–20; Vinogradov 1960, Acad. Rom., Stud. Cercet. Geol., vol. 5, no. 2, pl. 1, fig. 5.

Neoflabellina jarvisi (Cushman) Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 135, pl. 2, fig. 42.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek, Ivăncuţa Creek.
Dimensions: Length 1,99 mm — 0,96 mm; breadth 0,84 mm — 0,39 mm.
Hypotypes: L.P.B. 5300, 6152–6169.

Genus **Lagena** Walker & Jacob in Kanmacher 1798

Lagena globosa (Montagu)
Pl. VIII, figs. 19–20

Lagena globosa Walker-Reuss 1862, k. Akad. Wiss., Wien, Math.-naturw.-Cl. Sitzber., vol. 46, p. 318, pl. 1, fig. 1–3; Egger 1899, k. Bayer. Akad., Wiss., München, Math.-Physick. Cl. Abh., vol. 21. no. 1, p. 102, pl. 5, fig. 3; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 85, pl. 7, fig. 30; Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 109 pl. 7, fig. 3.

Lagena globosa ovalis Reuss-Pozaryska 1957, Paleont. Polon., no. 8, p. 43, pl. 4, fig. 6–7.

Occurence: Turonian Gurmezea Creek; Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Length 0,67 mm — 0,40 mm; diameter 0,65 mm — 0,29 mm.
Hypotypes: L.P.B. 5311–5312, 6200–6206, 6213, 6475–6479.

Lagena vulgaris Williamson
Pl. VIII, fig. 23

Lagena vulgaris Williamson-Reuss 1862, k. Akad. Wiss., Wien, Math.-Naturv. Cl., Sitzber., vol. 46, p. 321, pl. 1, fig. 15, pl. 2, fig. 16–17; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 85, pl. 7, fig. 31; Cushman 1931, Jour. Pal., vol. 5, no. 4, p. 308, pl. 35, fig. 11; 1946, U. S. Geol. Survey, Prof. Paper 206, p. 95, pl. 40, fig. 3; Pozaryska 1957, Paleont. Polon., no. 8, p. 58, pl. 5, fig. 1.

Occurence: Campanian, Ivanca Creek.
Dimensions: Length 0,43 mm; diameter 0,34 mm.
Hypotype: L.P.B. 6207.

Lagena emaciata Reuss
Pl. VIII, figs. 21–22

Lagena emaciata Reuss 1858, Deutsch. Geol. Gesel., Zeitschr., vol. 11, p. 433; 1862 k. Akad. Wiss., Wien, Math-Naturw. Cl., Sitzber., vol. 46, p. 319, pl. 1, fig. 9.

Occurence: Campanian, Ivanca Creek.
Dimensions: Length 0,79 mm — 0,50 mm; thickness 0,36 mm — 0,31 mm.
Hypotypes: L.P.B. 6472–6474.

Lagena apiculata Reuss
Pl. VIII, figs. 24–25

Oolina apiculata Reuss 1851, Haindinger's Naturw., vol. 4, no. 1, p. 22, pl. 1, fig. 1.
Lagena apiculata (Reuss)-Reuss 1862, k. Akad. Wiss., Wien, Math.-Naturw., Cl., Sitzber., vol. 46, p. 318, pl. 1, fig. 4–8, 10–11; Franke 1928, Preuss. Geol, Landesanst. Abh., n. ser., vol. 111, p. 86, pl. 7, fig. 34; Cushman 1946, U. S. Geol. Survey, Prof. Paper, 206, p. 94, pl. 39, fig. 23; Hagn 1953, Paläontographica vol. 104, A, p. 67, pl. 24, fig. 2; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 136, pl. 3, fig. 8; Pozaryska 1957, Palcont. Polon., no. 8, p. 40, pl. 3, fig. 9; Ebensberger 1962, Paleontographica vol. 120 A, p. 57, pl. 10, fig. 13.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Length 0,53 mm — 0,34 mm; thickness 0,34 mm — 0,21 mm.
Hypotypes: L.P.B. 5310, 6211, 6480–6481.

Lagena semilineata Wright
Pl. VIII, fig. 26

Lagena semilineata Wright-Cushman 1946, U. S. Geol. Survey, Prof. Paper, 206, p. 95, pl. 39, fig. 25; Pozaryska 1957, Paleont. Polon., no. 8, p. 51, pl. 1, fig. 5.

Occurence: Campanian, Ulveş Creek.
Dimensions: Length 0,24 mm; diameter 0,17mm.
Hypotypes: L.P.B. 5309.

Genus **Lenticulina** Lamarck 1804
Lenticulina acuta (Reuss)
Pl. XI, figs. 16–17

Cristellaria acuta Reuss 1860, k. Akad. Wiss. Wien, Math.-Naturw., Cl., Sitzber., vol. 40, p. 69, pl. 10, fig. 3.
Cristellaria gibba f. *acuta* (Reuss) — Franke 1928, Preuss. Geol. Landesanst Abh., n. ser., vol. 111, p. 106, pl. 10, fig. 12.
Cristellaria (Planularia) acuta (Reuss)-Gandolfi 1942, Riv. Ital. Paleont. vol. 48, Mem. 4, p. 58.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek.
Dimensions: Length (diameter), 1,44 mm — 1,08 mm; breadth 1,00 mm — 0,79 mm; thickness 0,58 mm — 0,53 mm.
Hypotypes: L.P.B. 5275, 6682–6685.

Lenticulina velascoensis White
Pl. XI, fig. 20

Lenticulina velascoensis White 1928, Jour. Pal. vol. 2, no. 2, p. 199, pl. 28, fig. 8; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 57, pl. 19, fig. 8; Liszkowa 1959, Instyt. Geol., Bull, 131, Geol. Carpath, vol. 2, p. 62, pl. 4, fig. 4.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek, Ulveş Hill.
Dimensions: Diameter 0,84 mm — 0,40 mm; thickness 0,36 mm — 0,17 mm.
Hypotypes: L.P.B. 5270, 6139–6151.

Lenticulina ovalis (Reuss)
Pl. X, figs. 19–20

Cristellaria ovalis Reuss 1874, Paläontographica vol. 20, no. 2, p. 103, pl. 22, fig. 6–11; Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser. vol. 111, p. 107, pl. 10, fig. 1.
Lenticulina ovalis (Reuss)-Marie 1941, Mus. Hist. Nat., Mem., n. ser., vol. 12, fasc. 1, p. 99, pl. 9, fig. 103; Hagn 1953, Paläontographica vol. 104 A, p. 36, pl. 3, fig. 6; Stanchewa 1959, Akad. Sci. Bulg. Instit. Geol., ser. Paleont., vol. 1, p. 141, pl. 4, fig. 4; Tollmann 1960, Jb. Geol. B. A., vol. 103, p. 5, pl. 11, fig. 7; Graham and Church 1963, Stanford Univ., Public. Geol. Sci., vol. 8, no. 1, p. 35, pl. 3, fig. 12.

Occurence: Campanian, Ulveş Creek, Ulveş Hill, Ivanca Creek.
Dimensions: Diameter 0,84 mm — 0,72 mm; breadth 0,60 mm — 0,46 mm.
Hypotypes: L.P.B. 5271, 6671–6672.

Lenticulina comptoni (Sowerby)
Pl. XI, figs. 18–19

Cristellaria rotulata d'Orbigny 1840, Soc. Geol. France, Mem., vol. 4, no. 1, p. 26, pl. 2, fig. 17–18; Alth 1850, Haidinger's Naturw. vol. 3, p. 267; Reuss 1860, k. Akad. Wiss., Wien., Math.-Naturw. Cl., Sitzber. vol. 40, p. 213; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser. vol. 111, p. 108, pl. 10, fig. 2; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 56, pl. 19, fig. 1–7.
Lenticulina comptoni (Sowerby)-Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p, 48, pl. 2, fig. 5; Pozaryska 1957, Paleont. Polon., no. 8, p. 121, pl. 17, fig. 5, text-fig. 27; Hofker 1957, Geol. Jb., Beih., vol. 27, p. 114, text-fig. 117–118.

Occurence: Campanian, Ulveş Creek, Ulveş Hill.
Dimensions: Diameter 0,84 mm — 0,72 mm.
Hypotypes: L.P.B. 5272, 6689–6680.

Lenticulina macrodisca (Reuss)

Pl.XI, figs. 4–5

Cristellaria macrodisca Reuss 1862, k. Akad. Wiss., Wien, Math.-naturw., Cl., Sitzber., vol. 46, p. 78, pl. 9, fig. 5; Egger 1899, k. Bayer. Akad. Wiss. München, Math.-Physik. Cl., Abh., vol. 21, no. 1, p. 120, pl. 11, fig. 5–6.

Robulus macrodiscus (Reuss)-Cushman and Jarvis 1932, U. S. Nat. Mus., Proc., vol. 80, art. 14, p. 23, pl. 7, fig. 3; Pozaryska 1957, Paleont. Polon., no 8, p. 132, pl. 15, fig. 7.

Lenticulina macrodisca (Reuss)-Stanchewa 1959, Akad.Sci. Bulg., Instit. Geol, ser. Paleont., vol. 1, p. 136, pl. 1, fig. 4.

Occurence: Lower Aptian, Valea Carelor Creek (comune).

Dimensions: diameter 0,62 mm; thickness 0,36 mm.

Hypotypes: L.P.B. 9102.

Lenticulina muensteri (Roemer)

Pl. XI, fig. 3

Cristellaria munsterii (Roemer)-Reuss 1862, k. Akad. Wiss., Wien, Math. naturw. Cl., Sitzber., vol. 46, p. 77, pl. 9, fig. 3–4.

Cristellaria (Robulus) munsteri (Roemer)-Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 111, pl. 10. fig. 9.

Robulus munsterii (Roemer)-Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 53, pl. 17, fig. 3–9; Hagn 1953, Paläontographica vol. 104 A, p. 32, pl. 3, fig. 13; Ebensberger 1962, Paläontographica vol. 120 A, p. 59, pl. 8, fig. 6.

Lenticulina muensteri (Roemer)-Stanchewa 1959, Akad. Sci. Bulg., Instit. Geol. Ser. Paleont., vol. 1, p. 134, pl. 3, fig. 5.

Occurence: Lower Aptian (Bedoulian) Valea Carelor Creek; Campanian, Ulveş Hill, Mădăraş Creek.

Dimensions: Diameter 1,05 mm — 0,77 mm; thickness 0,48 mm — 0,39 mm.

Hypotypes: L.P.B. 6673–6678, 6686–6689, 9101.

Lenticulina nodosa (Reuss)

Pl. X, figs. 21–22

Robulina nodosa Reuss 1862, k. Akad. Wiss., Wien, Math.-naturw. Cl., Sitzber., vol. 46, p. 78, pl. 9, fig. 6.

Lenticulina nodosa (Reuss)-Sztejn 1957, Instyt. Geol., Prace, vol. 22, p. 28, pl. 4, fig. 24; Bartenstein, Bettenstaedt and Bolli 1957, Eclogae Geol. Helv., vol. 50, no. 1, p. 24, pl. 3, fig. 49.

Lenticulina pilicensis Liszka 1949, Soc. Geol. Pologn., Ann., vol. 18, p. 187 pl. 5, fig. 1–3.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Length 0,60 mm; breadth 0,53 mm; thickness 0,26 mm.

Hypotype: L.P.B. 9177.

Lenticulina ouachensis ouachensis (Sigal)

Pl. XI, figs. 7–9

Cristellaria ouachensis Sigal 1952, 19-th Congr. Geol. Intern., Monogr. Reg., ser. 1, no. 26, p. 16, text-fig. 10.

Lenticulina wisselmanni Bettenstaedt 1952, Senckenbergiana vol. 33, no. 4/6, p. 269, pl. 1, fig. 6–8.

Lenticulina ouachensis ouachensis (Sigal) Bartenstein, Bettenstaedt and Bolli 1957, Eclogae Geol. Helv., vol. 50, no. 1, p. 25, pl. 3, fig. 50 a–b, pl. 4, fig. 71, 76.

Occurence: Lower Aptian, Valea Carelor Creek.

Dimensions: Length 0,91 mm — 0,53 mm; breadth 0,72 mm — 0,43 mm; thickness 0,31mm —0,24 mm.

Hypotype: L.P.B. 9178.

Lenticulina gaultina (Berthelin)

Pl. XI, figs. 27–28

Cristellaria gaultina Berthelin 1880, Soc. Geol. France, Mem., ser. 3, vol. 1,p. 49, pl. 3, fig. 15–19.

Robulus gaultinus (Berthelin) Eichenberg 1935, Niedersachs. Geol. Ver., Jahresber., 26, p. 156, pl. 16, fig. 6.

Lenticulina gaultina (Berthelin)-Tappan 1940, Jour. Pal., vol. 14, no. 2, p. 101, pl. 15, fig. 11 a–b; 1943, Jour. Pal., vol. 17, no. 5, p. 494, pl. 79, fig. 13–15; Ten Dam 1950, Soc. Geol. France, Mem., n. ser., vol. 29, pt. 4, no. 63, p. 20; Frizzell 1954, Texas Univ. Bur. Econ. Geol., Rept. Invest., no. 22, p. 82, pl. 8, fig. 15; Bartenstein 1954, Senckenbergiana vol. 35, no. 1/2, p. 45; Sztejn 1957, Instyt. Geol., Prace, vol. 22, p. 34, pl. 3, fig. 19, text-fig. 15–18; Neagu 1955, Micropaleontology vol. 11, no. 1, p. 10 pl. 3. fig. 1–2.

Robulus gaultinus (Berthelin)-Stanchewa 1959. Akad. Sci. Bulg. Instit. Geol. ser. Paleont., vol. 1, p. 143, pl. 4, fig. 5,7.

Occurence: Lower Aptian (Bedoulian) , Valea Carelor Creek.

Dimensions: Length 0,65 mm — 0,39 mm; breadth 0,50 mm — 0,26 mm; thickness 0,31 mm—0,17 mm.

Hypotype: L.P.B. 9180.

Lenticulina praegaultina Bartenstein, Bettenstaedt & Bolli

Pl. XII, figs. 1–2

Lenticulina (Lenticulina) praegaultina Bartenstein, Bettenstaedt and Bolli 1957, Eclogae Geol. Helv., vol. 50. no. 1, p. 24, pl. 3, fig. 48 a–b, pl. 4, fig. 63–65.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.
Dimensions: Length 0,55 mm — 0,53 mm; breadth 0,48 mm — 0,46 mm; thickness 0,26 mm.
Hypotype: L.P.B. 9179.

Lenticulina roemeri (Reuss)
Pl. XI, figs. 1—2

Cristellaria roemeri Reuss 1862, k. Akad. Wiss., Wien, Math.-Naturw. Cl., Sitzber., vol. 46, p. 75, pl. 8, fig 9.
Lenticulina (Lenticulina) roemeri (Reuss) — Bartenstein, Bettenstaedt and Bolli 1957, Eclogae Geol. Helv., vol. 50, no. 1, p. 23, pl. 5, fig. 93.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.
Dimensions: Length 0,82 mm — 0,50 mm; breadth 0,67 mm — 0,36 mm; thickness 0,29 mm — 0,21 mm.
Hypotype: L.P.B. 9181.

Lenticulina collignoni Espitalié & Sigal
Pl. X, figs. 23—24

Lenticulina collignoni Espitalié and Sigal 1963, Annal. Geol. Madagascar fasc. 32, p. 32, pl. 8, fig. 8, pl. 9, fig. 1—14, pl. 36, fig. 3.
Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.
Dimensions: Length 0,50 mm; breadth 0,36 mm; thickness 0,17 mm.
Hypotype: L.P.B. 9182.

Genus **Marginulina** d'Orbigny 1826
Marginulina bullata Reuss
Pl. X, figs. 15—16

Marginulina bullata Reuss-Reuss 1860, k. Akad. Wiss., Wien, Math.-Naturw. Cl., Sitzber., vol. 40, p. 61, pl. 6, fig. 4—6; Egger 1899, K Bayer Akad. Wiss., München, Math.-Physik. Cl. Abh., vol. 21, no. 1, p. 86, pl. 9, fig. 10, 12, 13; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 76, pl. 6, fig. 28;; Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 62, pl. 6, fig. 4—6; Cushman 1946, U.S. Geol. Survey, Prof. Paper, 206 p. 62, pl. 21, fig. 33—36 (not 32); Hagn 1953, Paläontographica vol. 104 A, p. 40, pl. 4, fig. 1; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Invest. no. 22, p. 84, pl. 8, fig. 34—36; Pozaryska 1957, Paleont. Polon., no. 8, p. 106, pl. 12, fig. 6; Ebensberger 1962, Paläontographica vol. 120 A, p. 50.

Occurence: Campanian, Ivanca Creek, Mădăraș Creek, Ulveș Hill.
Dimensions: Length 0,74 mm — 0,48 mm; thickness 0,50 mm — 0,43 mm.
Hypotypes: L.P.B. 6467—6470, 6566.

Marginulina curvatura Cushman
Pl. XI, fig. 21

Marginulina curvatura Cushman 1938, Cush. Labor. Foram. Res., Contrib., vol. 14, pt. 1, p. 34, pl. 5, fig. 13—14; 1946, U. S. Geol. Survey, Prof. Paper 206, p. 63, pl. 22, fig. 11—14; Frizzeli 1954, Texas Univ., Bur. Econ-Geol. Rept. Invest., no. 22, p. 84, pl. 8, fig. 40—41.
non Marginulina curvatura Cushman-Pozaryska 1957, Paleont. Polon., no. 8, p. 111, pl. 12, fig. 8—9.

Occurence: Lower Maestrichtian, Ivăncuța Creek.
Dimensions: Length 0,84 mm; thickness 0,31 mm.
Hypotype: L.P.B. 5278.

Marginulina texasensis Cushman
Pl. XI, fig. 22

Marginulina texasensis Cushman 1937, Cush. Labor. Foram. Res., Contrib., vol. 14, pt. 2, p. 95; Frizzell 1943, Jour. Pal. vol. 18, no. 3, p. 332, pl. 51, fig. 6—7; Cushman 1946, U.S. Geol. Survey Prof. Paper, 206, p. 61, pl. 21, fig. 21—29, 38—40; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Invest., no. 22, p. 86, pl. 9, fig. 24—25.
Marginulina texana Cushman and Hedberg 1941, Cush. Labor. Foram. Res., Contrib., vol. 17, pt. 1, p. 88, pl. 21, fig. 21.
Marginulina modesta Cushman and Jarvis (not Reuss) 1932, U. S. Nat. Mus. Proc., vol. 80, art. 14, p. 25, pl. 8, fig. 6.

Occurence: Campanian, Ivanca Creek.
Dimensions: Length 1,75 mm; thickness 0,65 mm.
Hypotype: L.P.B. 6171.

Marginulina modesta Reuss
Pl. X, fig. 18

Marginulina modesta Reuss 1860, k. Akad. Wiss., Wien, Math. naturw. Cl., Sitzber., vol. 40, p. 207, pl. 7, fig. 5.

Occurence: Lower Maestrichtian, Ivăncuța Creek.
Dimensions: Length 0,77 mm; thickness 0,36 mm.
Hypotype: L.P.B. 5279.

Marginulina austinana directa Cushman
Pl. XI, fig. 10

Marginulina austinana Cushman var. *directa* Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 59, pl. 20, fig. 11—16.

Occurence: Turonian, Craca Mare Creek.
Dimensions: Length 0,96 mm; thickness 0,21 mm.
Hypotype: L.P.B. 5453.

Marginulina armata Reuss
Pl. IX, fig. 33

Marginulina armata Reuss 1860, k. Akad. Wiss., Wien, Math.-naturw. Cl., Sitzber., vol. 40, p. 209, pl. 7, fig. 7; Cushman 1946, U.S. Geol. Survey, Prof. Paper, 206, p. 60, pl. 21, fig. 1.

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 0,72 mm; thickness 0,24 mm.

Hypotype: L.P.B. 5277.

Genus **Palmula** Lea 1833

Palmula primitiva Cushman
Pl. XII, fig. 3

Palmula primitiva Cushman-Cushman and Dea-derick 1944, Jour. Pal., vol. 18, no. 4, p. 335, pl. 52, fig. 6; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 84, pl. 32, fig. 1–2; Liszkowa 1959, Instyt. Geol. Bull., 131, Geol. Carpath., vol. 2, p. 63, pl. 4, fig. 3.

Falsopalmula primitiva (Cushman)-Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Invest. no. 22, p. 96, pl. 11, fig. 40; Pozaryska 1957, Paleont. Polon., no. 8, p. 169, pl. 20, fig. 2; Ebensberger 1962, Paläontographica vol. 120 A, p. 39, pl. 8, fig. 35.

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 2,04 mm; breadth 0,74 mm; thickness 0,29 mm.

Hypotype: L.P.B. 5301.

Genus **Planularia** Defrance, in de Blainville 1826

Planularia harpa (Reuss)
Pl. XI, fig. 12

Cristellaria harpa Reuss 1860, k. Akad. Wiss, Wien, Math. — Naturw. Cl., Sitzber, vol. 40, p. 211, pl. 10, fig. 1–2.

Astacolus harpa (Reuss)-Hagn 1953, Paläontographica vol. 104 A, p. 38, text,-fig. 5.

Planularia harpa (Reuss)-Ebensberger 1962, Paläontographica vol. 120 A, p. 36, pl. 5, fig. 5, 11.

Lenticulina (Planularia) harpa (Reuss)-Hofker 1957, Geol. Jb. Beiheft., vol. 27, p. 128, text-fig. 145.

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 1,27 mm — 0,96 mm; breadth 0,60 mm — 0,46 mm.

Hypotypes: L.P.B. 5273, 6218.

Genus **Pseudonodosaria** Boomgaart 1949

Pseudonodosaria mutabilis (Reuss)
Pl. X, figs. 9–10

Glandulina mutabilis Reuss 1862, k. Akad. Wiss., Wien, Math.-naturw. Cl., Sitzber., vol. 46, p. 158, pl. 5, fig. 7–11; Egger 1899, k. Bayer. Akad., Wiss., München, Math.-Physik. Cl., vol. 21, no. 1, p. 83, pl. 5, fig. 21; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 52, pl. 4, fig. 25; Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 89, pl. 4, fig. 16.

Occurence: Campanian, Ivanca Creek, Ulveş Creek.

Dimensions: Length 0,79 mm — 0,72 mm; thickness 0,48 mm — 0,34 mm.

Hypotypes: L.P.B. 6454–6457, 6494.

Pseudonodosaria paralella (Marsson)
Pl. IX, fig. 28

Glandulina paralella Marsson 1878, Mit. nat. Ver Neuvorpommer. u. Rugen, p. 124, pl. 1, fig. 4; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 51, pl. 4, fig. 16,20.

Glandulina cylindroides Reuss-Beissel 1891, (pars) Preuss. Geol. Landesanst., n. ser., vol 3, p. 27, pl. 5, fig. 21–24, 26–27, 30–34, 37–41, 50, 53–54.

Pseudoglandulina parallella (Marsson)-Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 77, pl. 27, fig. 35.

Rectoglandulina parallella (Marsson)-Ebensberger 1962, Paläontographica, vol. 120 A, p. 53, pl. 3, fig. 19, 25.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek.

Dimensions: Length 1,34 mm — 1,00 mm; thickness 0,58 mm — 0,53 mm.

Hypotypes: L.P.B. 5305, 6458.

Pseudonodosaria bistegia (Olszewski)
Pl. X, figs. 6–8

Pseudoglandulina bistegia (Olszewski) — Cushman and Jarvis 1932, U. S. Nat. Mus., Proc., vol. 80, art. 14, p. 37, pl. 11, fig. 10–12; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 76, pl. 27, fig. 30–31; Pozaryska 1957, Paleont. Polon., no. 8, p. 90, pl. 9, fig. 4.

Occurence: Turonian, Gurmezea Creek.

Dimensions: Length 0,60 mm — 0,46 mm; thickness 0,61 mm — 0,31 mm.

Hypotypes: L.P.B. 6490–6492.

Pseudonodosaria obesa (Loeblich & Tappan)
Pl. X, figs. 13–14

Rectoglandulina obesa Loeblich and Tappan 1955, Smithonian Miscell. C. Coll., vol. 126, no. 3, p. 5, pl. 1, fig. 5–6; Graham and Church 1963, Stanford Univ., Public. Geol. Sci., vol. 8, no. 1, p. 46, pl. 5, fig. 1.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,43 mm; thickness 0,36 mm.

Hypotypes: L.P.B. 5306, 6493.

Pseudonodosaria cylindracea (Reuss)
Pl. X, fig. 12

Glandulina cylindracea Reuss-Reuss 1851, Haidinger's Naturw Abh., vol. 4, pt. 1, p. 23, pl. 1, fig. 5; 1860 k. Akad. Wiss., Wien, Math. — naturw. Cl, Sitzber., vol. 40, p. 190, pl. 4, fig. 1; Egger 1899, k. Bayer. Akad. Wiss., München, Math. Physik. Cl., Abh., vol. 21, no. 1, p. 84, pl. 5, fig. 19—20.

Nodosaria (Glandulina) cylindracea (Reuss)-Cushman 1926, Am. Assoc. Petrol. Geol., Bull., vol. 10, p. 594, pl. 18, fig. 1.

Pseudoglandulina cylindracea (Reuss)-Cushman and Jarvis 1932, U. S. Nat. Mus., Proc., vol. 80, art. 14, p. 36, pl. 11, fig. 7—8; Brotzen 1936, Sver. Geol. Unders. ser. C, no. 396, p. 91, pl. 4, fig. 9; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 76, pl. 27, fig. 34; Cushman and Renz 1946, Cush. Contrib., Foram. Res., spec. Public., no. 18, p. 31, pl. 5, fig. 5; Pozaryska 1957, Paleont. Polon., no. 8, p. 91, pl. 9, fig. 1.

Occurence: Campanian, Ulveş Creek.
Dimensions: Length 1,00mm; thickness 0,39 mm.
Hypotypes: L.P.B. 5304.

Pseudonodosaria manifesta (Reuss)
Pl. X, fig. 17

Glandulina manifesta Reuss 1851, Haidinger's Naturw. Abh., vol. 4., no. 1, p. 22, pl. 2, fig. 4; Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser. vol. 111, p. 52, pl. 4, fig. 28.

Nodosaria manifesta (Reuss)-Cushman 1926, Am. Assoc. Petrol. Geol. Bull., vol. 10, p. 594, pl. 18, fig. 8.

Pseudoglandulina manifesta (Reuss)-Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 76, pl. 27, fig. 20—26: Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Invest., no. 22, p. 92, pl. 10, fig. 29—31; Pozaryska 1957, Paleont. Polon. no. 8, p. 93, pl. 9, fig. 7.

Occurence: Campanian, Ulveş Creek.
Dimensions: Length 0,84 mm; thickness 39 mm.
Hypotype: L.P.B. 5302.

Genus **Vaginulina** d'Orbigny 1826
Vaginulina trilobata d'Orbigny
Pl. X, fig. 11

Marginulina trilobata d'Orbigny 1840, Soc. Geol. France, Mem, ser. 3, vol. 4, p. 16, pl. 1, fig. 16—17.

Marginulina? trilobata (d'Orbigny)-Cushman, 1946, U.S. Geol. Survey, Prof. Paper 206, p. 64, pl. 22, fig. 22.

Vaginulina trilobata (d'Orbigny)-Ebensberger 1962, Paläontographica vol. 120 A, p. 35, pl. 5, fig. 14.

Occurence: Lower Maestrichtian, Ulveş Creek.
Dimensions: Length 0,74 mm; thickness 0,24 mm.
Hypotype: L.P.B. 5280.

Genus **Vaginulinopsis** Silvestri 1904
Vaginulinopsis ensis (Reuss)
Pl. XI, fig. 13

Marginulina ensis Reuss 1851, Haidinger's Naturw, Abh., vol. 4, no. 1, p. 27, pl. 1, fig. 16.

Cristellaria ensis (Reuss)-Franke 1928, Preuss, Geol. Landesanst. Abh., n. ser., vol. 111, p. 97, pl. 9, fig. 1.

Vaginulinopsis ensis (Reuss)-Hagn 1953, Paläontographica vol. 104 A, p. 55, pl. 6, fig. 1; Pozaryska 1957, Paleont. Polon., no. 8, p. 115, pl. 13, fig. 3—4.

Vaginulina ensis (Reuss)-Tollmann 1960, Jb. Geol. B. A., vol. 103, p. 167, pl. 13, fig. 1.

Occurence: Campanian, Ulveş Creek.
Dimensions: Length 1,41 mm; thickness 0,31 mm.
Hypotype: L.P.B. 5276.

Family Polymorphinidae d'Orbigny 1839
Subfamily Polymorphininae d'Orbigny 1839
Genus **Globulina** d'Orbigny, in de la Sagra 1839
Globulina prisca Reuss
Pl. XII, figs. 16—17

Globulina prisca Reuss 1862, k. Akad. Wiss., Wien Math.-naturw. Cl., Sitzber., vol. 46, p. 79, pl. 9, fig.8; Cushman and Ozawa 1930, U. S. Nat. Mus. Proc., vol. 77, art. 6, p. 73, pl. 12, fig. 6; Brotzen 1936, Sver. Geol. Unders., ser. C., no. 396, p. 114, pl. 7, fig. 11; Cushman and Renz 1946, Cush. Labor. Foram. Res., Spec., Public., no. 18, p. 34, pl. 5, fig. 23; Graham and Church 1963, Stanford Univ. Publ. Geol. Sci., vol. 8, no. 1, p. 49, pl. 5, fig. 16.

Occurence: Campanian, Ulveş Creek, Ivanca Creek.
Dimensions: Length 0,96 mm — 0,60 mm; thickness 0,36 mm — 0,29 mm.
Hypotypes: L.P.B. 5318, 6539—6571.

Globulina lacrima lacrima Reuss
Pl. XII, fig. 15

Globulina lacrima Reuss-Alth 1850, Haidinger's Naturw. vol. 3, p. 263, pl. 13, fig. 16.

Polymorphina lacrima (Reuss)-Egger 1899, k. Bayer. Akad. Wiss., München, Math.-Physik. Cl., vol. 21, no. 1, p. 125, pl. 17, fig. 39—40.

Globulina lacrima Reuss-Reuss 1851, Haidinger's Naturw. vol. 4, p. 27, pl. 4, fig. 9; Cushman and Ozawa 1930, U. S. Nat. Mus. Proc., vol. 77, art. 6, p. 77, pl. 19, fig. 1—2; Cushman 1946, U. S. Geol.

Survey Prof. Paper 206, p. 96, pl. 40, fig. 11–22; Hofker 1957, Geol. Jb., Beih., vol. 27, p. 170, text-fig. 212–213.

Globulina lacrima lacrima Reuss-Frizzell 1954; Texas Univ. Bur. Econ. Geol. Rept. Invest., no. 22, p. 104, pl. 14, fig. 21; Ebensberger 1962, Paläontographica, vol. 120 A, p. 65, pl. 4, fig. 18.

Occurence: Campanian, Ulveş Creek.

Dimensions: Thickness 0,31 mm — 0,24 mm.

Hypotypes: L.P.B. 6509–6510.

Globulina lacrima subsphaerica (Berthelin)

Pl. XII, fig. 14

Polymorphina sphaerica Berthelin 1880, Soc. Geol, France, Mem., ser. 3, vol. 1, p. 58, pl. 4, fig. 18.

Polymorphina gibba d'Orbigny f. *horrida* Reuss-Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 115, pl. 11, fig. 1.

Globulina lacrima subsphaerica (Berthelin)-Cushman and Ozawa 1930, U. S. Nat. Mus., Proc. vol. 77, art. 6, p. 78. pl. 19, fig. 5–7; Loetterle 1937, Nebraska Geol. Survey, ser. 2, Bull., 12, p. 31, pl. 4, fig. 5; Tappan 1940, Jour. Pal., vol. 14, no. 2, p. 133, pl. 17, fig. 29; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 96, pl. 40, fig. 13; Hagn 1953, Paläontographica vol. 104, A, p. 70, pl. 6, fig. 13; Hofker 1957, Geol. Jb., Beih., vol. 27, p. 171, text-fig. 214–215; Ebensberger 1962, Paläontographica vol. 120, A, p. 65, pl. 7, fig. 34–35.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,48 mm — 0,26 mm; thickness 0,26 mm — 0,14 mm.

Hypotypes: L.P.B. 5319, 6511–6531.

Genus **Guttulina** d'Orbigny, in de la Sagra 1839

Guttulina adherens adherens (Olszewki)

Pl. XII, figs. 8–9

Polymorphina problema Franke (not d'Orbigny) 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 118, pl. 11, fig. 5.

Guttulina adherens (Olszewki)-Cushman and Ozawa 1930, U. S. Nat. Mus., Proc., vol. 77, art. 6, p. 36, pl. 1, fig. 9, pl. 6, fig. 7 (non fig. 6) Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 96, pl. 40, fig. 8–10; Hofker 1957, Geol. Jb. Beih., vol. 27, p. 165, text-fig. 204; Ebensberger 1962, Paläontographica vol. 120 A, p. 63, pl. 4, fig. 15.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,29 mm; thickness 0,17 mm.

Hypotypes: L.P.B. 5315, 6610.

Guttulina adherens cuspidata Cushman & Ozawa

Pl. XII, figs. 6–7

Guttulina adherens (Olszewki) var. *cuspidata* Cushman & Ozawa 1930, U.S. Nat. Mus., Proc. vol. 77, art. 6, p. 37, pl. 6, fig. 6.

Occurence: Campanian, Ulveş Creek, Ivanca Creek.

Dimensions: Length 0,36 mm — 0,21 mm; thickness 0,21 mm — 0,17 mm.

Hypotypes: L.P.B. 5314, 6496–6503.

Guttulina trigonula (Reuss)

Pl. XII, figs. 10–12

Guttulina trigonula (Reuss)-Cushman and Ozawa 1930, U. S. Nat. Mus., Proc., vol. 77, art. 6, p. 28, pl. 4, fig. 2; Cushman and Renz 1946, Cush. Labor. Foram. Res., Spec. Public., no. 10, p. 34, pl. 5, fig. 20; Cushman 1946, U.S. Geol. Survey, Prof. Paper, 206, p. 95, pl. 40, fig. 6–7; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 137, pl. 3, fig. 16; Graham and Church 1963, Stanford Univ., Public. Geol. Sci., vol. 8, no. 1, p. 49, pl. 5, fig. 18.

Occurence: Campanian, Ulveş Creek, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,36 mm — 0,26 mm; breadth 0,31 mm — 0,26 mm.

Hypotypes: L.P.B. 5320, 6541–6555, 6563–6609.

Guttulina spicaeformis (Roemer)

Pl. XII, fig. 13

Guttulina spicaeformis (Roemer)-Cushman and Ozawa 1930, U.S. Nat. Mus., Proc., vol. 77, art. 6, p. 31, pl. 5, fig. 1–2.

Occurence: Campanian, Ivanca Creek.

Dimensions: Length 0,40 mm; breadth 0,19 mm

Hypotype: L.P.B. 6763.

Genus **Pseudopolymorphina** Cushman and Ozawa 1928

Pseudopolymorphina leopolitana (Reuss)

Pl. XIII, figs. 4–5

Polymorphina leopolitana Reuss 1851, Haidinger's Naturw., vol. 4, p. 28, pl. 4, fig. 11.

Pseudopolymorphina leopolitana (Reuss)-Cushman and Ozawa 1930, U.S. Nat. Mus., Proc., vol. 77, art. 6, p. 108, pl. 28, fig. 4; Ebensberger 1962, Paläontographica vol. 120 A, p. 67, pl. 4, fig. 23.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 1,36 mm — 0,77 mm; thickness 0,77 mm — 0,36 mm.

Hypotypes: L.P.B. 5316, 6504–6508, 6584.

Pseudopolymorphina digitata (d'Orbigny)
Pl. XIII, figs. 6–7

Pseudopolymorphina digitata (D'Orbigny)-Cushman and Ozawa 1930, U.S., Nat., Mus., Proc., vol. 77, art. 6, p. 108, pl. 28, fig. 3.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek.

Dimensions: Length 1,32 mm — 0,74 mm; thickness 0,46 mm — 0,24 mm.

Hypotypes: L.P.B. 6537, 6583.

Genus **Pyrulina** d'Orbigny, in de la Sagra 1839

Pyrulina cylindroides (Roemer)
Pl. XIII, figs. 1–3

Pyrulina cylindroides (Roemer)-Cushman and Ozawa 1930, U. S. Nat., Mus., Proc., vol. 77, art. 6, p. 56, pl. 14, fig. 1–2,5; Hofker 1957, Geol. Jb. Beih., vol. 27, p. 168, text-fig. 207–209; Ebensberger 1962, Paläontographica vol. 120 A, p. 66, pl. 8, fig. 21.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek.

Dimensions: Length 0,55 mm — 0,39 mm; thickness 0,21 mm — 0,17 mm.

Hypotypes: L.P.B. 6532–6586.

Subfamily Ramulininae Brady 1884

Genus **Ramulina** Jones in Wright 1875

Ramulina novaculeata Bullard
Pl. XII, fig. 5

Ramulina novaculeata Bullard 1953, Jour. Pal., vol. 27, no. 3, p. 346; Neagu 1965, Micropaleontology, vol. 11, no. 1, p. 28, pl. 7, fig. 17–18.

Occurence: Campanian, Ivanca Creek, Ivăncuţa Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 1,56 mm — 0,67 mm; thickness 0,86 mm — 0,48 mm.

Hypotypes: L.P.B. 5336, 6482–6484, 6731–6736, 6766–6777.

Family Glandulinidae Reuss 1860

Subfamily Oolininae Loeblich and Tappan 1961

Genus **Fissurina** Reuss 1850

Fissurina laevigata Reuss
Pl. XII, figs. 18–19

Fissurina laevigata Reuss 1850, k. Akad. Wiss., Wien, Math.–Naturw. Cl., Denschr., vol. 1, p. 366, pl. 46, fig. 1; Pozaryska 1957, Paleont. Polon., no. 8, p. 60, pl. 5, fig. 2; Graham and Church 1963, Stanford Univ., Publ. Geol. Sci., vol. 8, no. 1, p. 21, pl. 3, fig. 1–4.

Lagena laevigata (Reuss)-Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 95, pl. 40, fig. 1; Frizzell 1954, Texas Univ., Bur. Econ. Geol., Rept. Invest., no. 22, p. 103, pl. 14, fig. 10.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian Ulveş Creek, Ivăncuţa Creek.

Dimensions: Length 0,36 mm — 0,29 mm; thickness 0,29 mm — 0,17 mm.

Hypotypes: L.P.B. 5405, 6348–6361.

Fissurina alata Reuss
Pl. XII, figs. 20–21

Fissurina alata Reuss 1851, Deutsch. Geol. Ges., Zeischr., p. 58, pl. 3, fig. 1; 1862, k. Akad. Wiss. Wien, Math. naturw. Cl., Sitzber., vol. 46, p. 339, pl. 7, fig. 87.

Lagena (Fissurina) alata Reuss-Franke 1928, Preus, Geol. Landesanst., Abh., n. ser., vol. 111, p. 89, pl. 8, fig. 8.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek, Ulveş Hill; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,72 mm — 0,48 mm; thickness 0,55 mm — 0,34 mm.

Hypotypes: L.P.B. 5403, 6273–6290; 6306–6315, 6362–6368.

Fissurina orbignyana orbignyana Seguenza
Pl. XII, figs. 22–23

Lagena orbignyana Seguenza-Brady 1884, Challenger Voy., Rept. Zoology, vol. 9, p. 484, pl. 59, fig. 1, 18, 24, 26; Egger 1893, k. Bayer Akad. Wiss München, Abh., Math.-Physik. Cl., vol. 18, p. 333, pl. 10, fig. 89–91; Cushman 1918, U. S. Nat. Mus., Bull., 71, p. 42, pl. 19, fig. 1; 1923, idem, Bull. 104, p. 39; 1933 idem, Bull. 161, p. 26, pl. 6, fig. 7–8.

Entosolenia orbignyana (Seguenza)-Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 126, pl. 52, fig. 16–19.

Fissurina orbignyana Seguenza-Pozaryska 1957, Paleont. Polon., no. 8, p. 61, pl. 6, fig. 1–3.

Test free, lenticular, smooth, with an ovate to elliptical aspect, in having an acute, hyaline periferal keel, limited on the both sides by a rounded rige which give, in lateral view, a tricarinat aspect. The development of these ridges is various but, the important fact is that, there are continously around the test.

Occurence: Campanian, Ulveş Creek, Ulveş Hill, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,48 mm — 0,36 mm; breadth 0,40 mm — 0,26 mm.

Hypotypes: L.P.B. 5410, 6433–6452.

Remarks: The Seguenza's species have a large interpretation regarding the ornamentation and

the aspect of the test. After our material and literature data, the presence of the continously periferal keel rounding by the two ridges, are the distinctive characters.

Fissurina orbignyana inornata Neagu[3]
Pl. XII, fig. 24–25

This subspecies is distinguished from the *Fissurina orbignyana orbignyana* Seguenza, by the robust aspect of the test and its ornamentation. The periferal keel is limited by two large ditches and two rounded ridges, which on the opposite side of the aperture are forming two little proeminences. The lateral sides of the test are complete smooth.
Occurence: Campanian, Ulveş Creek, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.
Dimensions: Length (holotype) 0,62 mm; breadth 0,50 mm; thickness 0,34 mm (paratypes) length 0,58 mm — 0,40 mm; breadth 0,50 mm — 0,31 mm; thickness 0,31 mm — 0,21 mm.
Hollotype: L.P.B. 5409.
Paratypes: L.P.B. 6316–6369.

Fissurina orbignyana praeclara (Cushman & Renz)
Pl. XII, figs. 28–29

Lagena orbignyana (Seguenza) var.-Cushman and Jarvis 1932, U.S. Nat., Mus., Proc., vol. 80, art. 14, p. 40, pl. 12, fig. 7.
Entosolenia orbignyana praeclara Cushman and Renz 1946, Cush. Labor., Foram. Research. Spec. Public., no. 18, p. 38, pl. 6, fig. 18.

This subspecies is distinguished from the typical one in having the lateral sides ornated by the radial ridges which are not influencing the periferal ornamentation.
Occurence: Campanian, Ulveş Creek, Ulveş Hill.
Dimensions: Length 0,48 mm — 0,36 mm; breadth 0,40 mm — 0,26 mm.
Hypotypes: L.P.B. 5408, 6291–6293.

Fissurina orbignyana bicornis Neagu[3]
Pl. XII, figs. 26–27

By the characters of the test this subspecies is the furthest of the typical species.

The lenticular test, have an oval-elongated aspect, the periferal hyalin keel start from the aperture streaching until the two well developed caudal spines. The periferal ridges passiing under the apertural neck rounding the test, ends in the caudal spines. The lateral sides of the test are ornating by the fine radial ridges. Sometimes the apertural neck is providing with the small helycoidal ridges.
Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Length (hollotype) 0,67 mm; breadth 0,50 mm; thickness 0,25 mm; (paratypes) length 0,72 mm — 0,50 mm; breadth 0,46 mm — 0,31 mm; thickness 0,21 mm — 0,17 mm.
Hollotype: L.P.B. 5401.
Paratypes: L.P.B. 6370–6390, 6405–6431.

Genus **Parafissurina** Parr 1947
Parafissurina lageniformis Neagu[3]
Pl. XII, figs. 18–19; 30–34

Ellipsobulimina? sp. Cushman and Church 1929, Calif. Acad. Sc., Proc., ser. 4, vol. 18, no. 16, p. 514, pl. 40, fig. 1–3.
?*Ellipsobulimina* sp. Graham and Church 1962, Stanford Univ., Geol. Sci, vol. 8, no. 1, p. 66, pl. 8, fig. 4.

Test free, unilocular, glandular or oval, smooth; aperture subterminal opening at one side of the test with overhanging hoodlike extension of wall, have a short inner reflextion.
Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek, Ulveş Hill.
Dimensions: Length (hollotype) 0,46 mm; breadth 0,43 mm; (paratypes) length 0,43 mm — 0,24 mm; breadth 0,43 mm — 0,21 mm.
Remarks: By the aspect of the test this species is similar with *Fissurina*, but the aperture with a hoodlike extention of the wall is very clear and distinctive character.
Holotype: L.P.B. 8054.
Paratypes: L.P.B. 8055–8094.

Superfamily Buliminacea Jones 1875
Family Turrilinidae Cushman 1927
Subfamily Turrilininae Cushman 1927
Genus **Praebulimina** Hofker 1953
Praebulimina ovulum (Reuss)
Pl. XIII, figs. 9 – 10

Bulimina ovulum Reuss-Reuss 1851, Haidinger's Naturw., vol. 4, p. 38, pl. 3, fig. 9.
Bulimina reussi Morrow 1934, Jour. Pal., vol. 8, no. 2, p. 195, pl. 29, fig. 12; Cushman and Parker 1935, Cush. Labor. Foram. Research., Contrib., vol. 11, pt. 3, p. 99, pl. 15, fig. 8, 10; Jennings 1936, Bull. Am. Pal., vol. 23, no. 78, p. 31, pl. 3, fig. 20; Friz-

zell 1943, Jour. Pal., vol. 17, no. 4, p. 350, pl. 57, fig, 2; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 4, p. 337, pl. 53, fig. 6; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 120, pl. 51, fig. 1–5; Hagn 1953, Paläontographica vol. 104, A, p. 78, pl. 6, fig. 21; Said and Kenawy 1956, Micropaleontology vol. 2, no. 2, p. 143, pl. 4, fig. 15.

Praebulimina reussi (Morrow)-Hofker 1957, Geol. Jb. Beih., vol. 27, p. 187, text-fig. 227, 228 b.

Bulimina ovulum ovulum Reuss-Frizzell 1954, Texas Univ., Bur. Econ. Geol. Rept. Invest., no. 22, p. 115, pl. 17, fig. 2.

Praebulimina ovulum (Reuss)-Hofker 1957, Geol. Jb. Beih., vol. 27, p. 184, Belford 1960, Bur. Min. Research. Geol. and Geophys., Bull., no. 57, p. 64, pl. 16, fig. 7–9.

Occurence: Campanian, Ulveş Creek, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,36 mm — 0,24 mm; thickness 0,24 mm — 0,14 mm.

Hypotypes: L.P.B. 5334, 6612–6621, 6641–6650, 6662–6670, 6819–6820.

Praebulimina ventricosa (Brotzen)

Pl. XIII, figs. 8, 11, 12

Bulimina laevis D'Orbigny-Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 157, pl. 14, fig. 12.

Bulimina ventricosa Brotzen 1936, Sver. Geol. Unders., ser. C., no. 396, p. 124, pl. 8, fig. 1, text-fig. — 1–8.

Praebulimina ventricosa (Brotzen)-Hofker 1957, Geol. Jb. Beih., vol. 27, p. 184, text-fig. 223–224.

Buliminella (?) ventricosa (Brotzen)-Ebensberger 1962, Paläontographica, vol. 120 A, p. 71.

Occurence: Lower Coniacian, Floroaia Mică Creek; Campanian, Ulveş Creek, Ivanca Creek.

Dimensions: Length 0,31 mm — 0,19 mm; thickness 0,24 mm — 0,17 mm.

Hypotypes: L.P.B. 5333, 6611, 6651–6659.

Praebulimina carseyae (Plummer)

Pl. XIII, fig. 28

Buliminella carseyae Plummer 1931, Texas Univ. Bull. 3101, p. 179, pl. 8, fig. 7; Cushman 1946, U. S. Geol. Survey Prof. Paper, 206, p. 119, pl. 50, fig. 17–20; Loetterle 1937, Nebraska Geol. Survey, ser. 2, Bull. 12, p. 37, pl. 5, fig. 10; Ebensberger 1962, Paläontographica vol. 120 A, p. 69.

Prebulimina carseyae (Plummer) — Hofker 1957, Geol. Jb. Beih., vol. 27, p. 192, text-fig. 235–236.

Occurence: Campanian, Ulveş Creek, Ivanca Creek.

Dimensions: Length 0,24 mm — 0,19 mm; thickness 0,26 mm — 0,14 mm.

Hypotypes: L.P.B. 5335, 6623–6640.

Praebulimina laevis (Beissel)

Pl. XIII, fig. 15

Bulimina laevis Beissel 1891, Preuss. Geol. Landesanst., Abh., n. ser., vol. 3, p. 66, pl. 12, fig. 39–43; Cushman and Parker 1936, Cush. Labor. Foram. Research., Contrib., vol. 11, pt. 1, p. 6, pl. 2, fig.3.

Praebulimina laevis (Beissel)-Hofker 1957, Geol. Jb. Beih., vol. 27, p. 190, text-fig. 228 g–h, 230, 231, 232.

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 0,26 mm — 0,21 mm; thickness 0,14 mm.

Hypotypes: L.P.B. 6814–6818.

Praebulimina hofkeri (Brotzen)

Pl. XIII, figs. 13–14

Bulimina hofkeri Brotzen 1936, Sver. Geol. Ustv., ser. C., no. 396, p. 129, pl. 8, fig. 3, text-fig. 45.

Praebulimina hofkeri (Brotzen) — Hofker 1957, Geol. Jb. Beih., vol. 27, p. 186, text-fig. 225.

Occurence: Lower Coniacian, Floroaia Mică Creek.

Dimensions: Length 0,17 mm — 0,14 mm; thickness 0,12 mm — 0,096 mm.

Hypotypes: L.P.B. 6821–6822.

Praebulimina stokesi (Cushman & Renz)

Pl. XIII, fig. 16

Bulimina stokesi Cushman and Renz 1946, Cush. Labor. Foram. Research., Spec. Publ., no. 18, p. 37, pl. 6, fig. 14.

Occurence: Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,24 mm; thickness 0,19 mm.

Hypotype: L.P.B. 5332.

Praebulimina imbricata (Reuss)

Pl. XIII, figs. 17–18

Bulimina imbricata Reuss 1851, Haidinger's Naturw. vol. 4, p. 38, pl. 4, fig. 7.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,48 mm — 0,26 mm; thickness 0,24 mm — 0,12 mm.

Hypotypes: L.P.B. 6660–6661, 6765, 6794–6795.

Genus **Pyramidina** Brotzen 1948

Pyramidina szajnochae (Grzybowski)

Pl. XIII, figs. 24–26

Verneuilina szajnochae Grzybowski 1896, Akad. Um' Krakow, Rozpr., ser.2, vol. 10, p. 287, pl. 9, fig. 19.

Bulimina limbata White 1929, Jour. Pal. vol. 3, no. 1, p. 48, pl. 5, fig. 9; Cushman 1946, U.S. Geol.

Survey, Prof. Paper 206, p. 124, pl. 52, fig. 5; Vinogradov 1960, Acad. Rom., Stud. Cercet. Geol., vol. 5, no. 2, pl. 2, fig. 7–8.

Reussella szajnochae (Grzybowski) - Glaessner 1937, Moscow Univ., Pal. Lab. Probl., vol 2–3, p. 389; Noth 1951, Austria. Geol. Bundesanst. Jb. Sonderband 3, p. 65, pl. 7, fig. 7; Belford 1960., Bur. Min. Res., Geol.-Geophys., Bull. no. 57, p. 66, pl. 16, fig. 16–19, pl. 17, fig. 1–13; Graham and Church 1963, Stanford Univ., Publ. Geol. Sc., vol. 8, no. 1, p. 53, pl. 6, fig, 9.

Reussella szajnochae californica Cushman & Goudkoff-Noth 1951, Austria. Geol. Bundesanst. Jb. Sonderband 3, p. 65, pl. 7, fig. 6; De Klasz and Knipscher 1954, Geol. Jb., vol. 69, p. 606, pl. 45, fig. 8, 10–13.

Occurence: Campanian, Ulveş Creek, Ulveş Hill, Ivanca Creek, Mădăraş Creek, Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 1,20 mm — 0,19 mm; thickness 0,60 mm — 0,17 mm.

Hypotypes: L.P.B. 5331, 6739–6762.

Pyramidina cushmani (Brotzen)

Pl. XIII, figs. 29–30

Reussella cushmani Brotzen 1936, Sver. Geol. Unders. ser. C., no. 396, p. 136, pl. 8, fig. 7, text-fig. 47; Hofker 1957, Geol. Jb. Beih., vol. 27, p. 205, text-fig. 248–250.

Occurence: Campanian, Ulveş Creek.

Dimensions: Length 0,34 mm — 0,17 mm; thickness 0,17 mm — 0,096 mm.

Hypotypes: L.P.B. 5329, 6777–6779.

Pyramidina pseudospinulosa (Troelsen)

Pl. XIII, fig. 27

Reussella pseudospinulosa Troelsen, Brotzen 1945, Sver. Geol. Unders. ser. c, no. 465, p. 46, pl. 1, fig. 6; Hofker 1957, Geol. Jb. Beih., vol. 27, p. 212, text-fig. 259, 260.

Occurence: Campanian, Ulveş Hill, Ulveş Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,79 mm — 0,50 mm; thickness 0,50 mm — 0,39 mm.

Hypotypes: L.P.B. 5330, 6737–6738, 6780–6785.

Family Bolivinitidae Cushman 1927

Genus **Bolivina** d'Orbigny 1839

Bolivina incrassata incrassata Reuss

Pl. XIII, fig. 22

Bolivina incrassata Reuss 1851, Haidinger's Naturw., vol. 4., p. 45, pl. 5, fig. 13; Egger 1899, k. Bayer. Akad. Wiss., München, Math.-Physik., Cl. vol. 21, no. 1, p. 45, pl. 16, fig. 4–5; Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 153, pl. 14, fig. 6; White 1929, Jour. Pal. vol. 3, no. 1, p. 43, pl. 4, fig. 19; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 127, pl. 53, fig. 8–11; Noth 1951, Austria Geol. Bundesanst. Jb. Sonderband. 3, p. 64, pl. 9, fig. 8; Bandy 1951, Jour. Pal., vol. 25, no. 4, p. 510, pl. 75, fig. 5; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 144, pl. 4, fig. 19; Hofker 1957, Geol. Jb. Beih., vol. 27, p. 228, text-fig. 282–286, 288, 291, 292; Graham and Church 1963, Stanford Univ., Publ. Geol. Sc., vol. 8, no. 1, p. 52, pl. 5, fig. 26.

„Bolivina incrassata" Reuss-Frizzell 1954, Texas Univ. Bur. Econ. Geol., Rept. Investig., no. 22, p. 117, pl. 17, fig. 25.

Bolivina incrassata incrassata Reuss-Ebensberger 1962, Paläontographica, vol. 120 A, p. 76, pl. 7, fig. 22–23.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Length 0,62 mm — 0,26 mm, breadth 0,31 mm — 0,14 mm.

Hypotypes: L.P.B. 5329, 6786–6791, 6796.

Bolivina textilaroides Reuss

Pl. XIII, figs. 19–20

Bolivina textilaroides Reuss 1862, k. Akad. Wiss., Wien, Math. naturw. Cl. Sitzber., vol. 46, p. 81, pl. 10, fig. 1.

Bolivina textularoides Reuss-Hofker 1957, Geol. Jb., Beih., vol. 27, p. 225, text-fig. 277.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek.

Dimensions: Length 0,46 mm — 0,43 mm; breadth 0,19 mm — 0,17 mm.

Hypotypes: L.P.B. 6792, 6793.

Bolivina plaita Carsey

Pl. XIII, fig. 21

Bolivina plaita Carsey-Hofker 1957, Geol. Jb., Beih., vol. 27, p. 226, text-fig. 278, 279.

Occurence: Campanian, Ivanca Creek.

Dimensions: Length 0,36 mm; breadth 0,14 mm — 0,12 mm.

Hypotypes: L.P.B. 6797, 6798.

Family Eouvigerinidae Cushman 1927

Genus **Eouvigerina** Cushman 1926

Eouvigerina cristata (Marsson)

Pl. XIII, fig. 23

Uvigerina cristata Marsson 1878, Naturw. Ver. Nue-Vorpommern. u. Rügen, Mitt. Jahrb., vol. 10, p. 150, pl. 3, fig. 20.

Pseudouvigerina cristata (Marsson)-Brotzen 1945, Sver. Geol. Unders., ser. C., no. 465, p. 46, text-fig. 8 A–B.

Reussella cristata (Marsson) — Hofker 1957, Geol. Jb. Beih., vol. 27, p. 220, text-fig. 272, 273, 274.

Occurence: Campanian, Ivanca Creek.
Dimensions: Length 0,34 mm ; breadth 0,17 mm.
Hypotype: L.P.B. 6776.

Superfamily GLOBIGERINACEA Carpenter Parker & Jones 1862
Family HETEROHELICIDAE Cushman 1927
Subfamily HETEROHELICINAE Cushman 1927
Genus **Heterohelix** Ehrenberg 1843

Heterohelix globulosa (Ehrenberg)
Pl. XIII, figs. 31–33

Textularia globulosa Ehrenberg – Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser., vol. 111, p. 134, pl. 12. fig. 11.

Gümbelina globulosa (Ehrenberg) – Egger 1899, k. Bayer Akad. Wiss. München, Math. – Physik. Cl. Abh., vol. 21, no. 1, p. 32, pl. 14, fig. 43; White 1929, Jour. Pal. vol. 3, no. 1, p. 36, pl. 4, fig. 10; Glaessner 1937, Moscow Univ., Pal. Lab. Probl. Pal., vol. 1, p. 108, pl. 2, fig. 2; Loetterle 1937, Nebraska Geol. Survey, Bull., Bull. 12, ser., 2, p. 33, pl. 4, fig. 8; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 4, p. 336, pl. 53, fig. 2–3; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 105, pl. 45, fig. 9–15; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig., no. 22, p. 109, pl. 15, fig. 24–27; Said and Kenawy 1956, Micropaleontology vol. 2, no. 2, p. 139, pl. 3, fig. 29; Belford 1960, Bur. Min. Res. Geol. and Geophys., Bull., no. 57, p. 59, pl. 15, fig. 10–11.

Heterohelix globulosa (Ehrenberg) Montanaro-Gallitelli 1957, U. S. Nat. Mus., Bull. 215, p. 137, pl. 31, fig. 12, 15; Graham and Church 1963, Stanford Univ., Publ. Geol. Sc. vol. 8, no. 1, p. 61, pl. 7, fig. 11.

Occurence: Lower Coniacian, Floroaia Mică Creek; Campanian, Ivanca Creek, Mădăraș Creek; Lower Maestrichtian, Ivăncuța Creek.
Dimensions: Length 0,50 mm – 0,29 mm.
Hypotypes: L.P.B. 6825–6867, 7028–7058.

Heterohelix planata (Cushman)
Pl. XIII, figs. 34–36

Gümbelina planata Cushman 1938, Cush. Labor. Foram. Research. Contrib., vol. 16, pt. 1, p. 12, pl. 2, fig. 13–14; 1944, idem, vol. 20, pt. 1, p. 10, pl. 2, fig. 20; 1946, U. S. Geol. Survey Prof. Paper, 206, p. 105, pl. 45, fig. 6–7; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 109, pl. 15, fig. 32.

Occurence: Lower Coniacian, Floroaia Mică Creek.
Dimensions: Length 0,31 mm – 0,17 mm.
Hypotypes: L.P.B. 7087–7102.

Heterohelix pulchra (Brotzen)
Pl. XIV, figs. 6–8

Gümbelina pulchra Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 121, pl. 9, fig. 2–3.

Gümbelina pseudotessera Cushman 1938, Cush. Labor. Foram. Research. Contrib., vol. 14, pt. 1, p. 14, pl. 2, fig. 19–21; 1944, idem, vol. 20, pt. 2, p. 91, pl. 14, fig. 5; 1946, U. S. Geol. Survey Prof. Paper 206, p. 106, pl. 45, fig. 16–20; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig.,no. 22, p. 109. pl.15, fig. 33–34.

Heterohelix pulchra (Brotzen) syn. *G. pseudotessera* Cushman, Montanaro – Gallitelli 1957, U. S. Nat. Mus. Bull. 215, p. 137, pl. 31, fig. 20.

Occurence: Campanian, Ivanca Creek, Mădăraș Creek; Lower Maestrichtian, Ulveș Creek.
Dimensions: Length 0,53 mm – 0,39 mm.
Hypotypes: L.P.B. 6868–6885, 7059–7076.

Heterohelix moremani (Cushman)
Pl. XIV, figs. 8–10

Gümbelina mo.emani Cushman 1938, Cush. Labor. Foram. Research. Contrib., vol. 14, pt. 1, p. 10, pl. 2, fig. 1–3; 1944, idem vol. 20, pt. 3, p. 90, pl. 14, fig. 1; 1946, U.S. Geol. Survey, Prof. Paper 206, p. 103, pl. 44, fig. 15–17; Kikoine 1948, Soc. Geol. France Bull., vol. 28, fasc. 1–3, p. 18 pl. 1, fig. 4; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 109, pl. 15, fig. 28–30.

Occurence: Campanian, Ivanca Creek.
Dimensions: Length 0,62 mm – 0,40 mm.
Hypotypes: L.P.B. 7077–7086.

Genus **Gublerina** Kikoïne 1948

Gublerina ornatissima (Cushman & Church)
Pl. XIV, fig. 11

Gublerina cuvillieri Kikoine 1948, Soc. Geol. France, Bull., vol. 28, fasc. 1–3, p. 26, pl. 2, fig. 10.

Gublerina ornatissima (Cushman & Church), - Montanaro – Gallitelli 1957, U. S. Nat. Mus. Bull. 215, p. 140, pl. 32, fig. 1–9.

Occurence: Upper Campanian, Ivanca Creek; Lower Maestrichtian, Ulveș Creek.
Dimensions: Length 0,50 mm – 0,48 mm.
Hypotypes: L.P.B. 6993, 6986.

Genus **Planoglobulina** Cushman 1927

Planoglobulina glabrata (Cushman)
Pl. XIV, fig. 2

Ventilabrella eggeri glabrata Cushman-Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 111, pl. 47, fig. 20–22; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 111, pl. 16, fig. 11–12.

Ventilabrella eggeri eggeri Cushman-Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 111, pl.

47, fig. 17—19; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 111, pl. 16, fig. 10.

Planoglobulina glabrata (Cushman), Montanaro-Gallitelli 1957, U. S. Nat. Mus. Bull. 215, p. 141.

Occurence: Upper Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Length 0,60 mm — 0,40 mm.

Hypotypes: L.P.B. 5405, 6898—6909, 6960—6985.

Planoglobulina carseyae (Plummer)

Pl. XIV, figs. 13—14

Ventilabrella carseyae Plummer 1931, Texas Univ. Bull. 3101, p. 178, pl. 9, fig. 7—9; Jennings 1936, Bull. Am. Pal., vol. 23, no. 78, p. 28, pl. 3, fig. 13; Cushman 1938, Cush. Labor. Foram. Research. Contrib., vol. 14, pt. 1, p. 26, pl. 4, fig. 20—24; 1946, U.S. Geol. Survey, Prof. Paper 206, p. 112, pl. 48, fig. 1—5.

Planoglobulina carseyae (Plummer), Montanaro-Gallitelli 1957, U. S. Nat. Mus., Bul., 215, p. 141, pl. 32, fig. 13.

Occurence: Upper Campanian-Lower Maestrichtian, Ivanca Creek.

Dimensions: Length 0,53 mm — 0,39 mm.

Hypotypes: L.P.B. 6910—6917.

Genus **Pseudoguembelina** Brönnimann & Brown 1953

Pseudoguembelina striata (Ehrenberg)

Pl. XIV, figs. 4—5

Gümbelina striata Ehrenberg-Egger 1899, k. Bayer. Akad. Wiss. München, Math.-Physik. Cl. Abh., vol. 21, no. 1, p. 33, pl. 14, fig. 37—39 (non fig. 5—7, 10—11); Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 118, pl. 9, fig. 1, text-fig. 114 5/2, 39,40; Cushman 1938, Cush. Labor. Foram. Research. Contrib., vol. 14. pt. 1, p. 8, pl. 1, fig. 34—40; Cushman and Deaderick 1942, idem, vol. 18, pt. 3, pl. 63, pl. 15, fig. 8—10; Cushman 1944, idem, vol. 20, pt, 4, p. 91, pl. 14, fig. 4; 1946, U. S. Geol. Survey Prof. Paper 206, p. 104, pl. 45, fig. 4—5; Cushman and Todd 1943, Cush. Labor. Foram. Research. Contrib. vol. 19, pt. 3, p. 64, pl. 11, fig. 11; Kokoine 1948, Soc. Geol. France, Bull., vol. 28, fasc. 1—3 p. 19, pl. 1, fig. 7; Bandy 1951, Jour. Pal. vol. 25, no. 4, p. 510, pl. 75, fig. 8; Hamilton 1953, idem, vol. 27, no. 2, p. 235, pl. 30, fig. 13; Hagn 1953, Paläontographica vol. 104 A, p. 73, pl. 6, fig. 16—17; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 110, pl, 15, fig. 39—40; Said and Kenawy 1956, Micropaleontology vol. 2, no. 2, p. 139, pl. 3, fig. 37; Liszkowa 1959, Instyt. Geol. Bull., 131, Geol. Carpath. vol. 2, p. 63, pl. 5, fig. 2.

Heterohelix striata (Ehrenberg)-Berggren 1962, Acta Univ. Stockholm., Geol. Contrib., vol. 9, no. 1, p. 22, pl. 6, fig. 1—5; Graham and Church 1963, Stanford Univ. Publ. Geol. Sc., vol. 8, no. 1, p. 62, pl. 7, fig. 12.

Pseudoguembelina striata (Ehrenberg) — Brönnimann and Brown 1953, Cush. Found. Foram. Research. Contrib., vol. 4, pt. 4, p. 154, text-fig. 6; Montanaro — Gallitelli 1957, U. S. Nat. Mus. Bull., 215, p. 140; Belford 1960, Bur. Min. Res. Geol. Geophys., Bull., no. 57, p. 60, pl. 15, fig. 12—13.

Occurence: Upper Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,44 mm — 0,29 mm.

Hypotypes: L.P.B. 6888—6895, 6950—6952.

Pseudoguembelina costulata (Cushman)

Pl. XIV, fig. 12

Gümbelina costulata Cushman 1938, Cush. Labor. Foram. Research. Contrib., vol. 14, pt. 1, p. 16, pl. 3. fig. 7—9; Cushman and Todd 1943, idem, vol. 19, pt. 3, p. 64, pl. 11, fig. 3; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 108, pl. 46, fig. 10—12; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 108, pl. 15, fig, 17—19; Montanaro — Gallitelli 1957, U. S. Nat. Mus., Bull. 215, p. 140, pl. 31, fig. 21—22.

Occurence: Upper Campanian, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Length 0,48 mm — 0,34 mm.

Hypotypes: L.P.B. 6896, 6953—6959.

Genus **Pseudotextularia** Rzehak 1891

Pseudotextularia elegans Rzehak

Pl. XIV, fig. 1

Gümbelina plummerae Loetterle 1937, Nebraska Geol' Survey, Bull., ser. 2, Bull. 12, p. 33, pl. 5, fig. 1—2; Cushman 1946, U.S. Geol. Survey. Prof. Paper, 206, p. 104, pl. 45, fig. 1—3; Kikoïne 1948, Soc. Geol. France, vol. 28, fasc. 1—3, p. 18, pl. 1, fig. 5.

Gümbelina elegans (Rzehak), Kikoïne 1948, Soc. Geol. France, Bull., vol. 28, fasc. 1—3, p. 16, pl. 1, fig. 1.

Pseudotextularia elegans Rzehak, Montanaro-Gallitelli 1957, U.S. Nat. Mus., Bull. 215, p. 138, pl. 33, fig. 6.

Occurence: Upper Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Length 0,51 mm — 0,36 mm.

Hypotypes: 6918—6947, 6994—7027.

Genus **Racemiguembelina** Montanaro-Gallitelli 1957

Racemiguembelina fructicosa (Egger)

Pl. XIV, fig. 3

Gümbelina fructicosa Egger 1899, k. Bayer. Akad. Wiss., Munchen, Math.-Physik. Cl. Abh., vol. 21, no. 1, p. 35, pl. 14, fig, 8, 9, 24, 25, 26.

Pseudotextularia varians Rzehak 1895, Ann. Naturhist. Hofmus. Wien, vol. 10 no. 2, p.217, pl. 7, fig. 1–3; White 1929, Jour. Pal., vol. 3, no. 1, p. 40, pl. 4, fig. 15; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 110, pl. 47, fig. 4–7; Bukowy and Geroch 1957, Soc. Geol. Pologn., Ann. vol. 26, fasc. 4, p. 317, pl. 28, fig. 12–13; Liszkowa 1959, Instyt. Geol. Bull. 131, Geol. Carpath. vol. 2, p. 66, pl. 5, fig. 4–6; Maslakowa 1959, Trudy VNIIGAZ. p. 118, pl. 15, fig. 7; Vasilenko 1961, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit., n. ser., 171, p. 207, pl. 41, fig. 10.

Pseudotextularia varians Rzehak var. *textulariformis* White 1929, Jour. Pal. vol. 3, no. 1, p. 41, pl. 4, fig. 17.

Pseudotextularia varians Rzehak var. *mendezensis* White 1929, Jour. Pal. vol. 3, no. 1, p. 41, pl. 4, fig. 16.

Pseudotextularia varians Rzehak *varians* Rzehak–Glaessner 1936, Moskow Univ. Pal. Lab., Probl. Pal., vol. 1, p. 101, pl. 1, fig. 3–5, text-fig. C.

Racemiguembelina fructicosa (Egger), Montanaro-Gallitelli 1957, U. S. Nat. Mus., Bull. 215, p. 142, pl. 32, fig. 14–15.

Pseudotextularia (*Racemiguembelina*) *fructicosa* (Egger) – Berggren 1962, Acta Univ. Stockholm. Contrib. Geol., vol. 9, no. 1, p. 22, pl. 6, fig. 6.

Occurence: Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Length 0,55 mm – 0,36 mm.

Hypotypes: L.P.B. 5406, 6987–6992, 7263–7296.

Genus **Bifarina** Parker & Jones 1872

Bifarina texana (Cushman)

Pl. XIV, fig. 24

Rectogümbelina texana Cushman 1932, Cush. Labor. Foram. Research, Contrib. vol. 8, pt. 1, p. 6, pl. 1, fig. 8–10; 1937, idem, vol. 14, pt. 1, p. 20, pl. 3, fig. 17–19; 1946, U. S. Geol. Survey Prof. Paper 206, p. 109, pl. 46, fig. 19–21; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 110, pl. 16, fig. 3–4.

Tubitextularia texana (Cushman) – Montanaro – Gallitelli 1957, U. S. Nat. Mus. Bull. 215, p. 143, pl. 33, fig. 2–3.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek.

Dimensions: Length 0,82 mm – 0,60 mm.

Hypotypes: L.P.B. 6948–6949.

Family Planomalinidae Bolli, Loeblich & Tappan 1957

Genus **Biglobigerinella** Lalicker 1948

Biglobigerinella sp. cf. *B. algeriana* Dam & Sigal

Pl. XXVIII, figs. 15–18

Biglobigerinella cf. *algeriana* Ten Dam & Sigal-Geroch 1957, Soc. Geol. Pologn. Ann., vol. 26, fasc. 4, p. 327, pl. 28, fig. 4–10.

In ours material, this species was found in a small numbers of specimens which were not in a good preservations, and was difficult to establish certainly the identity of its, with ten Dam and Sigal's species.

Occurence: Lower Maestrichtian, Ulveş Creek, Upper Campanian/Lower Maestrichtian, Ivanca Creek.

Dimensions: Diameter 0,29 mm – 0,24 mm.

Hypotypes: L.P.B. 5382, 7717–7718, 7918–7920.

Genus **Globigerinelloides** Cushman & Dam 1948

Globigerinelloides echeri echeri (Kaufmann)

Pl. XXV, figs, 16–21; pl. XXVI, figs. 12–14

Globigerina aspera Ehrenberg-Franke 1928, Preuss. Geol. Landesanst. Abh. n. ser. vol. 111, p. 192, pl. 18, fig. 10.

Globigerinella echeri echeri (Kaufmann) – Brönnimann 1952, Bull. Am. Pal., vol. 34, no. 140, pl. 46, text-fig. 22–23.

Occurence: Lower Coniacian, Floroaia Mică Creek.

Dimensions: Diameter 0,21 mm – 0,14 mm.

Hypotypes: L.P.B. 7650–7661.

Globigerinelloides echeri clavata (Brönnimann)

Pl. XXIV, figs. 14–15

Globigerinella echeri clavata Brönnimann 1952, Bull. Am. Pal. vol. 34, no. 140, p. 49, pl. 1, fig. 12–13, text–fig. 24–26.

Occurence: Lower Coniacian, Floroaia Mică Creek.

Dimensions: Diameter 0,21 mm – 0,17 mm.

Hypotypes: L.P.B. 7662–7668.

Globigerinelloides biforaminata (Hofker)

Pl. XXVIII, figs. 19–20

Globigerinella biforaminata (Hofker) – Geroch 1957, Soc. Geol. Pologn. Ann., vol. 26, fasc. 4, p. 326, pl. 38, fig. 3.

Globigerina (*Biglobigerinella*) *biforaminata* (Hofker) – Hofker 1960, Micropaleontology, vol. 6, no. 3, pl. 2, fig. 28; 1962– Jour. Pal. vol. 36, no. 5, text-fig. 7C, 8D, 12D.

Occurence: Lower Maestrichtian, Ulveş Creek, Ivanca Creek.

Dimensions: Diameter 0,29 mm – 0,24 mm.

Hypotypes: L.P.B. 5383, 7676–7681.

Globigerinelloides aspera (Ehrenberg)
Pl. XXV, figs. 22–23

Globigerinella aspera (Ehrenberg) – Brotzen 1936, Sver. Geol. Unders. ser. C, no. 396, p. 170, pl. 13, fig. 2, text-fig. 62; Hagn 1953, Paläontographica, vol. 104 A, p. 92, pl. 8, fig. 7; Belford 1960, Bur. Min. Resour., Geol. and Geophys., Bull. 57, p. 91, pl. 25, fig. 4–6.

Occurence: Upper Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,29 mm – 0,21 mm.
Hypotypes: L.P.B. 5353, 7682–7687, 7923–7924.

Globigerinelloides cretacea (d'Orbigny)
Pl. XXV, figs. 7–11

Globigerina cretacea d'Orbigny 1840, Soc. Geol. France, Mem. vol. 4, ser. 1, p. 34, pl. 3, fig. 12–14; Beissel 1891, Preuss. Geol. Landesanst. Abh. n. ser. vol. 3, p. 71, pl. 13, fig. 43–47; Franke 1928, idem, vol. 111, p. 192, pl. 18, fig. 8; Brönnimann 1952, Bull. Am. Pal. vol. 34, no. 140, p. 14, text-fig. 3; Hagn 1953, Paläontographica, vol. 104 A, p. 92, pl. 8, fig. 5; Ebensberger 1962, idem. vol. 120 A, p. 99, pl. 11, fig. 13.

Occurence: Lower Coniacian, Floroaia Mică Creek; Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,34 mm – 0,17 mm.
Hypotypes: L.P.B. 5354, 7669–7675, 7688–7692; 7921–7922.

Family Schackoinidae Pokorny 1958
Genus **Schackoina** Thalmann 1932
Schackoina cenomana cenomana (Schacko)
Pl. XIV, figs. 15–23

Siderolina cenomana Schacko 1897, Ver. Freunde Naturg. Mecklenburg, Archiv, vol. 50, p. 166, pl. 4, fig. 3–5; Egger 1899, K. Bayer Akad. Wiss, München, Math. – Physik. Cl. Abh., vol. 21, no. 1, p. 174, pl. 21, fig. 42, Franke 1928, Preuss. Geol. Landesanst., Abh., n. ser. vol. 111, p. 193, pl. 18, fig. 11.
Hantkenina (*Schackoina*) *cenomana* (Schacko)-Thalmann 1932, Eclogae Geol. Helv., vol. 25, p. 288.
Schackoina cenomana (Schacko)-Noth 1951, Austria, Geol. Bundestanst. Jb., Sonderband 3, p. 74, pl. 5, fig. 9–10; Montanaro-Gallitelli 1955, Micropaleontology, vol. 1, no. 2, p. 143; Bolli, Loeblich and Tappan 1957, U. S. Nat. Mus., Bull. 215, p. 26, pl. 2, fig. 1–2; Bykowa, Vasilenko, Voloshinova, Mjatlyuk and Subbotina 1959, Osnovy Paleontologii, p. 30, text-fig. 676; Loeblich and Tappan 1961, Micropaleontology, vol. 7, no. 3, p. 270, pl. 10, fig. 2–7.
Schackoina cenomana cenomana (Schacko)-Neagu 1966, Micropaleontology vol. 12, no. 3, p. 365, pl. 1, fig. 1–2, 9–17.

Occurence: Cenomanian, Stînii Hill.
Dimensions: Diameter 0,26 mm – 0,12 mm.
Hypotypes: L.P.B. 6690–6696.

Schackoina cenomana gandolfii Reichel
Pl. XV, figs. 1–6

Schackoina gandolfii Reichel 1948, Eclogae Geol. Helv., vol. 40, no. 2, p. 397, text-fig. 6(3), text-fig. 8a, text-fig. 10 (1,3–4) pl. 8, fig. 1: Aurouzé and de Klasz 1954, Soc. Geol. France, Bull., ser. 6, vol. 4, p. 99, text-fig. 1C; Bolli 1959, Bull. Am. Pal. vol. 39, no. 179, p. 263, pl. 20, fig. 12–18.
Schackoina cenomana gandolfii Reichel–Neagu 1966, Micropaleontology, vol. 12, no. 3, p. 366, pl. 1, fig. 3–4, 18–21, pl. 2, fig. 1–2.

Occurence: Cenomanian Stînii Hill.
Dimensions: Diameter 0,24 mm – 0,34 mm.
Hypotypes: L.P.B. 6709–6715.

Schackoina multispinata bicornis Reichel
Pl. XV, figs. 7–25

Schackoina cenomana bicornis Reichel 1948, Eclogae Geol. Helv., vol. 40, no. 2, p. 401, text-fig. 6, text-fig. 8b, text-fig. 9, text-fig. 10 (6, 8) Aurouzé and de Klasz 1954, Soc. Geol. France, Bull., ser. 6, vol. 4, p. 88, text-fig. 1B.
Schackoina bicornis Reichel–Bykova, Vasilenko, Voloshinova, Mjatlyuk and Subbotina 1959, Osnovy Paleontologii, text-fig. 675.
Schackoina multispina bicornis Reichel-Neagu 1966, Micropaleontology, vol. 12, no. 3, p. 366, pl. 1, fig. 5–8, pl. 2, fig. 3–22.

Occurence: Cenomanian Stînii Hill.
Dimensions: Diameter 0,29 mm – 0,17 mm.
Hypotypes: L.P.B. 6716–6730.

Family Rotaliporidae Sigal 1948
Subfamily Hedbergellinae Loeblich & Tappan 1961
Hedbergella planispira (Tappan)
Pl. XIX, figs. 20–22

Globigerina planispira Tappan 1940, Jour. Pal., vol. 14, no. 2, p. 122, pl. 19, fig. 12; 1943, idem, vol. 17, no. 5, p. 513, pl. 83, fig. 3; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, pl. 127, pl. 20, fig. 2.
Globigerina globigerinelloides Subbotina-Subbotina 1953, Trudy Vses. Neft. Naukno. Isledov. Geol. Razved. Instit. n. ser., vol. 76, p. 51, pl. 1, fig. 11–12.
Praeglobotruncana planispira (Tappan)-Bolli, Loeblich and Tappan 1957, U.S. Nat. Mus., Bull. 215, p. 40, pl. 9, fig. 3; Bolli 1959, Bull. Am. Pal. vol. 39, no. 179, p. 267, pl. 22, fig. 3–4.
Hedbergella planispira (Tappan) – Loeblich and Tappan 1961, Micropaleontology, vol. 7, no. 3, p. 276, pl. 5, fig. 4–11; Neagu 1965, idem, vol. 11, no. 1, p. 36, pl. 10, fig. 1–4.

Occurence: Cenomanian Stînii Hill.
Dimensions: Diameter 0,21 mm; thickness 0,096 mm.
Hypotypes: L.P.B. 9072.

Hedbergella delrioensis (Carsey)

Pl. XX, figs. 1–6, 16–18: pl. XXI, figs. 7–9, 16–17; pl. XXII, figs. 4–6

Globigerina cretacea D'Orbigny var. *delrioensis* Carsey 1926, Texas Univ. Bull. no. 2612, p. 43.
Globigerina cretacea D'Orbigny – Tappan 1940, Jour. Pal., vol. 14, no. 2, p. 121, pl. 19, fig. 11; 1943, idem, vol. 17, no. 5, p. 512, pl. 82, fig. 16–17.
Globigerina gautirensis Brönnimann 1952, Bull. Am. Pal., vol. 34, no. 140, p. 11, pl. 1, fig. 1–3, text–fig. 2.
Globigerina delrioensis Carsey-Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 127, pl. 20, fig. 1.
Praeglobotruncana gautirensis (Brönnimann) – Bolli 1959, Bull,. Am. Pal. vol. 39, no. 179, p. 265, pl. 21, fig. 3–6.
Praeglobotruncana (*Hedbergella*) *delrioensis* (Carsey) – Banner and Blow 1959, Paleontology, vol. 2, pt. 1, p. 8.
Hedbergella delrioensis (Carsey) – Loeblich and Tappan 1961, Micropaleontology, vol. 7, no. 3, p. 275, pl. 2, fig. 11–13.
Occurence: Cenomanian, Stînii Hill.
Dimensions: Diameter 0,31 mm –0,24 mm; thickness 0,21 mm – 0,14 mm.
Hypotypes: L.P.B. 9075.

Hedbergella amabilis Loeblich & Tappan

Pl. XXI, figs. 1–6, 13–15

Hedbergella amabilis Loeblich and Tappan 1961, Micropaleontology vol. 7, no. 3, p. 274, pl. 3, fig. 2, 3, 5.
Occurence: Cenomanian, Stînii Hill.
Dimensions: Diameter 0,29 mm – 0,24 mm; thickness 0,096 mm.
Remarks: This species differs from *H. delrioensis* (Carsey) in having a more elongated aspect of the chambers, which approachs it to *Clavihedbergella simplicissima* Magné et Sigal. The more rounded aspect of the chambers is a good distinctive character between *H. amabilis* and *Clavihedbergella simplicissima.*
Hypotypes: L.P.B. 9074.

Genus **Clavihedbergella** Banner & Blow 1959

Clavihedbergella simplicissima (Magné & Sigal)

Pl. XIX, figs. 17–19; pl. XX, figs. 7–15

Hastigerinella simplicissima Magné & Sigal 1953, Soc. Geol. France, Bull., ser. 6, vol. 3, p. 487, pl. 14, fig. 11.
Praeglobotruncana (*Clavihedbergella*) *simplicissima* (Magné & Sigal) – Banner and Blow 1959, Paleontology, vol. 2, pt. 1, p. 19.
Hedbergella amabilis Loeblich & Tappan 1961, Micropaleontology vol. 7, no. 3, pl. 3, fig. 1, 4, 6, 7–11 (not fig. 2, 3, 5).
Clavihedbergella simplex (Morrow) – Loeblich and Tappan 1961, Micropaleontology, vol. 7, no. 3, p. 279, pl. 3, fig. 11 (not. fig. 12–13, 14).
Clavihedbergella simplicissima (Magné & Sigal) – Caron 1966, Revue Micropaleontologie, vol. 9, no. 2, p. 71, pl. 6, fig. 5.
Occurence: Cenomanian, Stînii Hill.
Dimensions: Diameter 0,29 mm – 0,24 mm; thickness 0,096 mm.
Remarks: Magné and Sigal's species is very clear differing from *Clavihedbergella simplex* (Morrow) in having more angular aspect of the chambers, which are not too elongated. It is possible that this species is situated between genus *Hedbergella* and *Clavihedbergella* and in this case the evolutionary serie is *Hedbergella amabilis*, *Clavihedbergella simplicissima* to *Clavihedbergella simplex.*
Hypotypes: L.P.B. 9076.

Genus **Praeglobotruncana** Bermudez 1952

Praeglobotruncana stephani stephani (Gandolfi)

Pl. XXV, figs. 7–12

Globotruncana stephani Gandolfi 1942, Riv. Ital. Pal., vol. 48, mem. 4, p. 130, pl. 3, fig. 4, 5, pl. 4, fig. 36–37, 41–44, pl. 6, fig. 4 (partim), pl. 9, fig. 5, 8, pl. 14, fig. 2.
Globotruncana (*Globotruncana*) *stephani* Gandolfi-Reichel 1950, Eclogae Geol. Helv., vol. 42, no. 2, p. 608, pl. 16, fig. 16, pl. 17, fig. 6.
Rotundina stephani (Gandolfi) – Subbotina 1953, Trudy Vses. Neft. Naukno. Isledov., Geol. Razved. Instit., n. ser. vol. 76, p. 165, pl. 2, fig. 5–7, pl. 3, fig. 1–2.
Praeglobotruncana stephani (Gandolfi) – Bolli, Loeblich and Tappan 1957, U. S. Nat. Mus. Bull. 215, p. 39, pl. 9, fig. 2.
Praeglobotruncana delrioensis (Plummer) – Neagu 1959, Univ. Buc. Ann., ser. St. Natur., vol. 21, pl. 1, fig. 16–18.
Praeglobotruncana stephani stephani (Gandolfi) – Klaus 1959, Eclogae Geol. Helv., vol. 52, no. 2, p. 794, pl. 6, fig. 2; Caron 1966, Revue Micropaleontologie, vol. 9, no. 2, p. 73, pl. 2, fig. 3 a–c.
Occurence: Cenomanian, Teliu Creek.
Dimensions: Diameter 0,40 mm – 0,36 mm; thickness 0,24 mm – 0,21 mm.
Hypotypes: L.P.B. 9077.

Praeglobotruncana stephani gibba Klaus

Pl. XXVII, figs. 1–6

Globotruncana stephani turbinata Reichel – Mornod 1950, Eclogae Geol. Helv., vol. 42, no. 2, p. 588, text-fig. 11(1 a–c, 2 a–c); Hagn and Zell 1954, idem. vol. 47, no. 1, p. 34, pl. 5, fig. 3–4; Ksiazkiewicz 1958, Acad. Sci. Pologn. Bull. ser. Sci. Chim. Geol. et Geogr. vol 6, no. 8, pl. 1, fig. 14 a–c.

Globotruncana (Globotruncana) stephani turbinata Reichel 1950, Eclogae Geol. Helv. vol. 42, no. 2, p. 609.

Praeglobotruncana stephani turbinata (Reichel) – Klaus 1959, Eclogae Geol. Helv. vol. 52, no. 2, p. 795, pl. 6, fig. 3.

Praeglobotruncana delrioensis turbinata (Reichel) – Brönnimann and Brown 1956, Eclogae Geol. Helv. vol. 48. no. 2, p. 514, text – fig. 16 d, 179, j, h.

Praeglobotruncana stephani gibba Klaus 1960, Eclogae Geol. Helv., vol. 52, no. 2, p. 304, text–fig. 1 f.; Caron 1966, Revue Micropaleontologie, vol. 9, no. 2, p. 73, pl. 2, fig. 4 a–c.

Occurence: Cenomanian, Teliu Creek.

Dimensions: Diameter 0,39 mm – 0,31 mm; thickness 0,20 mm – 0,34 mm.

Hypotypes: L.P.B. 9078.

Praeglobotruncana marginaculeata (Loeblich & Tappan)

Pl. XXVI, figs. 7–15

Globorotalia marginaculeata Loeblich & Tappan 1946, Jour. Pal. vol. 20, no. 3, p. 257, pl. 37, fig. 19–21, text – fig. 4 a.

Praeglobotruncana marginaculeata (Loeblich & Tappan) – Klaus 1960, Eclogae Geol. Helv., vol. 52, no. 2, p. 301, text–fig. 1 b–d; Caron 1966, Revue Micropaleontologie vol. 9, no. 2, p. 73, pl. 2, fig. 2 a–c.

Occurence: Cenomanian, Teliu Creek.

Dimensions: Diameter 0,39 mm; thickness 0,19 mm.

Hypotypes: L.P.B. 9079.

Genus **Rotalipora** Brotzen 1942

Rotalipora appenninica appenninica (Renz)

Pl. XXI, figs. 10–12; pl. XXIV, 7–13; pl. XXV, figs. 1–6

Globotruncana appenninica Renz 1936, Eclogae Geol. Helv. vol. 29, no. 1, p. 14, text-fig. 2.

Globotruncana appenninica Renz var. *alfa* Gandolfi 1942, Riv. Ital. Pal. vol. 48, mem. 4, p. 117, text-fig. 40.

Globotruncana (Rotalipora) appenninica Renz var. *gama* Gandolfi-Reichel 1950, Eclogae Geol. Helv., vol. 42, no. 2, p. 605, text – fig. 3.

Rotalipora appenninica (Renz) Subbotina 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 76, p. 159, pl. 1, fig. 5–8, pl. 2, fig. 1–2.

Rotalipora appenninica appenninica (Renz) – Luterbacher and Premoli Silva 1962, Riv. Ital. Pal., vol. 68, no. 2, p. 266, pl. 19, fig. 1 a–c, 2 a–c, pl. 20, fig. 1–4; Caron 1966, Revue Micropaleontologie vol. 9, no. 2, p. 72, pl. 1, fig. 4 a–c.

Occurence: Cenomanian, Teliu Creek, Stînii Hill.

Dimensions: Diameter 0,55 mm – 0,46 mm; thickness 0,29 mm – 0,19 mm.

Hypotypes: L.P.B. 9080, 9081.

Rotalipora appenninica gandolfii Luterbacher & Premoli-Silva

Pl. XXIII, figs. 10–12

Globotruncana appenninica Renz var. *typica* Gandolfi 1942, Riv. Ital. Pal. mem. 4, vol. 48, p. 116, pl. 2, fig. 5 c.

Rotalipora appenninica gandolfii Luterbacher and Premoli Silva 1962, Riv. Ital. Pal., vol. 68, no. 2, p. 267, pl. 19, fig. 3 a–c; Caron 1966, Revue Micropaleontologie vol. 9, no. 2, p. 72, pl. 1, fig. 5 a–c.

Occurence: Cenomanian, Teliu Creek, D. Stînii Hill.

Dimensions: Diameter 0,48 mm; thickness 0,24 mm.

Hypotypes: L.P.B. 9082, 9083.

Rotalipora appenninica evoluta (Sigal)

Pl. XXII, figs. 1–3

Rotalipora cushmani (Morrow) var. *evoluta* Sigal 1948, Rev. Inst. Fr. Petrol vol. 3, no. 4, p. 100, pl. 1, fig. 3 a–c, pl. 2, fig. 2 a–b.

Globotruncana (Rotalipora) evoluta (Sigal) – Carbonier 1952, Soc. Geol. France, Bull., ser. 6, vol. 2, fasc. 1–3, p. 118, pl. 7, fig. 2 a–b.

Rotalipora (Thalmanninella) evoluta (Sigal) – Klaus 1959, Eclogae Geol. Helv. vol. 52, nc. 2, p. 810, pl. 4, fig. 3 a–c.

Rotalipora evoluta (Sigal) – Loeblich and Tappan 1961, Micropaleontology vol. 7, no. 3, p. 298, pl. 7, fig. 3; Săndulescu 1967, Instit. Geol. Roman. C.R.S. vol. 52, no. 2, pl. 1, fig. 2 a–c.

Rotalipora appenninica evoluta (Sigal) – Luterbacher and Premoli-Silva 1962, Riv. Ital. Pal., vol. 68, no. 2, p. 268, pl. 20, fig. 5; Caron 1966, Revue Micropaleontologie, vol. 9, no. 2, p. 72, pl. 1, fig. 3 a–c.

Occurence: Cenomanian, Teliu Creek, Stînii Hill.

Dimensions: Diameter 0,58 mm – 0,39 mm; thickness 0,21 mm – 0,19 mm.

Hypotypes: L.P.B. 9084, 9085.

Rotalipora cushmani cushmani (Morrow)

Pl. XXII, figs. 10–12; pl. XXIV figs. 1–6

Globorotalia cushmani Morrow 1934, Jour. Pal., vol. 8, no. 2, p. 199, pl. 31, fig. 2,4; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 152, pl. 62, fig. 9;

Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Invest. no. 22, p. 129, pl. 20, fig. 28.

Rotalipora cushmani (Morrow) — Sigal 1948, Rev. Instit. Fr. Petrol, vol. 3, no. 4, p. 96, pl. 1, fig. 2, pl. 2, fig. 1; Hagn and Zeil 1954, Eclogae Geol. Helv., vol. 47, no. 1, p. 29, pl. 1, fig. 3, pl. 4, fig. 8—10; Brönnimann and Brown 1956, idem, vol. 48, no. 2, p. 537, pl. 20, fig. 10—12: Săndulescu 1967, Instit. Geol. Roman. C.R.S. vol. 52, no. 2, pl. 2, fig. 1 a—c.

Rotalipora (*Rotalipora*) *cushmani* (Morrow) — Klaus 1959, Eclogae Geol. Helv. vol. 52, no. 2, p. 814, pl. 5, fig. 2 a—c.

Occurence: Cenomanian, Teliu Creek.

Dimensions: Diameter 0,58 mm; thickness 0,26 mm.

Hypotypes: L.P.B. 9086.

Rotalipora cushmani turonica (Brotzen)

Pl. XXIII, figs. 1—9

Rotalipora turonica Brotzen 1942 Sver. Geol. Unders. ser. C. no. 451, no. 8, p. 32, text-fig. 10, 11 (4); Sigal 1948, Rev. Inst. Fr. Petrol. vol. 3, no. 4, p. 96, pl. 1, fig. 1; Hagn and Zeil 1954, Eclogae Geol. Helv., vol. 47, no. 1, p. 27, pl. 1, fig. 5, pl. 4, fig. 3—4; Loeblich and Tappan 1957, U. S. Nat. Mus. Bull. 215, p. 41, pl. 9, fig. 6; Săndulescu 1967, Instit. Geol. Roman. C.R.S., vol. 52, no. 2, pl. 1, fig. 4 a—c.

Globotruncana (*Rotalipora*) *turonica* (Brotzen) — Reichel 1950, Eclogae Geol. Helv., vol. 42, no. 2, p. 607, pl. 16, fig. 5, pl. 17, fig. 5.

Rotalipora (*Rotalipora*) *turonica* Brotzen-Klaus 1959, Eclogae Geol. Helv., vol. 52, no. 2, p. 815, pl. 5, fig. 3 a—c.

Occurence: Cenomanian, Teliu Creek.

Dimensions: Diameter 0,62 mm — 0,34 mm; thickness 0,29 mm — 0,24 mm.

Hypotypes: L.P.B. 9087.

Rotalipora reicheli (Mornod)

Pl. XXII, figs. 7—9

Globotruncana appenninica Renz var. *gama* Gandolfi 1942, Riv. Ital. Pal. vol. 48, mem. 4, p. 119, text — fig. 41 (1a, b) 42 (1), 44 (3—4), pl. 6, fig. 6 (partim) pl. 1, fig. 6.

Globotruncana (*Rotalipora*) *reicheli* Mornod 1950, Eclogae Geol. Helv. vol. 42, no. 2, p. 583, text-fig. 5 (IV a—c) 6 (no. 1—6) pl. 15, fig. 2 a—p, 3—8; Noth 1951, Austria Geol. Bundesanst. Jahr. Sonderband 3, p. 76, pl. 5, fig. 3 a—b; Carbonier 1952, Soc. Geol. France. Bull. ser. 6, vol. 2, fasc. 1—3, p. 119, pl. 7, fig. 4 a—b.

Rotalipora reicheli Mornod — Hagn and Zeil 1954, Eclogae Geol. Helv., vol. 47, no. 1, p. 25, pl. 1, fig. 2, pl. 4, fig. 1—2, pl. 7, fig. 11; Subbotina 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 76, p. 162, pl. 2, fig. 3; Gandolfi 1955, Bull. Am. Pal. vol. 36, no. 155, p. 83; Neagu 1959, Univ. Bucureşti, Ann. ser. St. Nat. vol. 21, p. 169, pl. 3, fig. 1—9; Vinogradov 1960, idem. vol. 23, p. 38, pl. 3, fig. 11—12; Loeblich and Tappan 1961, Micropaleontology vol. 7, no. 3, p. 301, pl. 8, fig. 12; Săndulescu 1967, Instit. Geol. Roman. C.R.S. vol. 52, no. 2, pl, 2, fig. 3 a—c.

Rotalipora (*Thalmanninella*) *reicheli* Mornod — Klaus 1959, Eclogae Geol. Helv. vol. 52, no. 2, p. 806, pl. 4, fig. 2, text-fig. 7 (3 a—c).

Occurence: Cenomanian, Teliu Creek.

Dimensions: Diameter 0,62 mm — 0,58 mm; thickness 0,36 mm — 0,34 mm.

Hypotypes: L.P.B. 9088.

Rotalipora globotruncanoides Sigal

Pl. XXVI, figs. 1—11

Rotalipora globotruncanoides Sigal Rev. Inst. Fr. Petrol, vol. 3, no. 4, p. 100, pl. 1, fig. 4, pl. 2, fig. 3—5; 1952, XIX Cong. Geol. Internat. Mon. Reg. ser. 1, Algerie, no. 26, text-fig. 24; Hagn and Zeil 1954, Eclogae Geol. Helv. vol. 47, no. 1, p. 23, pl. 4, fig. 7; Banner and Blow 1959, Paleontology, vol. 2, pt. 1, pl. 2, fig. 4.

Globotruncana (*Rotalipora*) *globotruncanoides* Sigal — Kupper 1955, Cush. Found. Foram. Res. Contrib., vol. 6, pt. 3, p. 113, pl. 18, fig. 1.

Rotalipora greenhornensis (Morrow) — Loeblich and Tappan 1961, Micropaleontology, vol. 7, no. 3, p. 299, pl. 7, fig. 8—9 (non 5—7,10)

Rotalipora (*Thalmanninella*) *globotruncanoides* (Sigal) — Klaus 1959, Eclogae Geol. Helv. vol. 52, no. 2, p. 805, pl. 4, fig. 1.

Occurence: Cenomanian, Stînii Hill.

Dimensions: Diameter 0,62 mm — 0,48 mm; thickness 0,31 mm — 0,26 mm.

Hypotypes: L.P.B. 9089.

Family Globotruncanidae Brotzen 1942

Genus **Globotruncana** Cushman 1927

Globotruncana renzi Gandolfi

Pl. XVI, figs. 1—3

Globotruncana renzi Gandolfi 1942, Riv. Ital. Pal. vol. 48, mem. 4, p. 124, pl. 3, fig. 1,4, 15—16, 28—29, pl. 10, fig. 1, text — fig. 45; Hagn and Zeil 1954, Eclogae Geol. Helv., vol. 47, no. 1, p. 37, pl. 3, fig. 2; Bolli 1957, U. S. Nat. Mus. Bull. 215, p. 58, pl. 14, fig. 3; Ksiazkiewicz 1958, Acad. Sci. Pologn., Bull. ser. sci. Chim. Geol. Geogr. vol. 6, no. 8, pl. 2, fig. 5; Küpper 1964, Geol. Geselsch. Wien, Mitt. vol. 58, fasc. 2, p. 628, pl. 2, fig. 10.

Occurence: Middle-Upper Turonian, Gurmezea Creek.

Dimensions: Diameter 0,50 mm — 0,36 mm.

Hypotypes: L.P.B. 7915—7917.

Globotruncana lapparenti lapparenti Brotzen

Pl. XVI, figs. 7—9

Globotruncana lapparenti Brotzen 1936, Sver. Geol. Unders. ser. C. no. 396, p. 175.

Globotruncana lapparenti lapparenti Brotzen-Reichel 1950, Eclogae Geol. Helv., vol. 42, no. 2, p. 613, pl. 16, fig. 9, pl. 17, fig. 9; Noth 1951, Austria Geol. Bundesanst. Jahrb. Sonderband 3, p. 76; Hagn 1953, Paläontographica vol. 104 A, p. 96, pl. 8, fig. 12, text-fig. 16–17; Hagn and Zeil 1954, Eclogae Geol. Helv. vol. 47, no. 1, p. 39, pl. 3, fig. 3; Ksiazkwiecz 1958, Acad. Sci. Polɔgn. Bull., ser. Sci. Chim. Geol. Geogr. vol. 6, no. 8, pl. 2, fig. 1; Tollmann 1960, Jb. Geol. B. A. Wien, p. 192, pl. 20, fig. 10–11; Belford 1960, Bur. Min. Resour. Geol. and Geophys. Bull., no. 57, p. 96, pl. 27, fig. 6–12; Küpper 1964, Geol-Geselsch. Wien, Mitt., vol. 56, no. 2, p. 624, pl. 3, fig. 1.

Globotruncana (Glt.) lapparenti Brotzen ssp. *lapparenti* Brotzen-Edgel 1957, Micropaleontology, vol. 3, no. 2, p. 113, pl. 1, fig. 7–9.

Occurence: Middle-Upper Turonian, Gurmezea Creek, Floroaia Mică Creek, Campanian, Ivanca Creek.

Dimensions: Diameter 0,43 mm — 0,34 mm.

Hypotypes: L.P.B. 5395, 7456–7463, 7597–7501.

Globotruncana lapparenti tricarinata (Quereau)

Pl. VI, figs. 4–6

Globotruncana lapparenti tricarinata (Querau) — Subbotina 1953, Trudy Vses. Neft. Naukno Isledov., Geol. Razved. Instit. n. ser., no. 76. p. 178, pl. 7, fig. 3–4; Hagn and Zeill 1954, Eclogae Geol. Helv. vol. 47, no. 1, p. 42, pl. 6, fig. 6–7; Ksiazkiewicz 1956, Soc. Geol. Pologn. Ann. vol. 24, fasc. 2–3, p. 274, text — fig. 47; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 150, pl. 5, fig. 20; Ksiazkiewicz 1958, Acad. Sci. Pologn. Bull., ser. sci. Chim. Geol. Geogr. vol. 6, no. 8, pl. 2, fig. 2; Bieda 1958, Instyt. Geol. Bull, 121, ser. micropal., vol. 3, p. 55, text-fig. 22; Witwicka 1958, idem., p. 215, pl. 16, fig. 29; Pessagno 1960, Micropaleontology vol. 6, no. 1, p. 100; Belford 1960, Bur. Min. Resour. Geol. and Geophys. Bull., no. 57, p. 97, pl. 28, fig. 1–6; Tollmann 1960, Jb. Geol. B. A. Wien, vol. 103, p. 1963, pl. 21, fig. 1; Berggren 1962, Acta Univ. Stockholm. Contrib. Geol., vol. 9, no. 1, p. 64, pl. 10, fig. 3; Küpper 1964, Geol. Geselsch. Wien, Mitt., vol. 56, no. 2, p. 626, pl. 3, fig. 3.

Globotruncana lapparenti lapparenti Brotzen — Vinogradov 1960, Acad. Rom. Stud. Cercet. Geol., vol. 5, no. 2, p. 313, pl. 5, fig. 28.

Occurence: Mddle-Upper Turonian, Gurmezea Creek, Hărcăoaia Creek, Floroaia Mică Creek, Craca Mare Creek.

Dimensions: Diameter 0,60 mm — 0,40 mm.

Hypotypes: L.P.B. 5393, 7479–7483, 7698–7710.

Globotruncana lapparenti coronata Bolli

Pl. XVII, figs. 1–3

Globotruncana lapparenti coronata Bolli-Mornod 1950 Eclogae Geol. Helv. vol. 42, no. 2, p. 591, text — fig. 13; Noth 1951, Austria Geol. Bundesanst. Jb. Sonderband 3, p. 75, pl. 5, fig. 8; Hagn and Zeil 1954, Eclogae Geol. Helv. vol. 47, no. 1, p. 43, pl. 3, fig. 4, pl. 7, fig. 1–3; Ksiazkiewicz 1956, Soc. Geol. Pologn. Ann., vol. 24, fasc. 2–3, p. 273, text — fig. 43; 1958, Acad. Sci. Pologn. Bull. ser. sci. Chim. Geol. Geogr., vol. 6, no. 8, pl. 2, fig. 3; Tollmann 1960, Jb. Geol. B. A., vol. 103, p. 194, pl. 21, fig. 2; Küpper 1964, Geol. Geselsch. Wien Mitt., vol. 56, no. 2, p. 625, pl. 3, fig. 2.

Occurence: Middle-Upper Turonian, Gurmezea Creek.

Dimensions: Diameter 0,62 mm — 0,50 mm.

Hypotypes: L.P.B. 5394, 7497–7498.

Globotruncana lapparenti angusticarinata (Gandolfi)

Pl. XV, figs. 27–29

Globotruncana linei (D'Orbigny) var. *angusticarinata* Gandolfi 1942, Riv. Ital. Pal. vol. 48, mem. 4, p. 127, text-fig. 46 (3); Sigal 1952, XIX Congr. Geol. Internat. Monogr. Region. 1 ser. Algerie, no. 26, 34, text-fig. 37 a; Ksiazkiewicz 1956, Soc. Geol. Pologn. Ann., vol. 24, fas. 2–3, p. 272, text — fig. 41–42;; Zeigler 1957, Geol. Bavarica, vol. 30, p. 78, pl. 1, fig. 11; Ksiazkiewicz 1958, Acad. Sci. Pologn. Bull. ser. sci. Chim. Geol. Geogr. vol. 6, no. 8. pl. 2, fig. 4; Tollmann 1960, Jb. Geol. B. A., vol. 103, p. 192, pl. 20, fig. 8–9.

Occurence: Upper Turonian, Gurmezea Creek.

Dimensions: Diameter 0,48 mm.

Hypotypes: L.P.B. 5391.

Globotruncana lapparenti bulloides Vogler

Pl. XVII, figs. 4–6

Globotruncana lapparenti bulloides Vogler-Hagn and Zeil 1954, Eclogae Geol. Helv. vol. 47, no. 1, p. 45, pl. 7, fig. 4; Belford 1960, Bur. Min. Resour. Geol. and Geophys. Bull. no. 57, p. 97, pl. 28, fig. 7–13; Küpper 1964, Geol. Geselsch. Wien. Mitt., vol. 56, no. 2, p. 625, pl. 3, fig. 8.

Occurence: Middle-Upper Turonian, Gurmezea Creek.

Dimensions: Diameter 0,48 mm — 0,29 mm.

Hypotypes: L.P.B. 5390, 6793–6797.

Globotruncana marginata (Reuss)

Pl. XVI, figs. 10–12

Rosalina marginata Reuss-Reuss 1854, Akad. Wiss. Wien, Math. — naturw. Cl. Denksch., vol. 7, p. 69, pl. 26, fig. 1.

Globotruncana marginata (Reuss) — Hagn 1953, Paläontographica, vol. 104 A, p. 93, pl. 8, fig. 10; text —

fig. 10—11; Hagn and Zeil 1954, Eclogae Geol. Helv., vol. 47, no. 1, p. 46, pl. 2, fig. 4, pl. 7, fig. 5—6; Belford 1960, Bur. Min. Resour. Geol. and Geophys. Bull. no. 57, p. 100, pl. 21, fig. 3; Küpper 1964, Geol. Geselsch. Wien, Mitt. vol. 56, no. 2, p. 628, pl. 4, fig. 2.

Globotruncana (Glt.) marginata (Reuss)-Edgel 1957, Micropaleontology, vol. 3, no. 2, p. 114, pl. 2, fig. 4—6.

Globigerina marginata (Reuss) — Franke 1928, Preuss. Geol. Landesanst. Abh.n. ser. vol. 111, p. 192, pl. 18, fig. 9.

Occurence: Middle-Upper Turonian, Gurmezea Creek, Craca Mare Creek; Lower Campanian, Ulveş Creek.

Dimensions: Diameter 0,39 mm — 0,26 mm.

Hypotypes: L.P.B. 5392, 7711—7716, 7493—7505, 5388.

Globotruncana fornicata Plummer

Pl. XVII, figs. 7—9

Globotruncana fornicata Plummer 1931, Texas Univ. Bull. no. 3101, p. 130, pl. 13, fig. 4—6; Noth 1951, Austria Geol. Bundesanst. Jb. Sonderband 3, p. 77, pl. 8, fig. 18; Hagn 1953, Paläontographica vol. 104A, p. 98, pl. 8, fig. 8; Hamilton 1953, Jour. Pal. vol. 27, no. 3, p. 232, pl. 29, fig. 21; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Invest. no. 22, p. 129, pl. 20, fig. 26; Brönnimann and Brown 1955, Eclogae Geol. Helv. vol. 48, no. 2, p. 542, pl. 21, fig. 14—15; Graham and Church, 1963, Stanford Univ. Geol. Sci. Public., vol. 8, no. 1, p. 63, pl. 7, fig. 14; Küpper 1964, Geol. Geselsch. Wien, Mitt., vol. 56, no. 2, p. 621, pl. 4, fig. 7.

Occurence: Upper Turonian-Lower Coniacian, Hărcăaoaia Creek; Lower Campanian, Ulveş Creek.

Dimensions: Diameter 0,35 mm — 0,31 mm.

Hypotypes: L.P.B. 5398, 7446.

Globotruncana arca (Cushman)

Pl. XVI, figs. 13—17; pl. XVII, figs. 10—14

Pulvinulina arca Cushman 1926, Cush. Labor. Foram. Res. Contrib. vol. 2, pt. 1, p. 23, pl. 3, fig. 1.

Globotruncana arca (Cushman) — Cushman 1927, Cush, Labor. Foram. Res. Contrib. vol. 3, pt. 3, p. 91, pl. 19, fig. 11; 1932 Jour. Pal., vol. 6, no. 4, p. 343, pl. 51, fig. 13; Jennings 1936, Bull. Am. Pal. vol. 23, no. 78. p. 37, pl. 4, fig. 14; Bandy 1951, Jour. Pal. vol. 25, no. 4, p. 509, pl. 75, fig. 1; Subbotina 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit., n. ser. no. 76, p. 185, pl. 9, fig. 1—5, pl. 10, fig. 1—5; Hagn 1953, Paläontographica vol. 104 A, p. 97, pl. 8, fig. 11, text — fig. 20,21; Brönnimann and Brown 1955, Eclogae Geol. Helv. vol. 48, no. 2, p. 539, pl. 23, fig. 10—12; Ksiazkiewicz 1956, Soc. Geol. Pologn. Ann. vol. 24, fasc. 2—3, p. 281, text — fig. 58; Bolli, Loeblich and Tappan 1957, U.S. Nat. Mus. Bull. 215, p. 44, pl. 11, fig. 6—11; Bieda 1958, Instyt. Geol. Bull. 121, ser. micropal. vol. 3, p. 60, text — fig. 24; Witwicka 1958, idem, p. 224, pl. 18. fig. 5; Klaus 1959, Eclogae Geol. Helv. vol. 52, no. 2, p. 824, pl. 7, fig. 5.

Globotruncana (Glt.) arca (Cushman) — Dalbiez 1955, Micropaleontology, vol. 1, no. 2, text — fig. 5; Berggren 1962, Acta Univ. Stockholm. Contrib. Geol. vol. 9, no. 1, p. 49, pl. 9, fig. 1—2.

Occurence: Campanian, Ivanca Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,58 mm — 0,36 mm.

Hypotypes: L.P.B. 5381, 7719—7788, 7903—7914.

Globotruncana stuarti stuarti (Lapparent)

Pl. XVIII, figs. 1—3

Globotruncana stuarti (Lapparent) — Renz 1936, Eclogae Geol. Helv. vol. 29 no. 1, pl. 6, fig. 35—41, pl. 8, fig. 6; Reichel 1950, idem, vol. 42, no. 2, p. 613, text —fig. 7 a, pl. 16, fig. 10, pl. 17, fig. 10; Bolli 1951, Jour. Pal. vol. 25, no. 2, p. 196, pl. 34, fig.10—12; Dalbiez 1955, Micropaleontology, vol 1, no. 2, text —fig. 4 a—c; Said and Kenawy 1956, idem vol. 2, no. 2, p. 151, pl. 5, fig. 22; Berggren 1962, Acta Univ. Stockholm Contrib. Geol., vol. 9, no. 1, p. 60, pl. 10, fig. 2.

Globotruncana stuarti stuarti (Lapparent) — Pessagno 1962, Micropaleontology, vol. 8, no. 3, pl. 2, fig. 1.

Occurence: Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,67 mm — 0,46 mm.

Hypotypes: L.P.B. 5379, 7315—7321, 7408—7410.

Globotruncana stuarti elevata (Brotzen)

Pl. XVIII, figs. 10—14

Globotruncana elevata elevata Brotzen-Dalbiez 1955, Micropaleontology vol. 1, no. 2, p. 169, text — fig. 9.

Globotruncana (Glt.) stuarti elevata (Brotzen) — Pessagno 1960, Micropaleontology, vol. 6, no. 1, p. 101, pl. 5, fig. 1,8; 1962, idem, vol. 8, no. 2, p. 362, pl. 1, fig. 10, p. 12, fig. 10—11.

Occurence: Uppermost Campanian-Lower Maestrichtian, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,56 mm — 0,39 mm.

Hypotypes: L.P.B. 5397, 7322—7363, 7464—7523.

Globotruncana stuarti stuartiformis (Dalbiez)

Pl. XVIII, figs. 4—6

Globotruncana elevata stuartiformis Dalbiez 1955, Micropaleontology, vol. 1, no. 2, p. 169, text — fig. 10.

Globotruncana (Glt.) stuarti stuartiformis (Dalbiez) — — Pessagno 1960, Micropaleontology, vol. 6, no. 1, p. 101, pl. 5, fig. 7, 11; 1962 idem, vol. 8, no. 2, p. 362, pl. 2, fig. 4—6.

Globotruncana stuarti (Lapparent), Subbotina 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved, Instit. n. ser. no. 76, p. 201, pl. 15, fig. 3—5; Gandolfi 1955, Bull. Am. Pal. vol. 36, no. 155, p. 64, pl. 5, fig. 6; Vinogradov 1960, Acad. Român., Stud. Cerc. Geol. vol. 5, no. 2, p. 315, pl. 6, fig. 29—30.

Occurence: Lower Maestrichtian, Ivăncuța Creek, Ulveș Creek.

Dimensions: Diameter 0,67 mm — 0,39 mm.

Hypotypes: L.P.B. 5396, 7365—7375.

Globotruncana rugosa (Marie)

Pl. XVII, figs. 15—17

Rosalinella rugosa Marie 1941, Mus. Nat. Hist. Nat., Mem. n. ser. vol. 12, fasc. 1, p. 240, pl. 36, fig. 340.

Globotruncana rugosa (Marie) — Vassilenko 1961, Trudy Vses. Neft. Naukno Isledov., Geol. Razved. Instit. n. ser. no. 171, p. 159, pl. 35, fig. 3, pl. 36, fig. 1.

Occurence: Upper Campanian, Ivanca Creek, Mădăraș Creek; Lower Maestrichtian, Ulveș Creek.

Dimensions: Diameter 0,55 mm — 0,43 mm.

Hypotypes: L.P.B. 7484—7491, 7791—7828, 7925—7927.

Globotruncana contusa (Cushman)

Pl. XVIII, figs. 7—9

Pulvinulina arca Cushman var. *contusa* Cushman 1926, Cush. Labor. Foram. Res. Contrib. vol. 2, pt. 1, p. 23.

Globotruncana arca (Cushman) var. *contusa* (Cushman) — Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 150, pl. 62, fig. 6.

Globotruncana contusa (Cushman) — Bolli 1951, Jour. Pal. vol. 25, no. 2, 196. pl. 34, fig. 7—9; Noth 1951, Austria Geol. Bundesanst. Jb., Sonderband 3, p. 79, pl. 8, fig. 7—9; Subbotina 1953; Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 76, p. 192, pl. 11, fig. 3, pl. 12, fig. 1—2; Troelsen 1955, Micropaleontology vol. 1, no. 1, p. 80, text — fig: 2; Bieda 1958, Instyt. Geol. Bull., 121, ser. Micropaleont. vol. 3, p. 63, text — fig. 26; Vinogradov 1960, Acad, Rom., Stud. Cerc. Geol., vol. 5, no. 2, p. 311, pl. 4, fig. 23—24, pl. 5, fig. 25.

Globotruncana (Glt.) contusa (Cushman) — Edgel 1957, Micropaleontology, vol. 3, no. 2, p. 111, pl. 2, fig. 10—12, pl. 3, fig. 7—9, pl. 4, fig. 1—3; Berrgren 1962, Acta Univ. Stockholm., Contrib. Geol., vol. 9, no. 1, p. 51, pl. 9, fig. 3—4.

Globotruncana (Marginotruncana) contusa (Cushman) Hofker 1962, Jour. Pal. vol. 36, no. 5, text — fig. 7A.

Occurence: Lower Maestrichtian, Ulveș Creek, Ivăncuța Creek, Ivanca Creek.

Dimensions: Diameter 0,46 mm — 0,31 mm.

Hypotypes: L.P.B. 5380, 7384—7404, 7474—7478.

Globotruncana caliciformis (Lapparent)

Pl. XVIII, figs. 15—17

Globotruncana caliciformis (Lapparent) — Bolli 1951, Jour. Pal. vol. 25, no. 2, p. 194, pl. 34, fig. 4—6.

Occurence: Lower Maestrichtian, Ulveș Creek.

Dimensions: Diameter 0,43 mm — 0,36 mm.

Hypotypes: L.P.B. 5374, 7426—7430.

Globotruncana havanensis Voorwijk

Pl. XVIII, figs. 18—25; pl. XIX, figs. 1—5

Globotruncana citae Bolli 1951, Jour. Pal., vol. 25, no. 2, p. 197, pl. 35, fig. 4—6; Gandolfi 1955, Bull. Amer. Pal., vol. 26, no. 155, p. 51, pl. 3, fig. 11.

Globotruncana (Glt.) citae Bolli — Edgel 1957, Micropaleontology, vol. 3, no. 2, p. 111, pl. 1, fig. 13—15.

Globorotalia pshadae Keller — Subbotina 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit., n. ser. no. 76, p. 204, pl. 14, fig. 1—6; Liszkowa 1959, Instyt. Geol. Bull. 131, Geol. Carpath., vol. 2, p. 76, pl. 4, fig. 9; Vinogradov 1960, Acad. Rom. Stud. Cerc. Geol., vol. 5, no. 2, p. 307, pl. 2, fig. 15.

Globotruncana havanensis Voorwijk 1937, K. Akad. Wetensch. Amsterdam, Proc. Sect. Sci., vol. 40, p. 195, pl. 1, fig. 25—26, 29; Corminboeuf 1961, Eclogae Geol. Helv., vol. 54, no. 1, p. 112, pl. 1, fig. 2.

Globotruncana (Rugotruncana) havanensis Voorwijk-Pessagno 1960, Micropaleontology, vol. 6, no. 1, p. 103.

Rugotruncana havanensis (Voorwijk) — Brönnimann and Brown 1955, Eclogae Geol. Helv., vol. 48, no. 2, p. 552, pl. 22, fig. 4—6, pl. 24, fig. 5.

Praeglobotruncana (Praegl.) havanensis (Voorwijk) — Berrgren 1962, Acta Univ. Stockholm., Contrib. Geol., vol. 9, no. 1, p. 26, pl. 7, fig, 1.

Occurence: Campanian, Ivanca Creek, Mădăraș Creek; Upper Campanian-Lower Maestrichtian, Ivanca Creek, Ulveș Creek.

Dimensions: Diameter 0,46 mm — 0,34 mm.

Hypotypes: L.P.B. 5378, 7376—7383, 7431—7433.

Genus **Abathomphalus** Bolli Loeblich & Tappan 1957

Abatomphalus mayaroensis (Bolli)

Pl. XIX, figs. 6—8

Globotruncana mayaroensis Bolli 1951, Jour. Pal. vol. 25, no. 2, p. 198, pl. 35, fig. 10—12; Subbotina 1953, Trudy Vses. Neft, Naukno. Isledov. Geol. Razved. Instit., n. ser. no. 76, p. 181, pl. 8, fig. 2; Gandolfi 1955, Bull. Amer. Pal., vol. 36, no. 155, p. 18, pl. 1, fig. 2, text—fig. 4 (10 a—b); Vinogradov

1960, Acad. Roman., Stud. Cercet. Geol., vol. 5, no. 2, p. 313, pl. 5, fig. 26; Hofker 1962, Jour. Pal. vol. 36, no. 5, text-fig. 7B.

Rugotruncana mayaroensis (Bolli) — Brönnimann and Brown 1955, Eclogae Geol. Helv. vol. 48, no. 2, p. 553, pl. 22, fig. 10—12.

Abatomphalus mayaroensis (Bolli) — Bolli, Loeblich and Tappan 1957, U.S. Nat. Mus., Bull. 215, p. 43, pl. 11, fig. 1; Cita 1962, Evolution. trends in Foram., text-fig. 17.

Praeglobotruncana (*Praeglt.*) *mayaroensis* (Bolli) — Berrgren 1962, Acta Univ. Stockholm. Contrib. Geol. vol. 9, no. 1, p. 32, pl. 7, fig. 3.

Occurence: Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 0,58 mm — 0,48 mm.

Hypotypes: L.P.B. 5377, 7422—7425.

Abatomphalus intermedia (Bolli)

Pl. XIX, figs. 9—11

Globotruncana intermedia Bolli 1951, Jour. Pal., vol. 25, no. 2, p. 197, pl. 35, fig. 7—9.

Globotruncana intermedia intermedia Bolli — Gandolfi 1955, Bull. Amer. Pal. vol. 36, no. 155, p. 48, pl. 13, fig. 8.

Rugotruncana intermedia (Bolli) — Brönnimann and Brown 1955, Eclogae Geol. Helv., vol. 48, no. 2, p. 553, pl. 22, fig. 13, 15.

Praeglobotruncana (*Praeglt.*) *intermedia* (Bolli) — Bergren 1962, Acta Univ. Stockholm Contrib. Geol., vol. 9, no. 1, p. 31, pl. 7, fig. 2.

Occurence: Uppermost Campanian/Lower Maestrichtian, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek.

Dimensions: Diameter 0,56 mm — 0,36 mm.

Hypotypes: L.P.B. 5371, 7447—7515.

Genus **Rugoglobigerina** Brönnimann 1952

Rugoglobigerina rugosa rugosa (Plummer)

Pl. XXVIII, figs. 21—23

***Globigerina rugosa* Plummer 1926, Univ. Texas, Bull. 2644, p. 38, pl. 2, fig. 10; Loetterle 1937, Nebraska Geol. Survey, Bull., 12.**

Rugoglobigerina rugosa rugosa (Plummer) — Brönnimann 1952, Bull. Amer. Pal. vol. 34, no. 140, p. 28, text — fig. 11—33; Bolli, Loeblich and Tappan 1957, U. S. Nat. Mus. Bull. 215, p. 40, pl. 11, fig. 2; Corminboeuf 1962, Eclogae Geol. Helv. vol. 54. no. 1, p. 119, pl. 2, fig. 5.

Rugoglobigerina rugosa (Plummer) — Graham and Clark 1961, Cush. Found. Foramin. Research, Contrib., vol. 12, pt. 3, p. 111, pl. 5, fig. 1; Edgel 1957, Micropaleontology vol. 3, no. 2, p. 115, pl. 4, fig. 10—12; Berggren 1962, Acta Univ. Stockholm. Contrib. Geol. vol. 9, no. 1, p. 71, pl. 11, fig. 1—5, text-fig. 8 (1—5).

Rotundina ordinaria Subbotina 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 76, p. 166, pl. 3, fig. 3—5, pl. 4, fig. 1—9 (non fig. 6—9, pl. 3).

Globotruncana (*Rugoglobigerina*) *rugosa rugosa* (Plummer) — Gandolfi 1955, Bull. Amer. Pal. vol. 36, no. 155, p. 72, pl. 7, fig. 6, text — fig. 11C.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian Ulveş Creek.

Dimensions: Diameter 0,43 mm — 0,31 mm.

Hypotypes: L.P.B. 5386, 7524—7597.

Rugoglobigerina rugosa rotundata Brönnimann

Pl. XXVIII, figs. 24—26; pl. XXIX, figs. 1—2

Rugoglobigerina rugosa rotundata Brönnimann 1952, Bull. Amer. Pal., vol. 34, no. 140, p. 34, pl. 4, fig. 7—9, text — fig. 15—16.

Occurence: Upper Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Diameter 0,48 mm — 0,31 mm.

Hypotypes: L.P.B. 5385, 7598—7634.

Rugoglobigerina rugosa pennyi Brönnimann

Pl. XXIX, figs. 3—5

Rugoglobigerina rugosa pennyi Brönnimann 1952, Bull. Amer. Pal., vol. 34, no. 140, p. 34, pl. 4, fig. 1—3, text — fig. 14.

Globotruncana (*Rugoglobigerina*) *rugosa pennyi* (Brönnimann) — Gandolfi 1955, Bull. Amer. Pal. vol. 36, no. 155, p. 73, pl. 7, fig. 8.

Rugoglobigerina pennyi Brönnimann — Berrgren 1962, Acta Univ. Stockholm. Contrib. Geol. vol. 9, no. 1, p. 75, pl. 12, fig. 1—3.

Occurence: Lower Maestrichtian, Ulveş Creek, Ivanca Creek.

Dimensions: Diameter 0,53 mm — 0,31 mm.

Hypotypes: L.P.B. 5384, 7635—7638.

Superfamily Orbitoidacea Schwager 1876
Family Eponididae Hofker 1951
Genus Eponides de Monfort 1808

Eponides praemegastoma Mjatlyuk

Pl. XXIX, figs. 9—20

Eponides praemegastoma Mjatlyuk 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 71, p. 107, pl. 14, fig. 1—3.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,72 mm — 0,43 m.

Hypotypes: L.P.B. 5364, 7190—7255.

Eponides monterelensis Marie

Pl. XXIX, figs. 6—8

Eponides monterelensis Marie 1941, Mus. Nat. Hist.

Nat , Mem., n. ser. vol. 12, fasc. 1, p., 224, pl. 34, fig. 325.
Occurence: Campanian, Ivanca Creek, Mădăraș Creek; Lower Maestrichtian, Ivăncuța Creek, Ulveș Creek.
Dimensions: Diameter 0,36 mm — 0,24 mm.
Hypotypes: L.P.B. 7118—7154.

Eponides biconvexa Marie
Pl. XXIX, figs. 21—33

Eponides biconvexa Marie 1941, Mus. Nat. Hist. Nat., Mem., n. ser. vol. 12, fasc. 1, p. 224, pl. 34, fig. 324.
Occurence: Campanian, Ulveș Creek, Mădăraș Creek; Lower Maestrichtian Ivăncuța Creek.
Dimensions: Diameter 0,55 mm — 0,31 mm.
Hypotypes: L.P.B. 5402, 7155—7186.

Eponides brönnimanni Cushman & Renz
Pl. IX, figs. 24—25

Eponides brönnimanni Cushman & Renz 1946, Cush. Labor. Foram. Res., Spec., Public., no. 18, p. 45, pl. 7, fig. 24.
Occurence: Upper Campanian, Ivanca Creek; Lower Maestrichtian, Ulveș Creek.
Dimensions: Diameter 0,40 mm — 0,26 mm.
Hypotypes: L.P.B. 5366, 7178—7189.

Family Cibicididae Cushman 1927
Subfamily Cibicidinae Cushman 1927
Genus **Cibicides** de Montfort 1808
Cibicides ribbingi Brotzen
Pl. XXXI, figs. 17—19

Cibicides ribbingi Brotzen 1936, Sver. Geol. Unders., ser. C, no. 396, p. 186, pl. 13, fig. 5—6, text—fig. 67—68.
Occurence: Lower Coniacian, Floroaia Mică Creek.
***Dimensions:* Diameter 0,26 mm.**
***Hypotype:* L.P.B. 5387.**

Cibicides beaumontianus (d'Orbigny)
Pl. XXXI, figs. 17—19

Truncatulina beaumontiana D'Orbigny 1840, Soc. Geol. France, Mem., vol. 4, ser. 1, p. 35, pl. 3, fig. 17—19.
Truncatulina convexa Reuss 1851, Haidinger's Naturw. Abh., vol. 3, p. 36, pl. 4, fig. 4.
Cibicides beaumontianus (D'Orbigny) — Marie 1941, Mus. Nat. Hist. Nat. Mem. n. ser., vol. 12, fasc. 1, p. 249, pl. 37, fig. 352—354; Hagn 1953, Paläontographica, vol. 104 A, p. 100, pl. 8, fig. 20; Hofker 1957, Beih. Geol. Jb., vol. 27, p. 94, text — fig. 97; Ebensberger 1962, Paläontographica vol. 120 A, p. 95, pl. 9, fig. 8.
Occurence: Campanian, Ulveș Creek.
Dimensions: Diameter 0,31 mm.
Hypotype: L.P.B. 5372.

Cibicides voltzianus (d'Orbigny)
Pl. XXXVII, figs. 4—6

Rotalina voltziana D'Orbigny 1840, Soc. Geol. France, Mem. vol. 4, ser. 1, p. 31, pl. 2, fig. 32—34.
Truncatulina voltziana (D'Orbigny) — Franke 1928, Preuss. Geol. Landesanst. Abh., n. ser., vol. 111, p. 177, pl. 16, fig. 7.
Cibicides voltziana (D'Orbigny) forma *typica* Marie 1941, Mus. Nat. Hist. Nat. Mem., vol. 12, fasc. 1, p. 247, pl. 37, fig. 345—347.
Gavelinopsis voltzianus (D'Orbigny) — Hofker 1957, Beih. Geol. Jb, vol. 27, p. 336, text-fig. 387—388
Cibicidoides vltzianus (D'Orbigny) — Ebensberger 1962, Paläontographica, vol. 120 A, p. 97, pl. 9 fig. 12, text — fig. 17—19.
Occurence: Campanian, Ulveș Creek.
Dimensions: Diameter 0,39 mm — 0,31 mm.
Hypotypes: L.P.B. 5400, 8840—8849.

Superfamily Cassidulinacea d'Orbigny 1839
Family Pleurostomellidae Reuss 1860
Subfamily Pleurostomellinae Reuss 1860
Genus **Pleurostomella** Reuss 1860
Pleurostomella globulifera Franke
Pl. XXX, figs. 29—30

Pleurostomella globulifera Franke 1912, Verhandl. Naturhist. Verens. Preuss. Rheinland u. Westfal., Jahrg., vol. 69, p. 265, pl. 6, fig. 3.
Occurence: Campanian, Mădăraș Creek, 833 Hill.
Dimensions: Length 0,50 mm — 0,31 mm.
Hypotypes: L.P.B. 7950—7954.

Pleurostomella velascoensis Cushman
Pl. XXXII, figs. 1—2

***Pleurostomella velascoensis* Cushman 1926, Am. Assoc. Petrol. Geol. Bull., vol. 10, p. 590, pl. 16, fig. 4; 1946, U. S. Geol. Survey Prof. Paper, 206, p. 133, pl. 55, fig. 12.**
Occurence: Campanian, Ivanca Creek, Mădăraș Creek.
Dimensions: Length 0,62 mm — 0,39 mm.
Hypotypes: L.P.B. 7936—7949.

Pleurostomella zuberi Grzybowski
Pl. XXXI, figs. 7—15

Pleurostomella zuberi Grzybowski 1896, Akad. Um. Krakow, Rozpr., vol. 30, pl. 9, fig. 32—33.
Occurence: Campanian, Ivanca Creek, Mădăraș Creek, Ulveș Creek,

Dimensions: Length 0,58 mm — 0,34 mm.
Remarks: By the buliminid aspect of the last chambers and particularly, of the last one, the irregular aspect and rapid development of these in comparison with the chambers of the early stage, this species is clearly defined. It is possible that the species represents, the early stage of a robust *Pleurostomella* may be *P. pseudocurta* Neagu. Unfortunately because we could not sow the Grzybowski's material it is only a supposition.
Hypotypes: L.P.B. 5341, 8096—8162.

Pleurostomella dacica Neagu[3] n.sp.
Pl. XXX, figs. 1—7

Test free, elongated with a pronounced polymorphinid aspect; chambers of the early stage have compact biserial disposition and irregular alternate disposition in the adult stage; sutures right or a little ondulated aspect and much elongated; semilunate terminal aperture have a small rounded hood.
Occurence: Upper Campanian-Lower Maestrichtian, Ivăncuța Creek.
Dimensions: Length (holotype) 0,77 mm; thickness 0,21 mm; (paratype) length 1,34 mm — 0,05 mm; thickness 0,43 mm — 0,19 mm.
Remarks: The specimens of this species are regarding to belong to genus *Pleurostomella* after the general aspect of the test and the aperture. It is named after the Dacs — the oldest people who lived in the Eastern Carpathian region.
Holotype: L.P.B. 5461.
Paratypes: L.P.B. 5462—5470.

Pleurostomella pseudocurta Neagu[3]
Pl. XXX, figs. 10—22

Test free, robust, early stage acute with the alternate dispositions of the chambers; adult stage with large, globulous, irregular, monoseriate chambers, rapidly increasing in dimensions; sutures deeep and oblique; aperture semilunate is terminal in having a rounded hood.
Occurence: Campanian, Ivanca Creek, Mădăraș Creek, Ulveș Creek.
Dimensions: Length (holotype) 1,24 mm; thickness 0,58 mm; (paratype) length 1,03 mm — 0,55 mm; thickness 0,43 mm — 0,29 mm
Remarks: The early stage nearly this species to *Pleurostomella curta* Cushman, but differs from Cushman's species by the acute aspect of it and the oblique aspect of the sutures. By *Nodosarella coalingensis* Cushman & Church it differ from the clear irregular monoseriate disposition and the aspect more globulous of the chambers.
Holotype: L.P.B. 8019.
Paratype: L.P.B. 8020—8049.

Genus **Ellipsoglandulina** Silvestri 1900
Ellipsoglandulina chilostoma (Rzehak)
Pl. XXX, fig. 9

Glandulina laevigata D'Orbigny var. *chilostoma* Rzehak 1895, k. k. Naturhist. Hoffmus., An., vol. 10,; p. 219, pl. 7, fig. 5.
Daucina chilostoma (Rzehak) — White 1929, Jour. Pal., vol. 3, no. 1, p. 55, pl. 5, fig. 19—20.
Ellipsoglandulina velascoensis Cushman 1926, Am. Assoc. Petrol. Geol. Bull. vol. 10, p. 590, pl. 16, fig. 7; 1946, U.S. Geol. Survey Prof. Paper 206, p. 137, pl. 56, fig. 37; Said and Kenawy 1956, Micropaleontology, vol. 2, no, 2, p. 147, pl. 4, fig. 36.
Occurence: Turonian, Hărcăoaia Creek; Campanian, Ivanca Creek, Mădăraș Creek.
Dimensions: Length 0,67 mm — 0,31 mm.
Hypotypes: L.P.B. 5348, 7948—7973.

Ellipsoglandulina ellissi Said & Kenawy
Pl. XXX, fig. 8

Ellipsoglandulina ellissi Said & Kenawy 1956. Micropaleontology, vol. 2, no, 2, p. 146, pl. 4, fig. 34.
Occurence: Campanian, Ivanca Creek, Mădăraș Creek, Ivăncuța Creek.
Dimensions: Length 1,00 mm — 0,67 mm.
Hypotypes: L.P.B. 5349, 7974—7984.

Ellipsoglandulina "laevigata Silvestri"
Pl. XXXI, fig. 3

Ellipsoglandulina laevigata Silvestri — Franke 1928, Preuss. Geol. Landesanst. Abh. n. ser. vol. 111, p. 56, pl. 4, fig. 34.
Occurence: Campanian, Ivanca Creek.
Dimensions: Length 0,60 mm; thickness 0,34 mm.
Hypotype: L.P.B. 5347.

Genus **Ellipsopolymorphina** Silvestri 1901
Ellipsopolymorphina sp. aff. *Ellipsopolymorphina schlichti* (Silvestri)

Ellipsopolymorphina sp. aff. *E. schlichti* (Silvestri) — Graham and Church 1963, Stanford Univ. Pul. Geol. Sci., vol. 8, no. 1, p. 67, pl. 8, fig. 7a—c.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek.
Dimensions: Length 0,31 mm — 0,130 mm; thickness 0,24 mm.
Remarks: Our specimens have a large globulous last formed chamber, and two smaller earlier ones, corrresponding with Graham and Church's material.
Hypotypes: L.P.B. 9090.

Genus **Ellipsoidella** Heron Allen & Earland 1910

Ellipsoidella pleurostomelloides Herron Allen & Earland
Pl. XXI, fig. 6

Ellipsoidella pleurostomelloides Heron Allen & Earland — Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, pl. 146, pl. 4, fig. 39.
Occurence: Upper Turonian, Craca Mare Creek; Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.
Dimensions: Length 0,79 mm — 0,53 mm.
Hypotypes: L.P.B. 5345, 8007—8012, 8051—8052.

Ellipsoidella elongata (Storm)
Pl. XXXI, figs. 23—27

Ellipsodimorphina elongata Storm 1931, Firgenwald, vol. 4, fasc. 1/2, p. 27, text — fig. 1.
Occurence: Campanian, Ivanca Creek, Mădăraş Creek.
Dimensions: Length 1,20 mm — 0,60 mm.
Hypotypes: L.P.B. 7994—8003.

Ellipsoidella divergens (Storm)
Pl. XXXI, figs. 28—30

Ellipsodimorphina divergens Storm 1929, Lotos, vol. 77, fasc. 3—5, p. 52, text — fig. 10.
Occurence: Campanian, Mădăraş Creek, Ivanca Creek.
Dimensions: Length 1,32 mm — 0,62 mm.
Hypotypes:: L.P.B. 7985—7993.

Ellipsoidella subnodosa (Guppy)
Pl. XXXI, fig. 16

Ellipsonodosaria subnodosa (Guppy) — Cushman and Jarvis 1932, U. S. Nat. Mus. Proc., vol. 80, art. 14, p. 45, pl. 13, fig. 11—13; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 137, pl. 56, fig. 30—31.
Nodosarella subnodosa (Guppy) — Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 146, pl. 4, fig. 31.
Occurence: Lower Maestrichtian, Ulveş Creek; Campanian, Ulveş Creek.
Dimensions: Length 1,94 mm.
Hypotypes: L.P.B. 5343, 5450.

Ellipsoidella kugleri (Cushman & Renz)
Pl. XXXII, figs. 3—7

Nodosarella kugleri Cushman & Renz 1946, Cushen Labor. Foram. Res. Spec., Publ., no. 18, p. 42, pl. 6, fig. 30, 33.
Occurence: Campanian, Ulveş Creek, Ivanca Creek.
Dimensions: Length 0,50 mm — 0,39 mm.
Hypotypes: L.P.B. 8013—8017.

Ellipsoidella multicostata (Galloway & Morrey)
Pl. XXXI, fig. 2

Ellipsoglandulina multicostata (Galloway & Morrey) — Beckmann 1953, Eclogae Geol. Helv. vol. 46, no. 2, p. 380, pl. 23, fig. 13.
Occurence: Campanian, Ivanca Creek; Lower Maestrichtian Ulveş Creek.
Dimensions: Length 0,91 mm — 0,79 mm.
Hypotypes: L.P.B. 5342, 8018.

Family LOXOSTOMIDAE Loeblich & Tappan 1962

Genus **Aragonia** Finlay 1939

Aragonia ouezzanensis (Rey)
Pl. XXXIX, figs. 7—8

Textularia flabelliformis Grzybowski (not Gümbel) 1896, Akad. Um. Krakow Rozpr., vol. 30, p. 286, pl. 9, fig. 14.
Bolivinella sp. Hanzlikowa 1953, Ustr. Ust. Geol., Sbornik, Ann., vol. 20, pl. 2, fig. 5.
Bolivinoides ouezzanensis Rey 1954, Soc. Geol. France, Bull. ser. 6, vol. 4, p. 210, pl. 12, fig. 2.
Aragonia ouezzanensis (Rey) — Liszkowa 1959, Instyt. Geol., Bull. 131, Geol. Carpath. Research., vol. 2, p. 70, pl. 3, fig. 7—8.
Occurence: Upper Turonian-Lower Coniacian, Floroaia Mică Creek; Campanian, Ulveş Creek, Ivanca Creek, Mădăraş Creek, Ulveş Hill.
Dimensions: Length 0,36 mm — 0,26 mm; breadth 0,34 mm — 0,26 mm.
Hypotypes: L.P.B. 5327, 6799—6814.

Family INVOLUTINIDAE Butschli 1880

Genus **Trocholina** Paalzow 1922

Trocholina infragranulata Noth
Pl. XXXII, figs. 13—14

Trocholina infragranulata Noth 1951, Austria Geol. Bundesanst. Jb. Sonderband 3, p. 69, pl. 1, fig. 32; Sztejn

1957, Instyt. Geol. Prace, vol. 22, p. 79, pl. 9, fig. 90; Iovcheva 1962, Bulgar. Geol. Soc. Review, vol. 23, no. 1, p. 55, pl. 2, fig. 19–21.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 0,39 mm — 0,24 mm; thickness 0,14 mm — 0,096 mm.

Hypotypes: L.P.B. 9091.

Trocholina aptiensis Iovcheva

Pl. XXXII, figs. 10–12

Trocholina aptiensis Iovcheva 1962, Bulgar. Geol. Soc. Review, vol. 23, no. 1, p. 55, pl 2, fig. 22–27.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 0,53 mm; thickness 0,26 mm.

Hypotype: L.P.B. 9092.

Family NONIONIDAE Schultze 1854

Subfamily CHILOSTOMELLINAE, Brady 1881

Genus **Allomorphina** Reuss in Czjzek 1849

Allomorphina cretacea Reuss

Pl. XXXII, figs. 16–17

Allomorphina cretacea Reuss 1851, Haidinger's Naturw. Abh., vol. 4, no. 1, p. 42, pl. 5, fig. 6; Cushman and Todd 1949, Cush. Labor. Foram. Res. Contrib., vol. 25, pt. 2, p. 61, pl. 11, fig. 3–4; Dain 1952, Trudy Vses. Neft. Naukno. Isledov. Geol. Razved. Instit. n. ser. no. 63, p. 119, pl. 1, fig. 2; Ebensberger 1962, Paläontographica vol. 120 A, p. 84.

Occurence: Turonian, Gurmezea Creek, Dobîrlău Creek; Campanian, Mădăraş Creek; Ivanca Creek; Lower Maestrichtian, Ulveş Creek.

Dimensions: Length 0,89 mm — 0,39 mm.

Hypotypes: **L.P.B. 5323, 8269–8292.**

***Allomorphina trigona* Reuss**

Pl. XXXII, fig. 15

Allomorphina trigona Reuss 1850, k. Akad. Wiss. Wien, Math. — Naturw. Cl. Denksch., vol. 1, p. 380, pl. 48, fig. 14; Cushman and Todd 1946, Cush. Labor. Foram. Research. Conrib., vol. 22, pt. 3, p. 63, pl. 11, fig. 11–15; 1949 idem, vol. 25, pt. 3, p. 67, pl. 12, fig. 1–2; Dain 1952, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit., n. ser. no. 63, p. 119, pl. 1, fig. 3–4.

Occurence: Campanian, Ulveş Creek, Mădăraş Creek.

Dimensions: Length 0,63 mm — 0,24 mm.

Hypotypes: L.P.B. 5322, 8293–8302, 8493–8495.

Genus **Quadrimorphina** Finlay 1939

Quadrimorphina allomorphinoides (Reuss)

Pl. XXXII, fig. 20

Valvulina allomorphinoides Reuss 1860, k. Akad. Wiss. Wien, Math. — naturw., Cl., Sitzber., vol. 40, p. 233, pl. 11, fig. 6.

Allomorphina allomorphinoides (Reuss) — White 1928, Jour. Pal., vol. 2, no. 3, p. 304, pl. 41, fig. 8; Hofker 1957, Beih. Geol. Jb., vol. 27, p. 197, text–fig. 242–244.

Discorbina allomorphinoides (Reuss) — Franke 1928, Preuss. Geol. Landesanst. Abh. n.ser, vol. 111, p. 189, pl. 18, fig. 7.

Valvulineria allomorphinoides (Reuss) — Brotzen 1936, Swer. Geol. Unders. ser. C, no. 396, p. 153, pl. 11, fig. 1; Cushman 1946, U. S. Geol. Survey, Prof. Paper 206, p. 138, pl. 51, fig. 6 (non fig. 7).

Quadrimorphina allomorphinoides (Reuss) — Cushman and Todd 1949, Cush. Labor. Foram. Research. Contrib., vol. 25, pt. 3, p. 69, pl. 12, fig. 10–12; Hagn 1953, Paläontographica vol. 104 A, p. 90, pl. 8, fig. 17; Ebensberger 1962, Paläontographica vol. 120 A, p. 84, pl. 10, fig. 24.

Gyromorphina allomorphinoides (Reuss) — Dain 1952, Trudy Vses. Neft. Naukno. Isledov. Geol. Razved. Instit. n. ser. no. 63, p. 121, pl. 1, fig. 6–9.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,70 mm — 0,31 mm.

Hypotypes: L.P.B. 5326, 8303–8337.

Quadrimorphina allomorphinoides polycamerata Neagu[3]

Pl. XXXII, figs. 18–23

Test trochospiral, spiral side flat or little convex, ombilical side concave-convex; the last whorl is formed by 5 to 6 globulous chambers with deep sutures. The last chamber has a typical valvular extension which covers 1/3 — ½ from the deep umbilicus.

Occurence: **Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.**

Dimensions: Diameter (holotype) 0,40 mm; breadth 0,34 mm; height of the last formed chamber 0,21 mm; (paratypes) diameter 0,60 mm — 0,34 mm; breadth 0,50 mm — 0,29 mm; heigth of the last formed chamber 0,31 mm — 0,14 mm.

Remarks: This subspecies is distinguished from *Q. allomorphinoides* (Reuss) by its many than 4 chambers on the last whorl.

Holotype: L.P.B. 5324.

Paratypes: L.P.B. 5325, 8338–8380.

Quadrimorphina minuta (Cushman)
Pl. XXXII, figs. 24–25

Allomorphina minuta Cushman – Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 145, pl. 60, fig. 6; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rpt. Investig. no. 22, p. 126, pl. 19, fig. 14; Hofker 1957, Beih. Geol. Jb. vol. 27, p. 198, text–fig. 242.

Occurence: Campanian, Ivanca Creek.
Dimensions: Length 0,43 mm – 0,24 mm; thickness 0,31 mm – 0,21 mm.
Hypotypes: L.P.B. 8882–8884.

Subfamily NONIONINAE Schultze 1854
Genus **Pullenia** Parker & Jones in Carpenter, Parker & Jones 1862

Pullenia quaternaria (Reuss)
Pl. XXXIII, figs. 5–6

Nonionina quaternaria Reuss 1851, Haidinger's Naturw. Abh., vol. 4, no. 1, p. 34, pl. 2, fig. 13.
Pullenia quaternaria (Reuss) – Cushman 1936, Cush. Labor. Foram. Res. Contrib. vol. 12, pt. 4, p. 74; Cushman and Todd 1943, idem, vol. 19, pt. 1, p. 2, pl. 1, fig. 1–4; Hagn 1953, Paläontographica vol. 104 A, p. 91, pl. 8, fig. 19.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,46 mm – 0,2 6mm.
Hypotypes: L.P.B. 8241–8255.

Pullenia cretacea Cushman
Pl. XXXIII, figs. 7–8

Pullenia cretacea Cushman 1936, Cush. Labor. Foram. Res. Contrib., vol. 12, pt. 4, p. 75, pl. 13, fig. 8; Cushman and Hedberg 1941, idem, vol. 17, pt. 4, p. 98, pl. 23, fig. 17; Cushman and Todd 1943, idem, vol. 19, pt. 1, p. 7, pl. 1, fig. 14; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 146, pl. 60, fig. 9; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig., no. 22, p. 126, pl. 19, fig. 19; Hofker 1956, Soc. Geol. Belge, Ann., vol. 81, p. 486, pl. 5. fig. 29: Liszkowa 1959, Instyt. Geol. Bull., 131, Geol. Carpath., vol. 2, p. 76, pl. 4, fig. 8; Belford 1960, Bur. Min. Res. Geol. Geophys., Bull., no. 57, p. 88, pl. 29, fig. 13–15; Graham and Church 1962, Stanford Univ., Publ. Geol. Sci., vol. 8, no. 1, p. 68, pl. 8, fig. 13–14; McCugan 1964, Jour. Pal. vol. 38, no. 5, p. 947, pl 152, fig. 6.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.
Dimensions: Diameter 0,40 mm– 0,26 mm.
Hypotypes: L.P.B. 5339, 8188–8197, 8262–8263.

Pullenia americana Cushman
Pl. XXXII, figs. 29–30

Pullenia americana Cushman 1936, Cush. Labor. Foram. Res Contrib., vol. 12, pt. 4, p. 76, pl. 13, fig. 4–5; Cushman and Todd 1943, idem, vol. 19, pt. 1, p. 7, pl. 1, fig. 16; Cushman 1946, idem, vol. 20, pt. 1, p. 11, p. 3, fig. 6; Cushman and Deaderick 1944 Jour. Pa'., vol. 18, no. 4, p. 339, pl. 53, fig. 25; Cushman 1946, U. S. Geol. Survey, Prof. Paper, 206, p. 146 pl. 60, fig. 13–14: Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 126, pl. 19, fig. 21; Belford 1960, Bur. Min. Res. Geol. Geophys. Bull., no. 5, p. 89, pl. 24, fig. 16–18.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.
Dimensions: Diameter 0,48 mm – 0,21 mm.
Hypotypes: L.P.B. 5321, 8202–8229, 8256–8259.

Pullenia reussi Cushman & Todd
Pl. XXXII, figs. 3–4

Pullenia reussi Cushman & Todd 1943, Cush-Labor. Foram. Res. Contrib. vol. 19, pt. 1, p. 4, pl. 1, fig. 10–12; Hagn 1953, Paläontographica vol. 104 A, p. 91, pl. 8, fig. 22; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 156, pl. 7, fig. 22; Belford 1960, Bur. Min. Res. Geol. Geophys. Bull. no. 57, p. 90, pl. 24, fig. 19–21.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian Ulveş Creek.
Dimensions: Diameter 0,40 mm – 0,29 mm.
Hypotypes: L.P.B. 5337, 8230–8240.

Pullenia minuta Cushman
Pl. XXXII, figs. 31–32

Pullenia minuta Cushman 1936, Cush. Labor. Foram. Res. Contrib., vol. 12, pt. 4, p. 77, pl. 13, fig. 7; Cushman and Todd 1943, idem, vol. 19 pt. 1, p. 8, pl. 1, fig. 7; Cushman 1946, idem, vol. 20, pt. 4, p. 70, pl. 12, fig. 10; Cushman 1946, U S. Geol. Survey Prof. Paper 206, p. 147, pl. 60, fig. 12; Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 126, pl. 19, fig. 20.

Occurence: Campanian, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,34 mm – 0,21 mm.
Hypotypes: L.P.B. 8174–8187.

Pullenia jarvisi Cushman
Pl. XXXII, figs. 1–2

Pullenia quinqueloba Cushman & Jarvis (non Reuss) 1932, U. S. Nat. Mus. Proc. vol. 80, art. 14, p. 49, pl. 15, fig. 4.

Pullenia jarvisi Cushman 1936, Cush. Labor. Foram. Res. Contrib., vol. 12, pt. 4, p. 77, pl. 13, fig. 6; Cushman and Todd 1943, idem, vol. 19, pt. 1, p. 9, pl. 1, fig. 15; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 147, pl. 60, fig. 15.

Occurence: Campanian, Ulveş Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,48 mm — 0,34 mm.
Hypotypes: L.P.B. 5340, 8164—8178.

Pullenia dampelae Dain
Pl. XXXII, figs. 27—28

Pullenia dampelae Dain 1952, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 63, p. 134, pl. 4, fig. 1—3.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,40 mm — 0,31 mm.
Hypotypes: L.P.B. 5338, 8198—8201, 8260—8261.

Family OSANGULARIIDAE Loeblich and Tappan 1964
Genus **Osangularia** Brotzen 1940
Osangularia cretacea (Carbonier)
Pl. XXXV, figs. 7—12; pl. 39, figs. 9—11

Parella cretacea Carbonier 1952, Soc. Geol. France, Bull., ser. 6, vol. 2, fasc. 1—3, p. 115, pl. 5, fig. 9 a—c; Neagu 1959, Univ. Bucureşti, Ann., ser. St. Nat., vol. 21, pl. 10, fig. 22—24.

Occurence: Vraconian, Buzău Valley; Cenomanian, Teliu Valley, Stînii Hill.
Dimensions: Diameter 0,39 mm — 0,29 mm.
Hypotypes: L.P.B. 9093—9094.

Osangularia whitei whitei (Brotzen)
Pl. XXXIII, figs. 14—16

Eponides whitei Brotzen 1936, Sver. Geol. Unders. ser. C, no. 396, p. 67, pl. 12, fig. 5.
Parella whitei whitei (Brotzen), Vassilenko 1961, Trudy Vses. Neft. Naukno. Isledov. Geol. Razved., Instit., n. ser. no. 171, p. 92, pl. 14, fig. 5.

Occurence: Middle-Upper Turonian, Brazilor Creek, Dobîrlău Creek, Scrădoasa Creek.
Dimensions: Diameter 0,48 mm — 0,20 mm.
Hypotypes: L.P.B. 7639—7646, 8626 8629,—8633.

Osangularia whitei polycamerata (Vassilenko)
Pl. XXXIII, figs. 23—24

Parella whitei polycamerata Vassilenko 1961, Trudy Vses. Neft. Naukno. Isledov. Geol Razved. Instit. n. ser. no. 171, p. 92, pl. 15, fig. 1—3.

Occurence: Middle-Upper Turonian, Cîrlanului Creek.
Dimensions: Diameter 0,34 mm — 0,21 mm.
Hypotypes: L.P.B. 5359, 8623—8627.

Osangularia florealis (White)
Pl. XXXIII, figs. 17—19

Gyroidina florealis White 1928, Jour. Pal. vol. 2, no. 4, p. 293, pl. 40, fig. 3; Noth 1951, Austria Geol. Bundesanst. Jb., Sonderband 3, p. 70, pl. 7, fig. 8.
Pulvinulinella florealis (White) — Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 144, pl. 59, fig. 11—12.
Osangularia florealis (White) — Liszkowa 1959, Instyt. Geol. Bull. 131, Geol. Carpath. vol. 2, p. 74, pl. 4, fig. 7; Geroch 1960, idem, Bull. 153, vol. 5, pl. 8, fig. 10.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian, Ivăncuţa Creek.
Dimensions: Diameter 0,60 mm — 0,43 mm.
Hypotypes: L.P.B. 5362, 8525—8569.

Osangularia spinea (Cushman)
Pl. XXXIII, figs. 9—10

Truncatulina spinea Cushman 1926, Cush. Labor. Foram. Res. Contrib., vol. 2, pt. 1, p. 22, pl. 2, fig. 10.
Eponides spinea (Cushman) — Cushman 1927, Jour. Pal., vol. 1, no. 2, p. 165, pl. 27, fig. 1.
Eponides? spinea (Cushman) — Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 142, pl. 57, fig. 16; Graham and Church 1963, Stanford Univ. Geol. Sci. vol 8, no. 1, p. 57, pl. 6, fig. 19.

Occurence: Campanian, Ulveş Creek, Ivanca Creek, Ivăncuţa Creek.
Dimensions: Diameter 0,48 mm — 0,31 mm.
Hypotypes: L.P.B. 8496—8524.

Osangularia cordieriana (d'Orbigny)
Pl. XXXIII, figs. 11—13

Rotalina cordieriana D'Orbigny 1840, Soc. Geol. France, Mem., vol. 4, p. 33, pl. 3, fig. 9—11.
Pulvinulinella cordieriana (D'Orbigny) — Marie 1941, Mus. Nat. Hist. Nat., Mem. n. ser., vol. 12, fasc. 1, p. 228, pl. 35, fig. 329—330.
Osangularia cordieriana (D'Orbigny) — Bieda 1958, Instyt. Geol. Bull. 121, ser. Micropaleont., vol. 3, p. 54, text—fig. 21; Ebensberger 1962, Paläontographica, vol 120 A, p. 93, pl. 11, fig. 1.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ulveş Creek.
Dimensions: Diameter 0,70 mm — 0,50 mm.
Hypotypes: L.P.B. 5258, 8570—8586, 8601—8614.

Osangularia navarroana (Cushman)

Pl. XXXIII, figs. 20–22

Pulvinulinella navarroana Cushman 1938, Cush. Labor' Foram. Res. Contrib., vol. 14, pt. 2, p. 66, pl. 11, fig. 5; 1946, U.S. Geol. Survey Prof. Paper 206, p. 144, pl. 60, fig. 2.

Pseudoparella navarroana (Cushman) – Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 126, pl. 19, fig. 9.

Occurence: Campanian, Ivanca Creek, Ulveș Creek.

Dimensions: Diameter 0,55 mm – 0,36 mm.

Hypotypes: L.P.B. 8587–8600, 8616–8622.

Genus **Globorotalites** Brotzen 1942

Globorotalites morrowi Goel

Pl. XXXVII, figs. 7–12

Globorotalites morrowi Goel 1965, Bur. Rech. Geol. Min. Bull, no. 5, p. 110, pl. 3, fig. 4.

Occurence: Cenomanian, Teliu Creek.

Dimensions: Diameter 0,46 mm – 0,36 mm; thickness 0,34 mm – 0,26 mm; height of the aperturale face 0,12 mm – 0,9 mm.

Remarks: The specimens of genus *Globorotalites* have a large morphological variety in dimensions, more and less conical aspect of the umbilical side, deepness of the umbilicus and the height of the apertural face of the last formed chamber. Taking in consideration all these characters Goel (1965) tried to clear up the material from Turonian and Senonian from Paris Basin. Unfortunately, his conception about the species was not in the maner of the "International code of Zoological nomenclature". Many of his new species are very hard to identify because these are not found on a population study, but only on a small number of specimens. In our opinion many of his new species can be considered in a best situation that subspecies.

Hypotypes: L.P.B. 7860–7865.

Globorotalites conicus conicus (Carsey)

Pl. XXXVI, figs. 16–18

Truncatulina refulgens (Montfort) var. *conica* Carsey 1926, Texas Univ. Bull. 2612, p. 46, pl. 4, fig. 15 a–b.

Globorotalites conicus (Carsey) – Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 130, pl. 20, fig. 31; Belford 1960, Bur. Min. Res. Geol. Geophys., Bull. no. 57, p. 100, pl. 30, fig. 8–13; Goel 1965, Bur. Rech. Geol. Min., Bull. no. 5, p. 105, pl. 2, fig. 3,7.

Occurence: Campanian, Ivanca Creek.

Dimensions: Diameter 0,36 mm – 0,31 mm; thickness 0,24 mm – 0,21 mm; height of the apertural face 0,07 mm – 0,04 mm.

Hypotypes: L.P.B. 7848–7849.

Globorotalites conicus plummerae (Goel)

Pl. XXXVII, figs. 1–6

Eponides micheliana Plummer (non D'Orbigny) 1931, Texas Univ., Bull. 31011, p. 192, pl. 14, fig. 11.

Globorotalites sp. 2 Ten Dam and Magné 1948, Rev. Ist. Fr. Petrol vol. 3, no. 8, p. 226.

Globorotalites plummerae Goel 1965, Bur. Rech. Geol. Min. Bull. no. 5, p. 121, pl. 5, fig. 4–5.

Occurence: Campanian, Ivanca Creek.

Dimensions: Diameter 0,36 mm – 0,31 mm; thickness 0,21 mm, height of the apertural face 0,09 mm – 0,04 mm.

Hypotypes: L.P.B. 7836–7847.

Globorotalites conicus laffittei (Goel)

Pl. XXXVI, figs. 10–15

Globorotalites laffittei Goel 1965, Bur. Rech. Geol. Min. Bull. no. 5, p. 112, pl. 3, fig. 7–8.

Occurence: Campanian, Ivanca Creek, Mădăraș Creek.

Dimensions: Diameter 0,36 mm – 0,31 mm; thickness 0,19 mm – 0,14 mm; heigth of the apertural face 0,09 mm – 0,07 mm.

Hypotypes: L.P.B. 7850 – 7854.

Globorotalites conicus cushmani (Goel)

Pl. XXXVI, figs. 7–9

Globorotalites cushmani Goel 1965, Bur. Rech. Geol. Min. Bull. no. 5, p. 108, pl. 3, fig. 1–2.

Occurence: Campanian, Ivanca Creek.

Dimensions: Diameter 0,31 mm – 0,29 mm; thickness 0,17 mm; height of the apertural face 0,07 mm.

Hypotypes: L.P.B. 7855–7859.

Globorotalites conicus rarisepta (Goel)

Pl. XXXVI, figs. 1–3

Globorotalites rarisepta Goel 1965, Bur. Rech. Geol. Min. Bull. no. 5, p. 103, pl. 2, fig. 1–2.

Occurence: Campanian, Ivanca Creek.

Dimensions: Diameter 0,36 mm; thickness 0,21 mm; height of the apertural face 0,07 mm.

Hypotype: L.P.B. 7862–7864.

Genus **Gyroidinoides** Brotzen 1942

Gyroidinoides depressa (Alth)

Pl. XXXI, figs. 31–33

Rotalina depressa Alth 1850, Haidinger's Naturw. Abh. vol. 3, p. 266, pl. 13 fig. 21.

Gyroidina depressa (Alth) – Cushman and Jarvis

1932, U. S. Nat. Mus. Proc. vol. 80, art. 14, p. 46, pl. 14, fig. 1; Loetterle 1937, Nebraska Geol. Survey Bull. ser. 2, vol. 12, p. 42, pl. 6, fig. 7; Cushman and Deaderick 1944, Jour. Pal., vol. 18, no. 4, p. 339, pl. 53, fig. 19–20; Cushman 1946, U. S. Geol. Survey Prof. Paper 206, p. 139, pl. 58, fig. 1–2 (non fig. 3–4); Frizzell 1954, Texas Univ. Bur. Econ. Geol. Rept. Investig. no. 22, p. 123, pl. 18, fig. 36; Said and Kenawy 1956, Micropaleontology, vol. 2, no. 2, p. 149, pl. 5, fig. 11.

Occurence: Campanian, Ulveş Creek, Ivanca Creek.

Dimensions: Diameter 0,34 mm — 0,24 mm.

Hypotypes: L.P.B. 5350, 8491–8492.

Gyroidinoides nitidus (Reuss)

Pl. XXXI, figs. 25–27

Gyroidina nitida (Reuss) — Loetterle 1937, Nebraska Geol. Survey, Bull. ser. 2, vol. 12, p. 42, pl. 6, fig. 8; Frizzell 1943, Jour. Pal., vol. 17, no. 3, p. 351, pl. 57, fig. 6; Cushman 1946, U.S. Geol. Survey, Prof. Paper 206, p. 140, pl. 58, fig. 5; Mjatlyuk 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 71, p. 54, pl. 3, fig. 2–4.

Gyroidinoides nitidus (Reuss) — Hofker 1957, Beih. Geol. Jb. vol. 27, p. 393, text — fig. 437–440, 444; Ebensberger 1962, Paläontographica vol. 120 A, p. 9, pl. 9, fig. 11.

Occurence: Turonian, Dobîrlău Creek; Campanian, Mădăraş Creek, Ivanca Creek.

Dimensions: Diameter 0,40 mm — 0,29 mm

Hypotypes: L.P.B. 8440–8468.

Gyroidinoides globosus (Hagenow)

Pl. XXXII, figs. 1–3

Rotalia globosa Reuss 1862, k. Akad. Wiss. Wien, Math. — Naturw. Cl. Sitzber., vol. 44, p. 330, pl. 7, fig. 2.

Gyroidina globosa (Hagenow) — Cushman and Jarvis 1932, U.S. Nat. Mus. Poc. vol. 80, art. 14, p. 47, pl. 14, fig. 3–4; Cushman and Deaderick 1944, Jour. Pal. vol. 18, no. 3, p. 339, pl. 53, fig. 21–22; Cushman 1946, U.S. Geol. Survey Prof. Paper 206, p. 140, pl. 58, fig. 6–8.

Gyroidinoides globosus (Hagenow) — Hofker 1857, Beih. Geol. Jb., vol. 27, p. 395, text — fig. 441; Ebensberger 1962, Paläontographica vol. 120 A, p. 90, pl. 9, fig. 3.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ulveş Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,53 mm — 0,29 mm.

Hypotypes: L.P.B. 8383–8439.

Gyroidinoides umbilicatus (d'Orbigny)

Pl. XLIII, figs. 4–6

Rotalina umbilicata D'Orbigny 1840, Soc. Geol. France, Mem. vol. 4, p. 32, pl. 3, fig. 4–6.

Rotalina nitida Beissel (non Reuss) 1891, Preuss. Geol. Landesanst. Abh., n. ser. vol. 3, p. 71, pl. 14, fig. 14–19.

Rotalia soldani D'Orbigny var. *umbilicata* (D'Orbigny) — Franke 1928, Preuss. Geol. Landesanst. Abh. n. ser vol. 111, p. 186, pl. 18, fig. 2.

Gyroidinoides umbilicatus (D'Orbigny) — Ebensberger 1962, Paläontographica, vol. 120 A, p. 90, pl. 9, fig. 1.

Occurence: Campanian, Ivanca Creek; Lower Maestrichtian, Ivăncuţa Creek, Ulveş Creek.

Dimensions: Diameter 0,58 mm — 0,40 mm.

Hypotypes: L.P.B. 5352, 8469–8490.

Gyroidinoides quadratus (Cushman)

Pl. XXXIII, figs. 28–30

Gyroidina quadrata Cushman & Church 1929, Calif. Acad. Sc. Proc. ser. 4, vol. 18, no. 16, p. 517, pl. 14, fig. 7–9; Graham and Church 1963, Standford Univ. Geol. Sci. Publ. vol. 8, no. 1, p. 58, pl. 7, fig. 2.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek, Ulveş Creek; Lower Maestrichtian Ulveş Creek.

Dimensions: Diameter 0,26 mm — 0,19 mm.

Hypotypes: L.P.B. 5363, 7103–7117, 8381–8382.

Family Anomalinidae Cushman 1927
Subfamily Anomalininae Cushman 1927
Genus **Gavelinella** Brotzen 1942

Gavelinella barremiana Bettenstaedt

Pl. XXXVII, figs. 13–15

Gavelinella barremiana Bettenstaedt 1952, Senckenbergiana, vol. 33, no. 4–6, 275, pl. 2, fig. 26–29; Bartenstein, Bettenstaedt and Bolli 1957, Eclogae Geol. Helv. vol. 50, no. 1, p. 47, pl. 7, fig. 168–169: Moullade 1960, Revue Micropaleontologie, vol. 3, no. 2, p. 137, pl. 2, fig. 6–8; Flandrin, Moullade and Porthault 1962, idem, vol. 4, no. 2, p. 220, pl. 3, fig. 14, 16; Michael 1966, Senckenbergiana leth. vol. 47, no. 5–6, p. 430, pl. 50, fig. 1–3.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 0,41 mm; thickness 0,13 mm.

Hypotypes: L.P.B. 9095.

Gavelinella intermedia (Berthelin)

Pl. XXXV, figs. 1–6

Anomalina intermedia Berthelin 1880, Soc. Geol. France, Mem., ser, 3, vol. 1, no. 5, p. 67, pl. 4, fig. 14.

Gavelinella intermedia (Berthelin) Bartenstein 1954, Senckenbergiana, vol. 35, no. 1–2, p. 49, pl. 1, fig. 21–28; Moullade 1960, Revue Micropaleontologie, vol. 2, no. 3, p. 138, pl. 2, fig. 15–17; Neagu

1965, Micropaleontology, vol. 11, no. 1, p. 32, pl. 8, fig. 1–2; Michael 1966, Senckenbergiana leth. vol. 47, no. 5–6, p. 432, pl. 40, fig. 4–13.

Anomalina (*Anomalina*) *suturalis* Mjatlyuk, Vassilenko 1954, Trudy Vses. Neft. Naukno. Isledov. Geol. Razved. Instit. n. ser. no. 80, p. 51, pl. 1, fig. 1.

Anomalina infracomplanata Mjatlyuk – Vassilenko 1954, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 80, p. 53, pl. 1, fig. 4.

Occurence: Upper Albian, Buzău Valley, Sita Buzăului.

Dimensions: Diameter 0,43 mm — 0,29 mm.

Hypotypes: L.P.B. 9095.

Gavelinella pertusa (Marsson)

Pl. XXXVII, figs. 16–18

Discorbina pertusa Marsson 1878, Mitt. Nat. Ver. Neuvorpommer. u. Rugen, p. 166, pl. 4, fig. 35.

Anomalina pertusa (Marsson) – Franke 1928, Preuss. Geol. Landesanst. Abh. n. ser. vol. 111, p. 182, pl. 17, fig. 4.

Gavelinella pertusa (Marsson) – Brotzen 1942, Sver. Geol. Unders. ser. C, no. 451, p. 41, pl. 1, fig. 1–2; Hagn 1953, Paläontographica vol. 104 A, p. 83, pl. 7, fig. 14; Hofker 1957, Beih. Geol. Jb. vol. 27, p. 291, text-fig. 345–346; Ebensberger 1962, Paläontographica, vol. 120 A, p. 89.

Occurence: Campanian, Mădăraş Creek, Ivanca Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Diameter 0,46 mm — 0,29 mm.

Hypotypes: L.P.B. 5367, 8797–8839.

Gavelinella clementiana clementiana (d'Orbigny)

Pl. XXXIV, figs. 13–18

Rosalina clementiana D'Orbigny 1840, Soc. Geol. France, Mem., vol. 4, p. 34, pl. 3, fig. 23–25.

Discorbis clementiana (D'Orbigny) – Marie 1941, Mus. Nat. Hist. Nat. n. ser., vol. 12, fasc. 1, p. 213, pl. 33, fig. 312.

Anomalina (*Pseudovalvulineria*) *clementiana* (D'Orbigny Vassilenko 1954, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 80, p. 90, pl. 9, fig. 6, pl. 10, fig. 1–3.

Pseudovalvulineria clementiana (D'Orbigny)–Hagn 1953, Paläontographica, vol. 104, A, p. 84, pl. 7, fig. 11.

Gavelinella clementiana (D'Orbigny) – Hofker 1957, Beih. Geol. Jb. vol. 27, p. 294, text – fig. 350–352.

Anomalina (*Pseudovalvulineria*) *clementiana* var. *clementiana* (D'Orbigny) – Vassilenko 1961, Trudy Vses. Neft. Naukno. Isledov. Geol. Razved. Instit. n. ser. no. 171, p. 121, pl. 22, fig. 4.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek, Ivăncuţa Creek; Lower Maestrichtian Ulveş Creek.

Dimensions: Diameter 0,60 mm — 0,39 mm.

Hypotypes: L.P.B. 5369, 8634–8642, 8666–8672.

Gavelinella clementiana laevigata (Marie)

Pf. XXXIV, figs. 7–12

Discorbis clementiana (D'Orbigny) var. *laevigata* Marie 1941, Mus. Nat. Hist. Nat. Mem. n. ser. vol. 12, fasc. 1, p. 212, pl. 33, fig. 209.

Anomalina (*Pseudovalvulineria*) *clementiana laevigata* (Marie) – Vassilenko 1961, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 171, p. 121, pl. 22, fig. 5.

Occurence: Campanian, Ivanca Creek, Mădăraş Creek; Lower Maestrichtian Ulveş Creek, Ivăncuţa Creek.

Dimensions: Diameter 0,60 mm — 0,43 mm.

Hypotypes: L.P.B. 5368, 8673–7831.

Gavelinella cayeuxi mangshlakensis (Vassilenko)

Pl. XXXIV, figs. 19–26

Anomalina (*Pseuudovalvulineria*) *cayeuxi mangslakensis* Vassilenko 1954, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 80, p. 94, pl. 11, fig. 1, pl. 12, fig. 1; 1961, p. 123, pl. 23, fig. 2, pl. 24, fig. 1.

Occurence: Campanian, Mădăraş Creek; Lower Maestrichtian, Ulveş Creek, Ivăncuţa Creek.

Dimensions: Diameter 0,36 mm — 0,31 mm

Hypotypes: L.P.B. 5370, 8740–8796.

Gavelinella bembix (Marsson)

Pl. XXXVII, figs. 19–20, pl. XXXVIII, figs. 1–3

Discorbis bembix Marsson 1878, Mitt. Naturw, Ver. Neuvorpomm. u. Rugen, Jahrg. vol. 10, p. 167, pl. 5, fig. 37.

Rotalia bembix (Marsson) – Franke 1928, Preuss. Geol. Landesanst. Anh. n. ser. vol. 111, p. 188, pl. 17, fig. 10.

Cibicides bembix (Marsson) – Marie 1941, Mus. Nat. Hist. Nat. Mem. n. ser., vol. 12, fasc. 1, p. 248, pl. 37, fig. 350–251; Hagn 1953, Paläontographica, vol. 104, A, p. 101, pl. 8, fig. 22.

Gavelinopsis bembix (Marsson) Hofker 1957, Beih. Geol. Jb. vol. 27, p. 330, text – fig. 383–384.

Gavelinopsis minimalis (Schijfsma) in Hofker 1957, Beih. Geol. Jb. vol. 27, p. 330, text – fig. 380–382.

Cibicidoides bembix (Marsson), Ebensberger 1962, Paläontographica, vol. 120 A, p. 96, pl. 11, fig. 4–5.

Occurence: Campanian, Ulveş Creek.

Dimensions: Diameter 0,29 mm — 0,21 mm.

Hypotypes: L.P.B. 5355, 8850–8881.

Superfamily ROBERTINACEA Reuss 1850
Family CERATOBULIMINIDAE Cushman 1927
Subfamily EPISTOMININAE Wedekind 1937
Genus **Epistomina** Terquem 1883

Epistomina ventriosa Espitalié & Sigal
Pl. XXXVIII, figs. 7–9

Epistomina ventriosa Espitalié & Sigal 1963. Ann. Geol. Madagascar, fasc. no. 32, p. 67, pl. 32, fig. 3.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 0,79 mm — 0,48 mm; thickness 0,50 mm — 0,29 mm.

Remarks: By the strong biconvex and asymetrical aspect of the test and by the spiral and ombilical weakly developped sutures this species is differing from *Epistomina caracolla* (Roemer) and, also by the rounded peripheral aspect of the test is differing from *E. carpenteri* (Reuss).

Hypotypes: L.P.B. 9097.

Epistomina spinulifera (Reuss)
Pl. XXXVIII, figs. 10–15

Rotalia spinulifera Reuss 1862, k. Akad. Wiss. Wien, Math. — Naturw. Cl., Sitzber. vol. 46, p. 93, pl. 13, fig. 3–5.

Epistomina spinulifera (Reuss) — Uhlig 1893, k. k. Geol. L. A. Jahrb., vol. 33, pl. 7, fig. 4–7; Ten Dam 1948, Rev. Insit. Francais Petrol, vol. 4, no. 6, p. 169, pl. 2, fig. 5; Mjatlyuk 1949, Mikrofauna SSSR, n. ser. vol. 2, no. 34, p. 207, pl. 4, fig. 3; 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 71, p. 217, pl. 7, fig. 4.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 0,72 mm — 0,53 mm; thickness 0,36 mm — 0,31 mm.

Hypotypes: L.P.B. 9098.

Epistomina juliae Mjatlyuk
Pl. XXXIX, figs. 1–6

Epistomina juliae Mjatlyuk 1949, Mikrofauna SSSR, n. ser. vol. 2, no. 34, p. 205, pl. 2, fig. 4–5; 1953, Trudy Vses. Neft. Naukno Isledov. Geol. Razved. Instit. n. ser. no. 71, p. 216 pl. 7, fig. 2–3.

Occurence: Lower Aptian (Bedoulian), Valea Carelor Creek.

Dimensions: Diameter 0,70 mm; thickness 0,36 mm.

Hypotypes: L.P.B. 9099.

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STUDIUL MICROPALEONTOLOGIC ŞI STRATIGRAFIC AL DEPOZITELOR CRETACICULUI SUPERIOR ÎNTRE VALEA SUPERIOARĂ A BUZĂULUI ŞI RÎUL NEGRU (CARPATII ORIENTALI)

(Rezumat)

Regiunea cercetată se poate încadra, în ansamblu, într-un poligon ce are în vîrfurile sale localităţile : Vama Buzăului, Sita Buzăului, Boroşneul Mic, Saciova, valea Dobîrlăului şi gara Poiana Florilor. Suprafaţa acestui poligon este de aproximativ 182 km p.

Orohidrografic regiunea se poate împărţi în două unităţi : una muntoasă cu înălţimi ce depăşesc 750 m altitudine şi alta depresionară cu altitudini inferioare acestei valori "depresiunea Întorsura Buzăului". Reţeaua hidrografică se distribuie la două mari bazine : bazinul văii Buzăului şi bazinul Rîului Negru.

Cele mai importante date din secolul XIX, privind geologia regiunii, aparţin lui Herbich care în 1878 publică lucrarea "Das Szekerland". Marele merit al acestei lucrări constă în faptul că, autorul chiar dacă a făcut unele confuzii, totuşi a reuşit să sesizeze clar deosebirea dintre depozitele Cretacicului inferior şi cele ale Cretacicului superior, deşi, aşa după cum afirmă el, datele paleontologice sînt aproape inexistente. Cercetările recente au dovedit că în mare măsură separaţia în cele două tipuri de depozite amintite este reală. După Herbich, cu studiul depozitelor cretacice din această regiune, nu se mai ocupă nimeni pînă după primul război mondial.

Lucrările de construire a tunelului de cale ferată Teliu-Întorsura Buzăului care încep în 1926 dau posibilitatea lui Jekelius (1930) să facă unele observaţii geologice în această regiune.

În 1927, prof. G. Macovei în ghidul excursiilor pentru cea de a doua reuniune a "Asociaţiei pentru avansarea geologiei Carpaţilor" ţinută la Bucureşti arată că "toate masivele muntoase cuprinse între Leaota, Sf. Gheorghe, Tg. Săcuiesc, Comarnic, confluenţa Teleajenului cu Telejenelul şi valea superioară a Buzăului sînt constituite din depozitele apţianului", în care autorul citat separă trei orizonturi : marno-şistos (în bază), grezos şi grezo-conglomeratic.

În 1936 M. G. Filipescu publică „Contribution à l'étude du Flysch interne compris entre rîul Crasna, Teleajen et Rîul Negru" în care aduce o serie de date noi privind această regiune. Se fixează astfel apariţia de marne roşii pe o linie tectonică majoră denumită „linia Crasna—Teliu—Măgheruş". După această linie depozitele Cretacicului inferior încalecă peste cele senonian-paleogene.

În 1956 Filipescu şi Neagu stabilesc vîrsta cenomaniană a marnelor roşii de la Teliu, pe baze micro- şi macropaleontologice.

Băncilă publică în 1958 „Geologia Carpaţilor Orientali" în care se cuprind date interesante privind şi această regiune.

Între 1960—1962 I. Marinescu publică o serie de articole privind geologia acestei regiuni. Autorul pune în evidenţă existenţa depozitelor turoniene şi senoniene pe baze macropaleontologice.

În cadrul Comitetului de Stat al Geologiei după 1963, au lucrat în această regiune mai

multe echipe de geologi ale căror rezultate sînt consemnate în rapoartele depuse în arhivă, fără a fi publicate. Numai Ştefănescu publică în 1964 date noi privind partea de sud a acestei regiuni (zona Vama Buzăului).

Din punct de vedere stratigrafic, litologic şi tectonic depozitele cretacice din această regiune se grupează în două mari unităţi şi anume : depozitele Cretacicului superior (Cenomanian-Maestrichtian inferior) cu cea mai mare dezvoltare ; depozitele Cretacicului inferior (Apţian-Albian) mai puţin răspîndite.

Caracterul general al microfaunei Cretacicului superior este dat de prezenţa slabă şi neuniformă a elementelor planctonice şi de mare abundenţă a celor aglutinante. Din aceste motive am căutat a folosi pe cît posibil indicaţiile oferite de speciile planctonice (atunci cînd apar), dar elementul de bază l-au format acele specii sau grupe de specii care au o frecvenţă şi o constanţă apreciabilă în diferitele serii litologice întîlnite.

În seria depozitelor cenomaniene prezenţa speciilor planctonice de *Rotalipora*, *Praeglobotruncana*, *Schackoina*, *Hedbergella*, *Clavihedbergella*, au dat indicaţii foarte valoroase. Depozitele Turonianului însă, din cauza caracterului lor pronunţat marno-grezos cu intercalaţii de marnocalcare sideritice, argile roşii, cinerite vulcanice, sînt aproape complet lipsite de foraminifere planctonice. În aceste depozite se dezvoltă în schimb foraminiferele aglutinante.

Depozitele Senonianului inferior, formate din gresii şi conglomerate sînt lipsite totalmente de microfaună. Seria depozitelor Senonianului superior (Campanian-Maestrichtian inferior), începe în bază cu marne bogate în intercalaţii de cinerite vulcanice. Microfauna acestor nivele inferioare este rară şi formată din foraminifere aglutinante. Dominant în aceste depozite sînt radiolarii. Partea superioară a seriei Senonianului superior este aproape complet lipsită de intercalaţii grezoase sau de cinerite, iar microfauna este bine dezvoltată atît în ceea ce priveşte foraminiferele bentonice cît şi cele planctonice ce devin iarăşi foarte abundente. (Cele mai de seamă genuri sînt: *Globotruncana*, *Rugoglobigerina*, *Heterohelix*, *Racemiguembelina*, *Planoglobulina*).

Vorbind mai ales despre asociaţiile de foraminifere aglutinante, acestea pot să apară la prima vedere, similare pentru diferite nivele şi vîrste. Cu toate acestea se întîlnesc elemente ce asigură posibilitatea de a face deosebiri clare şi bine fondate între diferitele asemenea asociaţii. Ţinînd seama de aspectul general şi particular al fiecărei asociaţii microfaunistice întîlnite precum şi de caracterele litologice ale depozitelor care le conţin se încearcă a se face unele consideraţii de ordin paleoecologic, pentru a stabili în linii generale care erau mediile de viaţă în care aceste asociaţii s-au dezvoltat. În descifrarea şi interpretarea acestor condiţii s-au avut în vedere faptul că în ansamblu regiunea cercetată este doar o părticică din marele geosinclinal al Carpaţilor Orientali. În acest geosinclinal au avut loc, aşa după cum era şi normal, fenomene de orogeneză care au dus la apariţia de bazine marine mai mult sau mai puţin separate între ele prin cordiliere emerse sau submerse, creste ce au avut o influenţă deosebită în repartiţia şi uniformizarea faunelor de foraminifere, a condiţiilor de viaţă, a dezvoltării variate a fenomenelor de turbiditate şi turbulenţă, etc., în legătura acestor bazine cu largul mării. Numai aşa se poate explica marea dezvoltare şi conţinutul diferitelor asociaţii de foraminifere din cadrul acestor depozite. Prezenţa cineritelor vulcanice în strate de compoziţie pură sau amestecate în masa celorlalte sedimente este un factor deosebit de important în ce priveşte influenţa asupra condiţiilor de viaţă din bazinul în care se depuneau.

Pentru o uşoară prezentare, se va trata pe rînd fiecare serie stratigrafică, încercînd desprinderea aspectelor esenţiale ale caracterelor globale ale asociaţiei, ale condiţiilor de mediu şi ale constituţiei litologice a depozitelor ce o compun.

Astfel, seria Cenomanianului cuprinde două tipuri net diferite de asociaţii microfaunistice care corespund perfect la două tipuri diferite de litologie. În bază se întîlneşte o serie de marnocalcare de culoare roşu-vişinie în care apar frecvent ca macrofosile *Neohibolites ultimus* (d'Orbigny). În aceste depozite asociaţia microfaunistică este extrem de bogată şi formată atît din foraminifere aglutinante, foraminifere calcaroase bentonice şi planctonice, cît şi din radiolari. Taxonomic, asociaţia de foraminifere din aceste depozite cuprinde peste 100 specii aparţinînd la 46 genuri. Dintre acestea deosebit de importante însă, sînt cele planctonice care au o mare greutate în procen-

tajul populației, reprezentînd peste 50% din acesta, deși ele reprezintă numai un număr relativ redus de genuri, anume: *Rotalipora*, *Praeglobotruncana*, *Hedbergella*, *Clavihedbergella*, *Sahackoina*. După caracterul ei general de altfel cum arată și Carozzi (1950) și Tappan (1962), această asociație poate fi considerată ca indicînd un mediu de mare larg deschisă în care condițiile de viață erau optime, permițînd dezvoltarea unui bentos viguros pe fundul bazinului, dar și a unui plancton la fel de bogat.

Peste aceste depozite, precum și ca o variație laterală de facies a lor, se dezvoltă un pachet de marnocalcare cenușii negricioase, șistoase, cu frecvente concrețiuni de pirită, în care macrofauna foarte săracă este reprezentată prin cochilii de *Mantelliceras mantelli* (Sow.), *Puzosia planulata* Sow., *Acanthoceras rotomagense* Defrance, *Turrilites* cf. *costatus* Lamarck, *Inoceramus crippsi* Mantell, *I.* cf. *etheridgei* Woods, resturi cărbunoase de *Podozamites* și foarte frecvente resturi de pești.

Microfauna din aceste depozite este formată în special din radiolari la care rar se adaugă testuri de foraminifere planctonice rău conservate.

Toate aceste caractere litologico-faunistice arată un mediu nu prea îndepărtat de țărm, dar în care aportul de pe continent era format dominant din material fin și mai rar, de material ceva mai grosier, (intercalații subțiri de gresii).

Dezvoltarea în aceste depozite a unei asociații de radiolari formată dominant din tipul *Spumellaria* indică o adîncime nu prea mare (Osnovî Paleontologii, vol. 1). Prezența concrețiunilor de pirită arată un mediu reducător puțin favorabil dezvoltării unui bentos de foraminifere.

În concluzie, privind seria depozitelor cenomaniene se poate deduce că au existat două medii de sedimentare diferite, unul aparținînd faciesului de mare larg deschisă, iar altul probabil mediului sublitoral intern (datorită dezvoltării concrețiunilor de pirită, a testurilor piritizate și a radiolarilor).

La partea superioară a depozitelor cenomaniene și la baza celor turoniene se întîlnește un orizont de argile roșii micacee cu o microfaună destul de săracă formată dominant din foraminifere aglutinante. După Carozzi (1950) și Tappan, această asociație indică un mediu sublitoral.

Din punct de vedere litologic seria turoniană prezintă o mare variație de facies. Caracterul general al său este cel marno-grezos cu intercalații frecvente de marnocalcare sideritice, lentile sau de argile roșii micacee sau chiar cinerite vulcanice în strate subțiri.

Macrofauna, destul de săracă, este formată din *Inoceramus labiatus* Schlotheim, *I. sturmi* Andert, *I.* cf. *lamarcki* Parcker, *I. inconstans* Woods.

Prezența sferosideritelor pune în evidență un mediu puțin oxigenat, iar prezența concrețiunilor de pirită și a testurilor piritizate de radiolari și foraminifere întărește această părere, precizînd și mai mult caracterul reducător al mediului de sedimentare. Apariția acestor condiții reducătoare se poate datora (Tappan, 1962) turbulenței și turbidității. Dacă ținem seama de faptul că sedimentarea s-a făcut într-o zonă ce aparține organic unui geosinclinal pe cale de cutare, rolul acestor din urmă factori apare și mai evident. Turbulența este aceea care, așa cum se arată de către Mayers (in Tappan, 1962) distruge pînă la 80% din faunele de foraminifere de pe fundul bazinului favorizînd fenomenele de piritizare. Dacă la aceste condiții de viață vitrege se mai adaugă și prezența manifestațiilor vulcanice marcate prin acele intercalații subțiri de cinerite, imaginea acestora devine și mai completă.

Prezența destul de timidă a foraminiferelor planctonice poate fi pusă pe seama curenților marini care le-au transportat din larg, unde acestea aveau probabil condiții mai prielnice de dezvoltare. Slaba prezență a speciilor de *Globotruncana* și *Globigerinelloides*, într-o stare de conservare destul de rea, pare să confirme această părere. Dezvoltarea în schimb, destul de importantă, a foraminiferelor aglutinante aparținînd familiilor Astrorhizidae, Hyperamminidae, Verneuilinidae, și mai rar a celor calcaroase bentonice cum este *Quadrimorphina*, și Lagenidae cu testul piritizat, vine în sprijinul părerii că aceste depozite s-au format într-un mediu de sedimentare sublitoral intern unde turbiditatea și turbulența au jucat un rol de seamă. Acest punct de vedere este întărit și de faptul că depozitele au în majoritate caracter marnogrezos și o sortare proastă.

Interesant de remarcat este faptul că în intercalaţiile lentiliforme de argile roşii se dezvoltă o asociaţie microfaunistică constantă în care *Uvigerinammina jankoi*, *Recurvoides*, *Thalmannammina meandertornata*, *Plectina*, *Astrorhizide* de talie mică sau foarte mică, dau nota caracteristică.

Seria senonian-inferioară formată din gresii masive cu intercalaţii microconglomeratice este total lipsită de microfaună.

Seria Senonianului superior ce se dispune peste gresiile masive prezintă o mare variaţie litologică. În bază ea cuprinde un pachet de argile cenuşii şi roşii în care intercalaţiile cineritice sînt numeroase atingînd uneori grosimi pînă la 1 m. Legat de aceste intercalaţii apar bancuri subţiri de marne silicifiate. În acest pachet, microfauna este reprezentată prin rare aglutinante de tipul *Uvigerinammina jankoi*, *Thalmannammina*, *Recurvoides*, *Plectina*, în schimb însă, radiolarii sînt foarte bine dezvoltaţi mai ales în bancurile silicifiate unde apar asociaţi cu spiculi de spongieri silicioşi.

Urmează în continuare, un complex marnogrezos, cu alternanţă tipică de fliş constituit din marne şi gresii cu numeroase bioglife şi mecanoglife şi cuprinzînd intercalaţii subţiri şi rare de cinerite în partea bazală.

Asociaţia macrofaunistică destul de bogată este formată din : *Inoceramus balticus* Boehm, *I. regularis* d'Orbigny, *I. lobatus* Münster, *I. planus* Münster, *I. salisburgensis* Fugger & Kastner şi *Belemnitella mucronata* Schlotheim, care atestă, fără îndoială, prezenţa Campanianului mediu şi superior.

În aceste depozite asociaţia de foraminifere începe treptat să fie mai bogată. Apar numeroase specii de aglutinante ca : *Ammobaculites*, *Spiroplectammina*, *Goesella carpathica*, precum şi foraminifere calcaroase aparţinînd familiei Nodosariidae, apoi *Pyramidina szajnochae* de talie mică şi mijlocie, *Gavelinella*, *Osangularia*, precum şi primele tipuri planctonice ca : *Globotruncana arca*, *Glt. fornicata* şi *Rugoglobigerina*.

În continuare se dispune un pachet de marnocalcare verzui şi roşii în care intercalaţiile mai grosiere grezoase sînt foarte rare şi subţiri. În acest pachet cu *Inoceramus salisburgensis* Fugger & Kastner şi *Allectryonia semiplana* (Sowerby), atît foraminiferele bentonice cît şi cele planctonice iau o mare dezvoltare. Apar acum aglutinante de talie mare (decimetrică), ca *Aschemonella carpathica*, *Psammatodendron*, însoţite de *Marssonella*, *Spiroplectammina*, *Gaudryina*, numeroase specii de Nodosariidae, Polymorphinidae, Discorbidae, Pleurostomellidae etc. Dintre speciile planctonice se dezvoltă în special *Globotruncana arca*, *Rugoglobigerina rugosa*, *Heterohelix*.

Seria depozitelor senoniene se încheie cu un pachet de marne cenuşii, moi, extrem de bogate în foraminifere. În acest pachet atît foraminiferele bentonice cît şi cele planctonice sînt reprezentate prin numeroase genuri şi specii a căror populaţie este extrem de bogată în indivizi. Dintre foraminiferele planctonice deosebit de dezvoltate sînt : *Rugoglobigerina*, *Globotruncana stuarti*, *Globotruncana havanensis* şi Heterohelicidae.

Urmărind dezvoltarea asociaţiilor de foraminifere din această serie se observă că în partea inferioară care aparţine probabil unui mediu sublitoral intern există o mare sărăcie în foraminifere, dar o mare dezvoltare a organismelor silicioase. Îmbunătăţirea treptată a condiţiilor de viaţă, atinge un optimum la nivelul marnocalcarelor verzui şi roşii, precum şi al marnelor cenuşii superioare. Îmbunătăţirea condiţiilor de viaţă reflectă fidel schimbarea mediului de la cel sublitoral intern cu condiţii vitrege, prin cel sublitoral extern căruia îi corespunde pachetul intermediar de depozite, la cel de mare larg deschisă cu marea sa bogăţie de specii şi indivizi. Se ajunge astfel în final (probabil, la începutul Maestrichtianului inferior) la instalarea din nou a mediului ce a existat în timpul depunerii marnocalcarelor roşii din Cenomanian. Toată această evoluţie a faunei de foraminifere corelată cu cea a litologiei este redată schematic în pl. XLIII.

Zonele micropaleontologice

În depozitele Cretacicului superior zonarea micropaleontologică are la bază speciile de foraminifere planctonice ale genurilor : *Rotalipora*, *Schackoina*, *Praeglobotruncana*, *Globotruncana*, *Rugoglobigerina* sau ale genurilor bentonitice ca *Bolivinoides* sau *Neoflabellina*. Aceste specii au o mare valoare, mai ales în cadrul depozitelor cu caracter epicontinental. În cadrul depozitelor în facies de fliş unde condiţiile de sedimentare şi de viaţă au fost guvernate de o serie de alţi

factori care au frînat sau au făcut imposibilă dezvoltarea condiţiilor de viaţă cerute de foraminiferele planctonice şi bentonice, utilizarea speciilor amintite devine foarte anevoioasă sau chiar imposibilă. Din aceste motive la stabilirea zonelor micropaleontologice din cadrul depozitelor cercetate am căutat a folosi pe cît posibil indicaţiile acestor specii, atunci cînd ele apar, dar am ţinut seama în special de specia sau grupul de specii care se întîlneşte cu o frecvenţă şi o constanţă apreciabilă în diferitele serii litologice.

Am urmărit în principiu evoluţia litologică a acestor depozite şi posibilitatea caracterizării lor printr-o asociaţie microfaunistică cît mai evidentă. În acest sens au fost stabilite următoarele zone şi subzone micropaleontologice.

1. Zona cu *Rotalipora reicheli*. În cadrul acestei zone, care din punct de vedere litologic corespunde marnocalcarelor roşii cu *Neohibolites ultimus*, se pot distinge următoarele subzone:

a) Subzona cu *Rotalipora cushmani* şi *Praeglobotruncana stephani* ce corespunde părţii superioare a Cenomanianului inferior. Cele mai importante elemente ale acestei subzone sînt: *Textularia paralella* Reuss, *Dorothia concina* (Reuss), *Gyroidinoides mauretanicus* (Carbonier), *Rotalipora cushmani* (Morrow), *R. appenninica* (Renz), *Praeglobotruncana stephani stephani* (Gandolfi), *P. stephani gibba* Klaus, *Cibicides polyraphes polyraphes* (Reuss), *C. polyraphes praeeriksdalensis* (Vassilenko).

b) Subzona cu *Rotalipora reicheli*. Aceasta corespunde părţii inferioare şi medii a Cenomanianului mediu în care *Rotalipora reicheli* are o dezvoltare maximă atît din punct de vedere al taliei cît şi al numărului de indivizi în cadrul populaţiei. În această subzonă *Neohibolites ultimus* este foarte frecvent iar principalii componenţi ai asociaţiei de foraminifere sînt: *Reophax minuta* Tappan, *Ammobaculites problematicus* (Neagu), *Spiroplectammina gandolfii* Carbonier, *Tritaxia gaultina carinata* (Neagu), *Dorothia oxycona* (Reuss), *D. pupa* (Reuss), *Lenticulina pachynota* (Reuss), *L. navicula* (d'Orbigny), *Dentalina megalopolitana* Reuss, *Gryoidinoides mauretanicus* (Carbonier), *Ramulina globulifera*, Brady, *R. globotubulosa* Cushman, *Tristix excavatus* (Reuss), *Pleurostomella subnodosa* Reuss, *P. obtusa* Berthelin, *Osangularia cretacea* (Carbonier), *Hedbergella infracretacea* (Glaessner), *Globorotalites morrowi* Goel., *Rotalipora appenninica* (Renz), *R. cushmani* (Morrow), *R. reicheli* Mornod, *Praeglobotruncana stephani stephani* (Gandolfi), *P. stephani gibba* Klauss, *Cibicides polyraphes polyraphes* (Reuss), *C. polyraphes praeeriksdalensis* (Vassilenko), *Planularia* cf. *spissocosta* Cushman, radiolari calcifiaţi.

c) Subzona cu *Rotalipora globotruncanoides* şi *Schackoina*. Această subzonă corespunde părţii superioare a Cenomanianului mediu şi Cenomanianului superior. Elementele mai importante ale asociaţiei sînt: *Ammobaculites problematicus* (Neagu), *Haplophragmoides gigas minor* Nauss, *H. bulloides* (Beissel), *Plectorecurvoides alternans* (Noth), *Recurvoides imperfectus* Hanzlikova, *Spiroplectammina gandolfii* Carbonier, *S. complanata* (Rss), *Tritaxia gaultina carinata* (Neagu), *Dorothia pupa* (Rss), *D. concina* (Rss), *Spiroloculina cretacea* Rss, *Lenticulina navicula* (d'Orb.), *Ramulina globulifera* Brady, *Pleurostomella subnodosa* Rss, *Gyroidinoides mauretanicus* (Carbonier), *Rotalipora appenninica* (Renz), *R. cushman turonica* (Brotzen), *R. evoluta* Sigal, *R. globotruncanoides* Sigal, *Praeglobotruncana stephani stephani* (Gandolfi), *P. stephani gibba* Klauss, *Hedbergella planispira* (Tappan), *Schackoina cenomana cenomana* (Schacko), *S. cenomana gandolfi* (Reichel), *S. multispinata bicornis* (Reichel).

2. Biofaciesul cu radiolari. Litologic aceasta corespunde pachetului de marnocalcare roşii şistoase cu *Mantelliceras mantelli* şi *Puzosia panulata*. În aceste depozite foraminiferele sînt extrem de rare în schimb însă radiolarii au o frecvenţă ridicată.

Subzona cu *Pseudobolivina variabilis*. La partea superioară a marnocalcarelor cenuşii negricioase se întîlneşte un orizont de argile roşii violacee cu foraminifere aglutinante care ţin mai mult de asociaţiile similare din Turonian, decît de cele din Cenomanian. Componentele principale ale acestei subzone sînt: *Glomospira charoides* (Jones & Parker), *G. iregularis* (Grzyb.), *Hormosina ovulum*

(Grzyb.), *Ammobaculites problematicus* (Neagu), *Haplophragmoides gigas minor* Nauss, *Reophax minuta* Tappan, *Pseudobolivina variabilis* (Vasicek), *Eponides* sp., *Gavelinella* sp., cf. *umbonella* (Rss), *Rotalipora* sp., radiolari calcifiaţi.

3. Zona cu *Allomorphina cretacea*. Această zonă corespunde seriei depozitelor turonieneconiacian inferioare. Datorită marii variaţii litologice a acestora a fost dificil a se stabili detaliat diversele subzone microfaunistice. În general s-au separat următoarele subzone:

a) Subzona inferioară lipsită de globotruncane bicarinate în care un rol important îl au *Bathysiphon vitta* şi *Haplophragmoides bulloides*. Această subzonă corespunde Turonianului inferior cu *Inoceramus labiatus*. Asociaţia de foraminifere este destul de săracă şi dominată de aglutinante. Dintre elementele mai importante citãm: *Saccammina sphaerica* (Sars), *Hyperammina grzybowski* (Dylaz.), *Bathysiphon vitta* Nauss, *Spiroplectammina praelonga* (Rss), *Ammobaculites problematicus* (Neagu), *Uvigerinammina jankoi* Majzon *Dentalina cilindroides* Rss, *Osangularia whitei whitei* (Brotzen), *O. whitei crassa* (Vassilenko), *O. whitei polycammerata* (Vassilenko), *Allomorphina cretacea* Rss.

Începînd cu această subzonă îşi face apariţia *Allomorphina cretacea*, care va fi prezentă în toate asociaţiile turoniene. În această parte a depozitelor se întîlneşte şi o intercalaţie de argile roşii care conţine o asociaţie de foraminifere formată exclusiv numai din aglutinante printre care *Gaudryina carinata* Franke, *Plectina* cf. *taylleuri* Tappan, *Thalmannammina meandertornata* n. sp. sînt elementele principale.

b) Subzona cu globotruncane bicarinate de tip *Globotruncana lapparenti*, corespunde stratigrafic Turonianului mediu şi superior. În această subzonă *Allomorphina cretacea* este foarte bine dezvoltată, fiind elementul comun tuturor asociaţiilor cu excepţia intercalaţiilor de argile roşii. Principalele elemente ale acestei subzone sînt: *Bathysiphon vitta* Nauss, *Glomospira irregularis* (Grzyb.), *Spiroplectammina praelonga* (Rss), *Haplophragmoides bulloides* (Beissel), *Ammobaculites problematicus* (Neagu), *Thalmannammina meandertornata* n.sp., *Th. recurvoidiformis* n.sp., *Gaudryina carinata* Franke, *Dorothia crassa* (Marsson), *Uvigerinammina jankoi* Majzon, *Ellipsoglandulina chilostoma* (Rzehak), *Allomorphina cretacea* Rss., *Eponides karsteni* (Rss), *Globotruncana lapparenti bulloides* (Brotzen), *Glt. lapparenti coronata* Bolli, *Glt. lapparenti tricarinata* (Quereau), *Glt. lapparenti angusticarinata* Gandolfi, *Hedbergella* sp., radiolari piritizaţi.

În cadrul intercalaţiilor de argile roşii elementele principale sînt *Uvigerinammina jankoi* Majzon, *Thalmannammina meandertornata* n.sp., *Th. recurvoidiformis* n.sp., *Plectina* sp., *Haplophragmoides herbichi* n.sp., *Glomospira irregularis* (Grzyb.), *Plectorecurvoides alternans* (Noth), *Trochammina umiatensis* Tappan. La partea superioară a depozitelor citate se întîlneşte o intercalaţie de argile roşii în care, pe lîngă speciile de aglutinante amintite apar şi foraminifere calcaroase dar cu o talie extrem de mică. Dintre acestea amintim: *Praebulimina obtusa* (Brotzen), *P. ventricosa* (Brotzen), *Osangularia whitei whitei* (Brotzen), *Aragonia ouezzanensis* (Rey), *Cibicides ribbingi* Brotzen, *Globotruncana lapparenti lapparenti* (Brotzen), *Heterohelix globulosa* (Ehrbg.), *H. planata* (Cushman). Asociaţia aceasta arată că seria depozitelor amintite cuprinde şi un mic interval din partea inferioară a Senonianului, respectiv Coniacianul inferior.

4. Zona cu *Goesella carpathica*. Această zonă cuprinde partea bazală şi mijlocie a depozitelor Senonianului superior. S-au putut separa mai multe subzone microfaunistice după cum urmează:

a) Subzona inferioară cu rare foraminifere aglutinante corespunzînd părţii bazale a seriei.

b) Subzona cu radiolari şi spiculi de spongieri ce corespunde intervalului în care s-au depus cineritele vulcanice. În această subzonă foraminiferele sînt aproape absente.

c) Subzona superioară au foraminifere aglutinante. În această subzonă deşi asociaţia de foraminifere este destul de săracă totuşi un fapt important este apariţia speciei *Goesella carpathica*. Dintre cele mai importante elemente menţionăm: *Pelosina complanata* (Franke), *Uvigerinammina jankoi* Majzon, *Hormosina ovulum* (Grzybowski) ş.a.

Aceste 3 subzone aparţin Campanianului inferior.

d) Subzona cu *Goesella carpathica* şi *Pyramidina szajnochae* (de talie mică şi mijlocie). Această subzonă corespunde Campanianului mediu, iar asociaţia de foraminifere care arată o continuă îmbogăţire în specii bentonice şi planctonice este formată în principal din: *Rzehakina epigona* (Rzhk), *Hormosina ovulum gigantea* Geroch, *Spiroplectammina subhaeringensis* (Grzyb.), *Goesella carpathica* Liszkowa (în diferite stadii de dezvoltare), *Lenticulina velascoensis* (White), *Pyramidina szajnochae* (Grzyb.), (de dimensiuni mici şi mijlocii), *Pleurostomella zuberi* Grzyb., *Gavelinella clementiana* (d'Orb.), *G. pertusa* (Marsson), *Osangularia florealis* (White), *O. spinea* (Cushman), *O. cordieriana* (d'Orb.,), *Rugoglobigerina rugosa rugosa* (Plummer), *Globotruncana arca* (Cushman), *Glt. havenensis* (Voorwijk).

5. Zona cu *Globotruncana arca*. Această zonă cuprinde Campanianul superior şi Maestrichtianul inferior, iar din punct de vedere litologic corespunde cu pachetul marnocalcarelor verzui şi roşii precum şi cu marnele cenuşii, moi. Asociaţia de foraminifere atinge maximum de dezvoltare atît ca număr de specii cît şi ca număr de indivizi. Micropaleontologic se pot distinge două subzone bine definite şi anume:

a) Subzona cu *Aschemonella carpathica* şi *Globotruncana arca* care corespunde Campanianului superior, iar litologic marnocalcarelor verzui şi roşii de tip „Gura Beliei". În această subzonă foraminiferele aglutinante de talie mare cum sînt *Aschemonella carpathica* Neagu şi *Psammatodendron dichotomicus* Neagu ating talii puţin obişnuite, centimetrice. Lor li se asociază foarte multe specii dintre care citãm: *Rzehakina epigona* (Rzehak), *Hormosina ovulum gigantea* Geroch, *Spiroplectammina boudouniana* (d'Orb.), *S. subhaeringensis* (Grzyb.), *Gavelinella pertusa* (Marsson), *Gavelinella clementiana clementiana* (d'Orb.), *G. clementiana laevigata* (Marie), *G. cayeuxi mangshlakensis* (Vassilenko), *Eponides praemegastoma* (Mjatlyuk), *Osangularia florealis* (White), *O. cordieriana* (d'Orb.), *Rugoglobigerina rugosa rugosa* (Plummer), *R. rugosa rotundata* Bronnimann, *Globotruncana rugosa* (Marie), *Glt. arca* (Cushman), *Glt. havanensis* (Vorwijk), *Globorotalites* sp.

b) Subzona cu Heterohelicidae şi *Globotruncana contusa*, care corespunde Maestrichtianului inferior, iar litologic marnelor cenuşii moi, cuprinde cea mai bogată asociaţie de foraminifere din care citãm: *Textularia plummerae* Lalicker, *Matanzia varians* (Glaesner), *Pyramidina szajnochae* (Grzyb.) (de talie foarte mare), *Bolivina incrassata* Rss, *Globigerinelloides biforaminata* (Hofker), *Rugoglobigerina rugosa rugosa* (Plummer), *R. rugosa rotundata* Bronnimann, *R. rugosa rotundata* Bronnimann, *R. rugosa pennyi* Bronnimann, *Globotruncana contusa* (Cushman), *Glt. arca* (Cushman), *Glt. stuarti stuarti* (Lapp.), *Glt. stuarti elevata* (Brotzen), *Glt. stuarti stuartiformis* (Dalbiez), *Glt. caliciformis* (Lapp.), *Glt. gagnebini* Tileev, *Glt. havanensis* (Voorwijk), *Abatomphalus mayaroensis* (Bolli), *A. intermedia* (Bolli), *Pseudotextularia elegans* Rzehak, *Planoguembelina glabrata* (Cushman), *Racemiguembelina fructicosa* (Egger), *Heterohelix pulchra* (Brotzen), *H. globosa* (Ehrbg.), *Globorotalites* sp.

Depozitele Cretacicului inferior ce apar în raza satului Brădet pe pîraiele Mănecelului şi valea Carelor, aparţin Apţianului inferior (Bedoulian) şi conţin o macrofaună formată din: *Deshayesites consobrinoides* (Sinzow), *Aconoceras trautscholdi* (Sinzow), *Ptychoceras* sp. cf. *puzosianum* (d'Orb.). Microfauna acestor depozite este formată din: *Tritaxia pyramidata* Rss., *Gaudryina subcretacea* Cushman, *Choffatella decipiens* Schlumb., *Orbitolina lenticularis* (Blum.), *O. discoidea* Grass., *O. conoidea* Grass, *Trocholina infragranulata* Noth, *T. aptiensis* Iovcheva, *Lenticulina nodosa* (Rss), *L. muensteri* (Roem), *L. gaultina* (Berth), *L. ouachensis* (Sigal), *Chitharina reticulata* (Cornuel), *Gavelinella barremiana* Bettenstaedt, *Epistomina spinulifera* (Rss), *E. juliae* Mjatlyuk, *E. ventriosa* Sigal & Espitalié, *Vidalina carpathica* Neagu & Popescu.

Partea terminală a profilului se încheie printr-o serie conglomeratică masivă în care apar blocuri puternice de calcare recifale.

Depozitele Cretacicului inferior apar şi în partea de est a regiunii cercetate, reprezentate în special prin gresii masive cu resturi de plante,

nivele microconglomeratice, precum şi brecii sedimentare în care materialul marnos este dominant. În nivelele microconglomeratice de la Întorsura Buzăului, am recoltat numeroase rostrumuri de *Neohibolites minimus* Lister ce atestă prezenţa Albianului. La Sita Buzăului într-o intercalaţie de brecie sedimentară apar numeroase resturi de macrofaună reprezentată prin *Neohibolites minimus* Lister, *Parahibolites tourtiae* Wagn şi cochilii de amoniţi. Ansamblul de macrofaună arată vîrsta albiană incluzînd şi Vraconianul. Microfauna acestor marne din cadrul breciei este destul de săracă şi formată din: *Arenobulimina macfadyeni* Cushman, *Spiroplectinata anectens* (Jones & Parker), *Dorothia trochus* (d' Orb.), *Hedbergella planispira* (Tappan), *Gavelinella intermedia* (Berth), *Epistomina caracolla* (Roem), *Epistomina ornata* (Roem).

Către nord depozitele acestea apar bine deschise pe pîrîul Feneş — Valea Mare, unde conţin o macrofaună formată din: *Neohibolites minimmus* Lister, *Inoceramus anglicus* Woods, *Hoplites* sp., *Puzosia* sp., *Aucellina* sp. Microfauna acestor depozite este foarte săracă şi formată numai din foraminifere aglutinante rău conservate.

În sectorul Teliu — valea Dobîrlăului seria depozitelor apţiene a fost cercetată de Filipescu şi colaboratorii care au pus în evidenţă pe baze paleontologice prezenţa Apţianului şi a Albianului.

Caracterele structurale ale regiunii cercetate

Asupra structurii tectonice a acestei regiuni au existat şi încă mai există o divergenţă de păreri. De la structura simplă cu contacte normale între depozitele Cretacicului inferior şi cele ale Cretacicului superior cum o vedea Herbich (1878) se trece treptat la o interpretare în pînze de şariaj tot mai complicată. În lumina ultimelor păreri privind structura tectonică a acestei regiuni, exprimate de Filipescu (1955, 1956, 1963) şi Băncilă (1958) depozitele cretacice din zona cercetată se pot grupa în două mari unităţi structurale şi anume:

— pînza internă superioară (Filipescu) sau unitatea vest internă (Băncilă);

— pînza internă inferioară (Filipescu) sau unitatea est internă (Băncilă). Linia de încălecare dintre aceste două mari unităţi a fost denumită „linia Crasna-Măgura Nebunii-Teliu-Lutu Roşu" (Filipescu) sau „Linia Lutu Roşu" (Băncilă).

În cadrul pînzei interne inferioare se distinge, după Filipescu, o dispunere a trei trepte şi anume: o zonă foarte ridicată (Poiana Florilor-Dobîrlău), o zonă foarte prăbuşită (despresiunea Întorsura Buzăului-Dalnic-Cernatu) şi o zonă moderat ridicată (Tabla Buţii-Sita Buzăului-Toria). Aceste trei zone sînt separate între ele prin mari falii.

Cercetările noastre au permis a jalona clar linia de încălecare dintre cele două mari unităţi structurale începînd de la Vama Buzăului în sud pînă la afundarea acesteia sub cuvertura de depozite neozoice din Ţara Bîrsei. O a doua linie tectonică importantă urmărită este aceea care pune în contact depozitele senoniene cu cele cretacic-inferioare, denumită „falia Boroşneu-Întorsura Buzăului". De-a lungul acestei linii începînd din sud, din dealul Secuiului (Vama Buzăului)-dealul Prădescu, depozitele cenomaniene vin în contact tectonic cu cele apţian-albiene. Către nord trecînd prin dealul Stînii linia aceasta merge pînă la pîrîul Feneş-Valea Mare, unde aduce în contact tectonic depozitele senoniene cu cele albiene, după care se afundă sub cuvertura neogenă a Ţării Bîrsei. Între aceste două linii tectonice majore se situează propriu-zis regiunea cercetată. În ansamblu această regiune se prezintă ca un mare sinclinal cu flancul de vest mult mai ridicat şi încălecată de pînza internă superioară şi cel de est mai coborît şi în contact tectonic cu depozitele apţian-albiene. În cadrul acestui mare sinclinal se pot identifica o serie de falii de importanţă locală care complică structura geologică a regiunii. Interesantă din punct de vedere structural devine linia de contact dintre cele două pînze.

În 1962 Marinescu semnalează în regiunea Teliu aşa-numita „semifereastră Teliu", pornind de la faptul că pe culmea Vîrşaie apar o serie de conglomerate, cu blocuri mari, gresii cu orbitoline şi marnocalcare albicioase, asemănătoare cu cele din stratele de Comarnic ce apar în culmea Cocoanelor (ceva mai la sud). Se reia astfel o interpretare mai veche dată de Filipescu (1936) care consideră depozitele marnoase cenuşii cu sferosiderite din culmea Predeal drept albiene. În această interpretare prezenţa

stratelor de Comarnic în axul unor anticlinale era foarte logică. Stabilirea de către cercetările noastre a vîrstei turoniene a acestor depozite cu sferosiderite nu mai poate sprijini interpretarea amintită. După părerea noastră, cele două puncte unde apar depozite de tipul gresiei de Teliu-strate de Comarnic, din culmea Vîrşaie nu sînt altceva decît mici petece de acoperire rămase în urma eroziunii. Această părere este susţinută de faptul că pe culmea cu cota de 902 m se pot observa clar depozitele turoniene în faciesul cu sferosiderite suportînd depozitele Cretacicului inferior amintite.

Corelarea depozitelor cretacic-superioare din această regiune cu cele din regiunile învecinate

Faciesul marnocalcarelor roşii cu *Neohibolites ultimus* şi *Rotalipora* se întîlneşte în mod constant începînd din Măgura Nebunii, spre est pînă la Mănăstirea Cheia (Teleajen), valea Teleajenului, pasul Boncuţa, Vama Buzăului, Dealul Stînii (Întorsura Buzăului). O a doua serie de apariţii a acestor depozite porneşte din extremitatea vestică a culmii Măgura Nebunii, pînă în valea Teleajenului (P o p e s c u , 1958), la confluenţa cu valea Pridvaria, iar de aici pînă la Mănăstirea Cheia. Aşa cum arată M. G. F i l i p e s c u şi G h . P o p e s c u aceste depozite se afundă sub conglomeratele de Ciucaş. Pe versantul nordic al Ciucaşului F i l i p e s c u şi I l i e s c u (1957) citează ca apărînd într-o fereastră tectonică, depozite cenomaniene, în Valea Popii. Dezvoltarea maximă a acestor depozite are loc însă în regiunea valea Teliu-valea Dobîrlău. Celălalt pachet de marne cenuşii negricioase ce aparţin tot Cenomanianului, urmăreşte cu fidelitate complexul anterior. Modul de prezentare al acestor formaţiuni sugerează existenţa unui mare sinclinal cu flancul estic bine dezvoltat.

Seria depozitelor turoniene şi senonian inferioare ce formează umplutura acestui sinclinal apare bine dezvoltată în regiunea Măgura Nebunii-Teleajen, subţiindu-se foarte mult în regiunea de vărsare a văii Dălghiu în Buzău (datorită acoperirii lor tectonice cu depozitele conglomeratice din pînza superioară), pentru a se dezvolta apoi puternic către nord pe o distanţă de 22 km lungime şi 10 km lăţime, între Brădet şi Valea Mare.

Depozitele campaniene apar doar sub formă de petece reduse. În pasul Boncuţa sub faciesul „marnelor de Gura Beliei", iar în regiunea Valea Mare sub faciesul marnocalcarelor gălbui-verzui şi roşii. O dezvoltare şi mai redusă o au depozitele maestrichtiene. În zona Zăganu, pe valea Zăganului G r . P o p e s c u citează o apariţie de marne cenuşii nisipoase cu *Parapachydiscus* sp. Mai la nord aceste depozite nu se mai întîlnesc decît pe pîrîul Ivăncuţa-Ulveş, Valea Mare, determinate pe baze micropaleontologice (pl. XLII).

Repartiţia geografică a speciei de *Belemnitella mucronata* în regiunea de la curbura Carpaţilor arată date interesante privind evoluţia şi legăturile probabile ale regiunii Întorsura Buzăului cu cele înconjurătoare (fig. 5). Se poate constata astfel că aria de repartiţie a acestei zone se localizează, pentru flişul carpatic, în regiunea cuprinsă între valea Dîmboviţei la vest şi Tohanul Vechi la extremitatea de est. În acest perimetru deosebit de interesantă devine şi urmărirea variaţiei litofaciale a depozitelor Cretacicului superior. Astfel, în regiunea de vest (valea Dîmboviţei, valea Ialomiţei) faciesul marnocalcarelor roşii se instalează în Cenomanian şi continuă cu mici variaţii pînă în Senonian. Cu cît se avansează către est situaţia se schimbă tot mai mult. Astfel, Cenomanianul începe prin marnocalcare roşii ce trec treptat la marnocalcare cenuşii negricioase ; Turonianul este reprezentat prin marne cenuşii nisipoase cu intercalaţii de argile roşii iar în Senonianul inferior se instalează cu un facies grosier, microconglomeratic (zona Teleajen—Valea Mare). În Senonianul superior are loc o revenire la un facies mai fin al marnocalcarelor gălbui-verzui şi roşii. În sectorul de la est de pasul Boncuţa aceste depozite sînt cunoscute sub denumirea de „marne de Gura Beliei" marne ce conţin specia *Belemnitella mucronata*. În sectorul de la nord de pasul Boncuţa instalarea faciesului acestor marne are loc ceva mai tîrziu, deoarece *B. mucronata* se întîlneşte aci în marnele cenuşii (Valea Mare şi Tohanu) peste care se dispun marnocalcare de tip Gura Beliei. Din punct de vedere paleogeografic reiese clar că faciesul acesta al marnelor de Gura Beliei a migrat treptat de la vest către est şi de la sud către nord reuşind a se instala în partea de nord a regiunii numai după momentul apariţiei speciei *Belemnitella mucronata*.

Posibilitatea stabilirii de asemenea elemente comune de corelare oferite de litologie şi de macro- şi microfaună sînt argumente în plus pentru sprijinirea părerii că regiunea Întorsura Buzăului-Valea Mare nu este decît extremitatea de nord a unui mare bazin de sedimentare, Măgura Nebunii-Cheia-Cernatu, în care variaţiile locale nu maschează decît puţin din trăsăturile sale comune cu celelalte bazine de sedimentare ale flişului carpatic de la est de curbură.

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EXPLANATION OF THE PLATES

Plate XLI

Cenomanian-Lower Senonian Foraminiferal Zones and levels of the Intorsura Buzăului region Eastern Carpathians Romania

Cenomanian and probably lowermost Turonian assemblages

9 — *Glomospira irregularis* (Grzybowski)
10 — *Glomospira charoides* (Jones & Parker)
14 — *Hormosina ovulum* (Grzybowski)
15 — *Reophax minuta* Tappan
18 — *Spiroplectammina gandolfii* (Carbonier)
21 — *Bigenerina variabilis* Vasicek
22 — *Haplophragmoides gigas minor* Nauss
25 — *Ammobaculites problematicus* Neagu
32 — *Tritaxia gaultina carinata* (Neagu)
34 — *Pseudoclavulina arenata* (Cushman)
41 — *Trochammina umiatensis* Tappan
42 — *Cystammina pauciloculata* (Brady)
46 — *Rotalipora cushmani* (Morrow)
46a — *Rotalipora appenninica* (Renz)
47 — *Rotalipora globotruncanoides* (Sigal)
48 — *Rotalipora reicheli* Mornod
49.— *Praeglobotruncana stephani stephani* (Gandolfi)
50 — *Praeglobotruncana stephani gibba* Klauss
51 — *Schackoina cenomana cenomana* (Schacko)
52 — *Schackoina cenomana gandolfii* Reichel
53 — *Schackoina multispinata bicornis* Reichel
54 — *Clavihedbergella simplicissima* (Magné & Sigal)
66 — *Gyroidinoides mauretanicus* (Carbonier)
68 — *Cibicides polyraphes polyraphes* (Reuss)
69 — *C. polyraphes praeeriksdalensis* Vassilenko
72 — *Osangularia cretacea* (Carbonier)
79 — *Pleurostomella obtusa* Berthelin

Turonian and Lower Coniacian assemblages

1 — *Psammosphaera fusca* (Schultze)
2 — *Saccammina sphaerica* Brady
3 — *Pelosina complanata* Franke
4 — *Bathysiphon vitta* Nauss
5 — *Bathysiphon brosgei* Tappan
6 — *Rhabdammina annulata* Grzybowski
7 — *Rhabdammina* sp.
8 — *Rhyzammina cylindrica* (Glaessner)
9 — *Glomospira iregularis* Grzybowski)
10 — *Glomospira charoides* (Jones & Parker)
11 — *Glomospira serpens* (Grzybowski)
12 — *Ammodiscus cretaceus* (Reuss)
13 — *Ammodiscus incertus* (d'Orbigny)
14 — *Hormosina ovulum* (Grzybowski)
16 — *Reophax clavulinus* (Reuss)
17 — *Hormosina velascoense* (Cushman)
19 — *Spiroplectammina praelonga* (Reuss)
20 — *Spiroplectammina dentata* (Alth)
23 — *Haplophragmoides bulloides* (Beissel)
24 — *Haplophragmoides herbichi* Neagu
25 — *Ammobaculites problematicus* Neagu
26 — *Ammobaculites coprolithiformis* (Schwager)
27 — *Thalmannammina recurvoidiformis* n.sp.
28 — *Thalmannammina meandertornata* n.sp.
29 — *Trochamminoides irregularis* White
30 — *Trochamminoides proteus* (Karrer)
31 — *Trochamminoides dubius* (Grzybowski)
33 — *Tritaxia amorpha* (Cushman)
35 — *Plectina* sp.
36 — *Gaudryinella pseudoserrata* Cushman
37 — *Gaudryina carinata* Franke
38 — *Dorothia crassa* (Marsson)
39 — *Uvigerinammina jankoi* Majzon
40 — *Arenobulimina truncata* (Reuss)
41 — *Trochammina umiatensis* Tappan
42 — *Cystammina pauciloculata* (Brady)
43 — *Dentalina peracuta* (Reuss)
44 — *Nodosaria annulata* Reuss
45 — *Allomorphina cretacea* Reuss
55 — *Globotruncana marginata* (Reuss)
56 — *Globotruncana lapparenti angusticarinata* Gandolfi
57 — *Globotruncana lapparenti lapparenti* Brotzen
58 — *Globotruncana lapparenti coronata* Bolli
59 — *Globotruncana lapparenti tricarinata* (Quereau)
60 — *Globotruncana globigerinoides* Brotzen
61 — *Globotruncana fornicata* Plummer
62 — *Globotruncana* cf. *arca* (Cushman)
63 — *Hedbergella cretacea* (d'Orbigny)
64 — *Globigerinelloides escheri escheri* (Kaufmann)
65 — *Globigerinelloides escheri clavata* (Brönnimann)
67 — *Gyroidinoides nitidus* (Reuss)
70 — *Cibicides ribbingi* Brotzen
71 — *Eponides karsteni* (Reuss)
73 — *Osangularia whitei* (Brotzen)

74 — *Osangularia* sp.
75 — *Dentalina catenula* Reuss
77 — *Ellipsoidella divergens* (Storm)
78 — *Pleurostomella subnodosa* Reuss
80 — *Praebulimina obtusa* (d'Orbigny)
81 — *Praebulimina hofkeri* (Brotzen)
82 — *Heterohelix globulosa* (Ehrenberg)
83 — Radiolarian.

Plate XLII

Campanian-Lower Maestrichtian Foraminiferal Zones and levels of the Intorsura Buzăului region Eastern Carpathians Romania

Lower Campanian assemblages
1 — *Rhabdammina annulata* Grzybowski
3 — *Dendrophrya excelsa* Grzybowski
5 — *Pelosina complanata* Franke
8 — *Glomospira serpens* (Grzybowski)
9 — *Glomospira irregularis* (Grzybowski)
10 — *Hormosina ovulum* (Grzybowski)
14 — *Lituotuba incerta* Franke
19 — *Spiroplectammina* cf. *praelonga* (Reuss)
21 — *Recurvoides* sp.
22 — *Thalmannammina* sp.
26 — *Goesella carpathica* Liszkowa
27 — *Uvigerinammina jankoi* Majzon
28 — *Plectina* sp.
32 — *Trochammina umialensis* Tappan
97—98 — Radiolarians
99 — Sponge spicule

Lower and middle Campanian assemblages
2 — *Bathysiphon vitta* Nauss
4 — *Psammatodendron dichotomicus* Neagu
6 — *Saccammina sphaerica* Sars
7 — *Glomospira gordialis* (Jones & Parker)
10 — *Hormosina ovulum* (Grzybowski)
12 — *Hormosina velascoense* (Cushman)
15 — *Reophax pillulifer* Brady
17 — *Spiroplectammina dentata* (Alth)
20 — *Ammobaculites lueckei* Cushman & Hedberg
23 — *Cribrostomoides trinitatensis* Cushman & Jarvis
24 — *Tritaxia subparisiensis* (Grzybowski)
26 — *Goesella carpathica* Liszkowa
28 — *Plectina* sp.
29 — *Arenobulimina truncata* (Reuss)
30 — *Gaurdyina cretacea* (Karrer)
31 — *Gaudryina pyramidata* Cushman
33 — *Haplophragmoides kirki* Wickenden
34 — *Trochammina bulloidiformis* (Grzybowski)
35 — *Trochammina quadriloba* Grzybowski
44 — *Planularia harpa* (Reuss)
45 — *Planularia marcki* (Reuss)
46 — *Neoflabellina rugosa* (d'Orbigny)
52 — *Pyramidina szajnochae* (Grzybowski)
66 — *Globotruncana fornicata* Plummer
67 — *Globotruncana lapparenti lapparenti* Brotzen
68 — *Globotruncana arca* (Cushman)
83 — *Gavelinella clementiana* (d'Orbigny)
96 — *Cibicides voltzianus* (d'Orbigny)
97—98 — Radiolarians

Upper Campanian assemblages
4 — *Psammatodendron dichotomicus* Neagu
11 — *Hormosina ovulum gigantea* Geroch
13 — *Aschemonella carpathica* Neagu
16 — *Rzehakina epigona* (Rzehak)
18 — *Spiroplectammina subhaeringensis* (Grzybowski)
24 — *Tritaxia subparisiensis* (Grzybowski)
25 — *Dorothia crassa* (Marsson)
35 — *Trochammina quadriloba* Grzybowski
36 — *Dentalina basiplanata* Cushman
37 — *Dentalina communis* d'Orbigny
38 — *Fissurina alata* Reuss
39 — *Fissurina orbignyana orbignyana* Seguenza
41 — *Pseudonodosaria lagenoides* (Olszewski)
42 — *Pseudonodosaria paralella* (Marsson)
43 — *Pseudonodosaria cylindracea* (Reuss)
47 — *Kyphopyxa jarvisi* (Cushman)
48 — *Textularia plummerae* Lalicker
49 — *Vaginulina trilobata* (d'Orbigny)
50 — *Guttulina trigonula* Reuss
51 — *Guttulina adherens* (Olszewski)
52 — *Pyramidina szajnochae* (Grzybowski)
68 — *Globotruncana arca* (Cushman)
74 — *Ellipsoidella subnodosa* (Guppy)
75 — *Ellipsoidella gracillima* (Cushman)
76 — *Ellipsoidella pleurostomelloides* Heron-Allen & Earland
77 — *Ellipsoglandulina ellisi* Said & Kenawy
78 — *Ellipsoglandulina exponens* (Brady)
79 — *Ellipsoglandulina chilostoma* (Rzehak)
80 — *Parafissurina lageniformis* Neagu
82 — *Aragonia ouezzanensis* (Rey)
87 — *Eponides praemegastoma* Mjatlyuk
88 — *Osangularia florealis* (White)
91 — *Gyroidinoides nitidus* (Reuss)
92 — *Gyroidinoides globosus* (Hagenow)
93 — *Pullenia jarvisi* Cushman
94 — *Pullenia cretacea* Cushman
95 — *Quadrimorphina allomorphinoides* (Reuss)

Lower Maestrichtian assemblages
40 — *Fissurina orbignyana praeclara* (Cushman & Renz)
52 — *Pyramidina szajnochae* (Grzybowski)
53 — *Pseudouvigerina cristata* (Marsson)
54 — *Bolivina incrassata* Reuss
55 — *Praebulimina ovulum* (Reuss)
56 — *Praebulimina ventricosa* (Brotzen)
57 — *Heterohelix globulosa* (Ehrenberg)
58 — *Racemiguembelina fructicosa* (Egger)
59 — *Planoguembelina glabrata* (Cushman)
60 — *Pseudotextularia elegans* (Rzehak)
61 — *Globigerinelloides biforaminata* (Hofker)

63 — *Rugoglobigerina rugosa pennyi* Brönnimann
64 — *Rugoglobigerina rugosa rotundata* Brönnimann
65 — *Rugoglobigerina rugosa rugosa* (Plummer)
69 — *Globotruncana contusa* (Cushman)
70 — *Globotruncana calciformis* (Lapparent)
71 — *Globotruncana stuarti* (Lapparent)
72 — *Globotruncana havanensis* Voorwijk
73 — *Globotruncana rugosa* (Marie)
81 — *Pleurostomella dacica* Neagu
84 — *Gavelinella involuta* (Reuss)
85 — *Gavelinella clementiana laevigata* (Marie)
86 — *Eponides monterelensis* Marie
87 — *Eponides praemegastoma* Mjatlyuk
88 — *Osangularia florealis* (White)
89 — *Osangularia cordieriana* (d'Orbigny)
90 — *Gyroidinoides quadratus* (Cushman)
95 — *Quadrimorphina allomorphinoides* (Reuss)

Plate XLIII

Diagram showing lithological and faunal facies of the Upper Cretaceous deposits from the Intorsura Buzăului–Valea Mare–Valea Dobîrlăului area

Cenomanian and probably lowermost Turonian assemblages
1 — *Gyroidinoides mauretanicus* (Carbonier)
2 — *Ammobaculites problematicus* Neagu
3 — *Tritaxia gaultina carinata* (Neagu)
4 — *Rotalipora reicheli* Mornod
4a — *Rotalipora appenninica* (Renz)
5 — *Hedbergella delrioensis* (Carsey)
6 — *Praeglobotruncana stephani gibba* Klaus
7 — *Neohibolites ultimus* (d'Orbigny)
8 — *Spiroplectammina gandolfii* (Carbonier)
9 — *Osangularia cretacea* (Carbonier)
10 — *Pseudoclavulina arenata* (Cushman)
11 — *Schackoina multispinata bicornis* Reichel
12 — *Praeglobotruncana stephani stephani* (Gandolfi)
13 — *Schackoina cenomana cenomana* (Schacko)
14–15 — Radiolarians
16 — Plant remains
17 — *Puzosia planulata* (Sowerby)
18 — Scales of fish
28 — *Glomospira charoides* (Jones & Parker)
29 — *Haplophragmoides bulloides* (Beissel)
30 — *Hormosina ovulum* (Grzybowski)
31 — *Bigenerina variabilis* Vasicek

Turonian and Lower Coniacian assemblages
2 — *Ammobaculites problematicus* Neagu
14–15 — Radiolarians
19 — *Bathysiphon vitta* Nauss
20 — *Rhabdammina* sp.
21 — *Bathysiphon brosgei* Tappan
22 — *Psammosphaera fusca* (Schultze)
23 — *Spiroplectammina praelonga* (Reuss)
24 — *Ammobaculites coprolithiformis* (Schwager)
25 — *Dorothia crassa* (Marsson)
26 — *Altumorphina cretacea* Reuss
27 — *Trochammina umiatensis* Tappan
28 — *Glomospira charoides* (Jones & Parker)
30 — *Plectina* cf. *tayleuri* (Tappan)
32 — *Reophax minutus* Tappan
33 — *Dendrophrya excelsa* Grzybowski
34 — *Gaudryina carinata* Franke
35 — *Gaudryinella pseudoserrata* (Cushman)
36 — *Lituotuba incerta* Franke
37 — *Thalmannammina meandertornata* n.sp.
38 — *Haplophragmoides herbichi* Neagu
39 — *Thalmannammina recurvoidiformis* n.sp.
40 — *Plectina* sp.
41 — *Uvigerinammina jankoi* Majzon
42 — *Plectina* cf. *coniformis* (Grzybowski)
43 — *Glomospira irregularis* (Grzybowski)
44 — *Trochamminoides irregularis* White
45 — *Ellipsoidella divergens* (Storm)
46 — *Dentalina peracuta* Reuss
47 — *Globotruncana globigerinoides* Brotzen
48 — *Globotruncana lapparenti tricarinata* (Quereau)
49 — *Globotruncana lapparenti lapparenti* Brotzen
50 — *Globotruncana lapparenti angusticarinata* Gandolfi
51 — *Globigerinelloides escheri escheri* (Kaufmann)
52 — *Heterohelix globulosa* (Ehrenberg)
53 — *Cibicides ribbingi* Brotzen
61 — *Glomospira gordialis diffundens* Cushman & Renz
93 — *Inoceramus labiatus* Schlotheim

Upper Coniacian and Santonian assemblages
54 — Hexacorals (fragments)
55 — teeth of fish
56 — fragments of *Inoceramus* shell
94 — fragments of *Hippurites* shell

Campanian and Lower Maestrichtian assemblages
14–15 — Radiolarians
20 — *Rhabdammina* sp.
21 — *Bathysiphon brosgei* Tappan
30 — *Plectina* cf. *tayleuri* (Tappan)
33 — *Dendrophrya excelsa* Grzybowski
41 — *Uvigerinammina jankoi* Majzon
52 — *Heterohelix globulosa* (Ehrenberg)
57 — *Psammatodendron dichotomicus* Neagu
58 — *Hormosina ovulum gigantea* Geroch
59 — *Pelosina complanata* Franke
60 — *Glomospira serpens* (Grzybowski)
61 — *Glomospira gordialis diffundens* Cushman & Renz
62 — *Lituotuba incerta* Franke
63 — *Arenobulimina truncata* (Reuss)
64 — *Trochammina quadriloba* Grzybowski
65 — *Tritaxia subparisiensis* (Grzybowski)
66 — *Goesella carpathica* Liszkowa
67 — *Hormosina velascoense* (Cushman)

68 — *Rzehakina epigona* (Rzehak)
69 — *Aschemonella carpathica* Neagu
70 — *Belemnitella mucronata* (Schlotheim)
71 — *Praebulimina ovulum* (Reuss)
72 — *Palmula primitiva* Cushman
73 — *Lenticulina velascoensis* (White)
74 — *Inoceramus balticus* Boehm
75 — *Aragonia ouezzanensis* (Rey)
76 — *Osangularia cordieriana* (d'Orbigny)
77 — *Osangularia spinea* (Cushman)
78 — *Textularia plummerae* Lalicker
79 — *Pullenia cretacea* Cushman
80 — *Spiroplectammina dentata* (Alth)
81 — *Pyramidina szajnochae* (Grzybowski)
82 — *Globigerinelloides aspera* (Ehrenberg)
83 — *Globotruncana arca* (Cushman)
84 — *Bolivina incrassata* Reuss
86 — *Globotruncana havanensis* Voorwijk
86 — *Rugoglobigerina rugosa rugosa* (Plummer)
87 — *Rugoglobigerina rugosa pennyi* Brönnimann
88 — *Racemiguembelina fructicosa* (Egger)
89 — *Globotruncana rugosa* (Marie)
90 — *Globotruncana contusa* (Cushman)
91 — *Abatomphalus mayaroensis* (Bolli)
92 — *Planoguembelina glabrata* (Cushman)
95 — *Gavelinella clementiana clementiana* (d'Orbigny)
96 — *Osangularia* sp.

PLATE I

Fig. 1. — *Rhabdammina discreta* H. B. Brady, Lower Maestrichtian, hypotype, L. P.B 5210, x 65.

Fig. 2. — *Bathysiphon dubius* White, Campanian, hypotype, L.P.B. 5725, ×55.

Fig. 3,4. — *Bathysiphon brosgei* Tappan, Turonian, hypotypes, fig. 3, L.P.B. 5924, fig. 4, L.P.B. 5929, ×61.

Fig. 5,6. — *Kalamopsis grzybowskii* Dylazanka, Campanian, hypotypes, fig. 5, L.P.B. 5212, × 65, fig. 6, L.P.B. 5513, × 49.

Fig. 7. — *Dendrophrya dichotomica* (Neagu), Campanian, hypotype, L.P.B. 5388 × 65.

Fig. 8. — *Hyperammina gaultina* Dam, Campanian, hypotype, L.P.B. 5211, × 65.

Fig. 9. — *Pelosina complanata* Franke, Lower Maestrichtian, hypotype, L.P.B. 5207, × 72.

Fig. 10. — *Psammosphaera fusca* Schultze, Campanian, hypotype, L.P.B. 5674, × 65.

Fig. 11. — *Glomospira irregularis* (Grzybowski), Turonian, hypotype, L.P.B. 5743, × 72.

Fig. 12. — *Glomospira gordialis* (Jones & Parker), Campanian, hypotype, L.P.B. 5815, × 65.

Fig. 13. — *Glomospira gordialis diffundens* Cushman & Renz, Lower Maestrichtian, hypotype, L.P.B. 5518, × 65.

Fig. 14. — *Glomospira serpens* (Grzybowski), Lower Maestrichtian, hypotype, L.P.B. 5478, × 78.

Fig. 15. — *Lituotuba incerta* Franke, Lower Maestrichtian, hypotype, L.P.B. 5218, × 33.

Fig. 16—18. — *Rzehakina epigona* (Rzehak), Lower Maestrichtian, hypotype, fig. 16—17, L.P.B. 5550, fig. 18, L.P.B. 5551, × 65.

Fig. 19. — *Rzehakina fissistomata* (Grzybowski), Uppermost Campanian, hypotype, L.P.B. 6599, × 65,

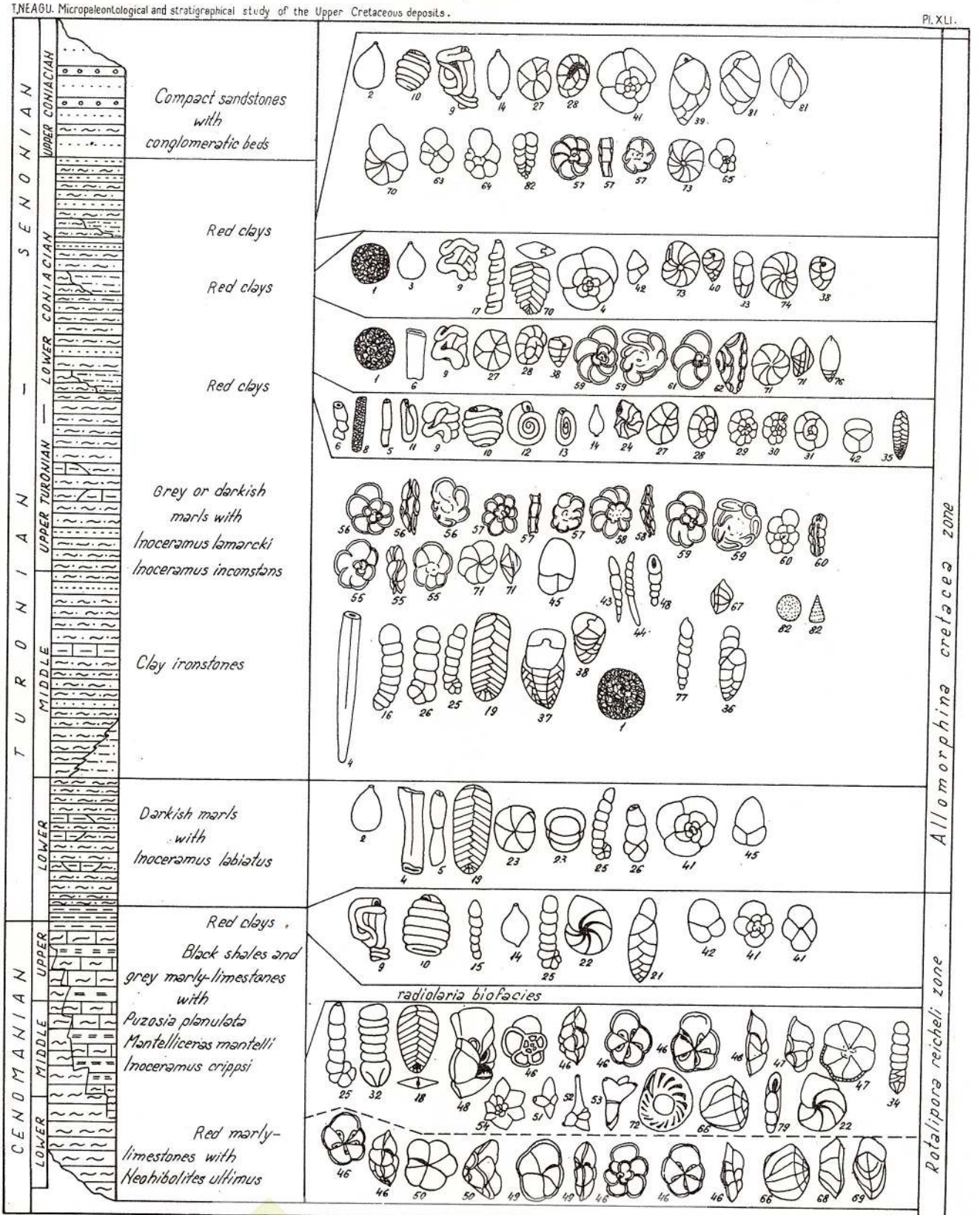
Fig. 20,22. — *Rzehakina epigona lata* Cushman & Jarvis, Campanian, hypotypes, fig. 20, L.P.B. 6596, fig. 22, L.P.B. 6598, ×65.

Fig. 21,23. — *Rzehakina inclusa* (Grzybowski), Lower Maestrichtian, hypotypes, fig. 21, L.P.B. 6587, fig. 23, L.P.B. 6589, × 65.

CENOMANIAN-LOWER SENONIAN FORAMINIFERAL ZONES AND LEVELS OF THE ÎNTORSURA BUZĂULUI REGION EASTERN CARPATHIANS ROMANIA

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits.

Pl. XLI.



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CAMPANIAN-LOWER MAESTRICHTIAN FORAMINIFERAL ZONES AND LEVELS OF THE ÎNTORSURA BUZĂULUI REGION EASTERN CARPATHIANS ROMANIA

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. PL. XLII.

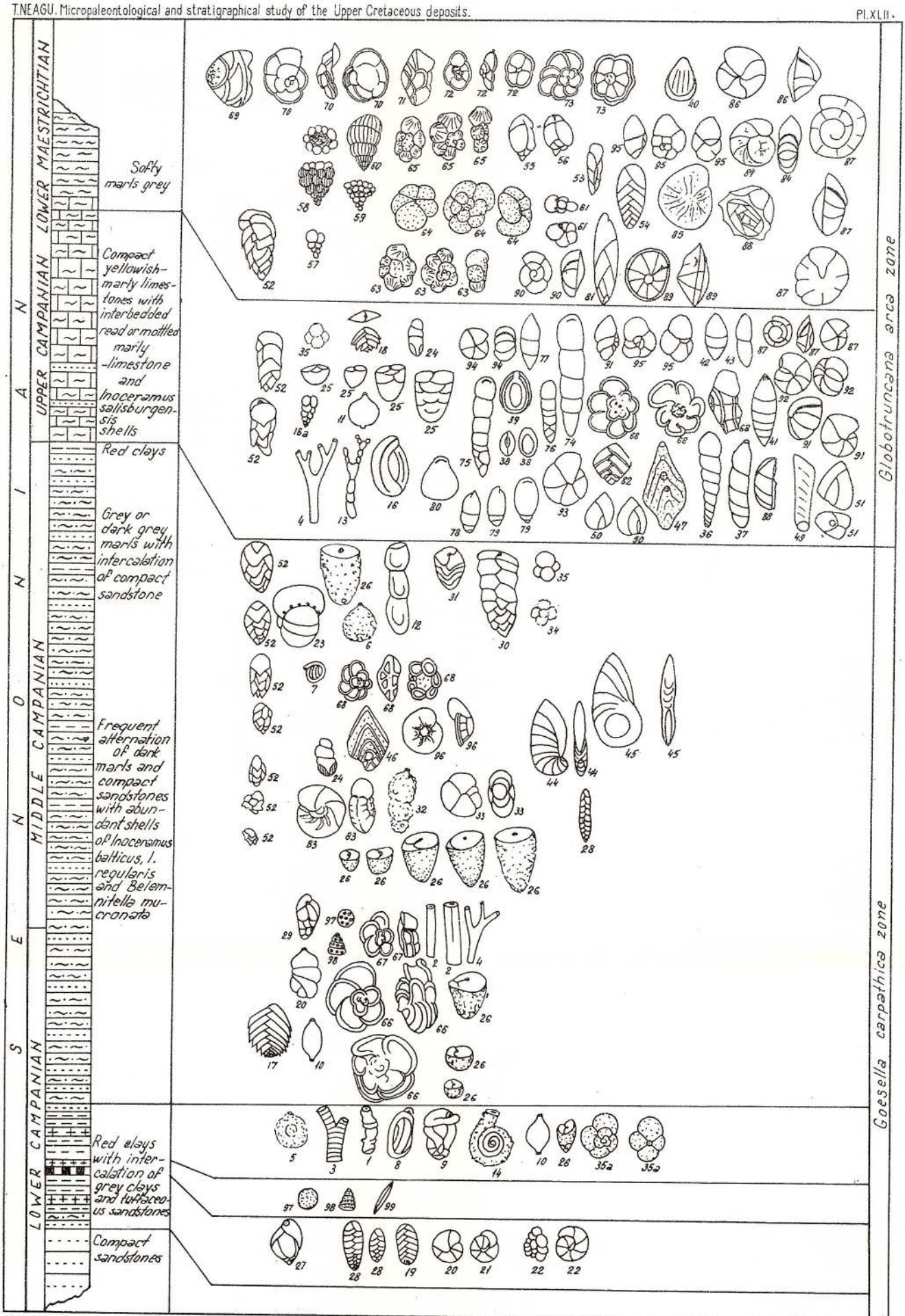

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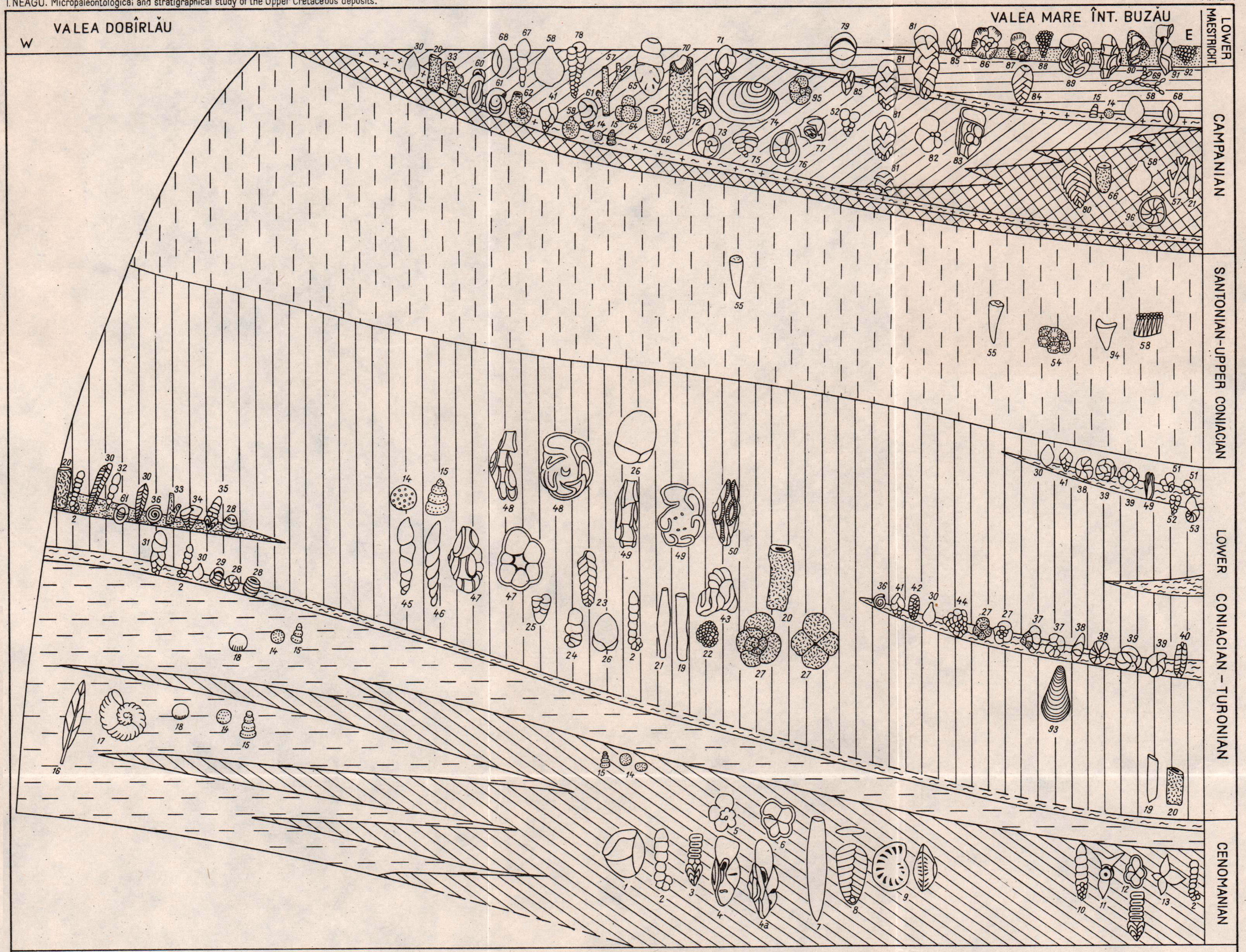
DIAGRAM SHOWING LITHOLOGICAL AND FAUNAL FACIES OF THE UPPER CRETACEOUS DEPOSITS FROM THE ÎNTORSURA BUZĂULUI-VALEA MARE-VALEA DOBÎRLĂULUI AREA

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits.

Pl. XLIII.



LEGENDĂ

A — *Red marly-limestones with Neohibolites ultimus*

B — *1.Red clays*
Black shales and grey marly-limestones with Puzosia planulata, Mantelliceras mantelli, Inoceramus crippsi.

C — *Grey or darkish marls and irostones with Inoceramus labiatus*
1.red clays

D — *Compact sandstones with conglomeratic beds*

E — *red clays with intercalations of grey clays and tuffaceous sandstones*
1.red clays and tuffaceous sandstones

F — *Frequent alternation of dark marls and compact sandstones with abundant shels of: I.balticus, I.regularis, and Belemnitella mucronata*
1.red clays and tuffaceous sandstones

G — *Compact yellowish marly-limestones with interbedeed red or mottled marly-limestones and I.salisburgensis*
1.softy grey marls.

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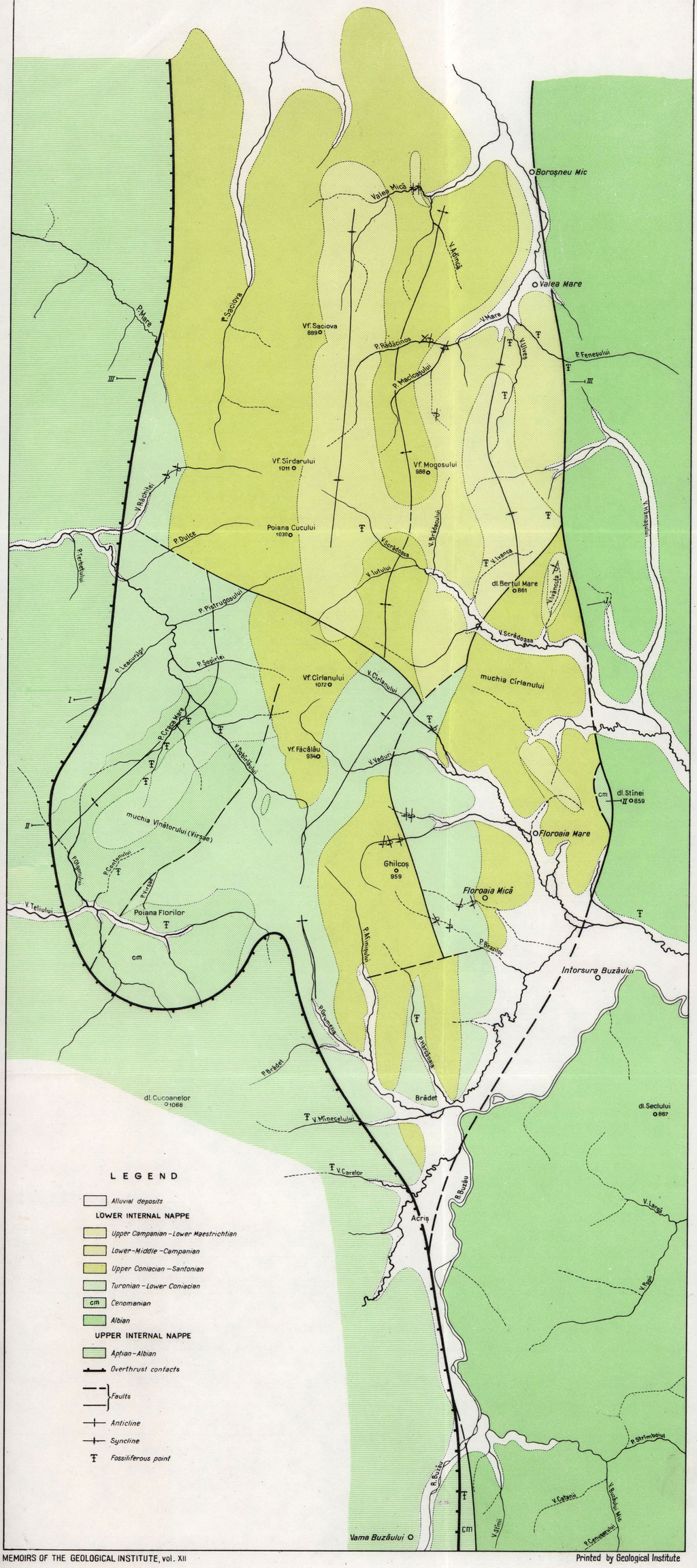
TH. NEAGU

GEOLOGICAL MAP OF THE ÎNTORSURA BUZĂULUI – VALEA MARE – DOBÎRLĂU AREA

0 750 1500 2500 3000 m



LEGEND

- Alluvial deposits
- **LOWER INTERNAL NAPPE**
- Upper Campanian – Lower Maestrichtian
- Lower-Middle – Campanian
- Upper Coniacian – Santonian
- Turonian – Lower Coniacian
- cm Cenomanian
- Albian
- **UPPER INTERNAL NAPPE**
- Aptian – Albian
- Overthrust contacts
- Faults
- Anticline
- Syncline
- Fossiliferous point

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. I.

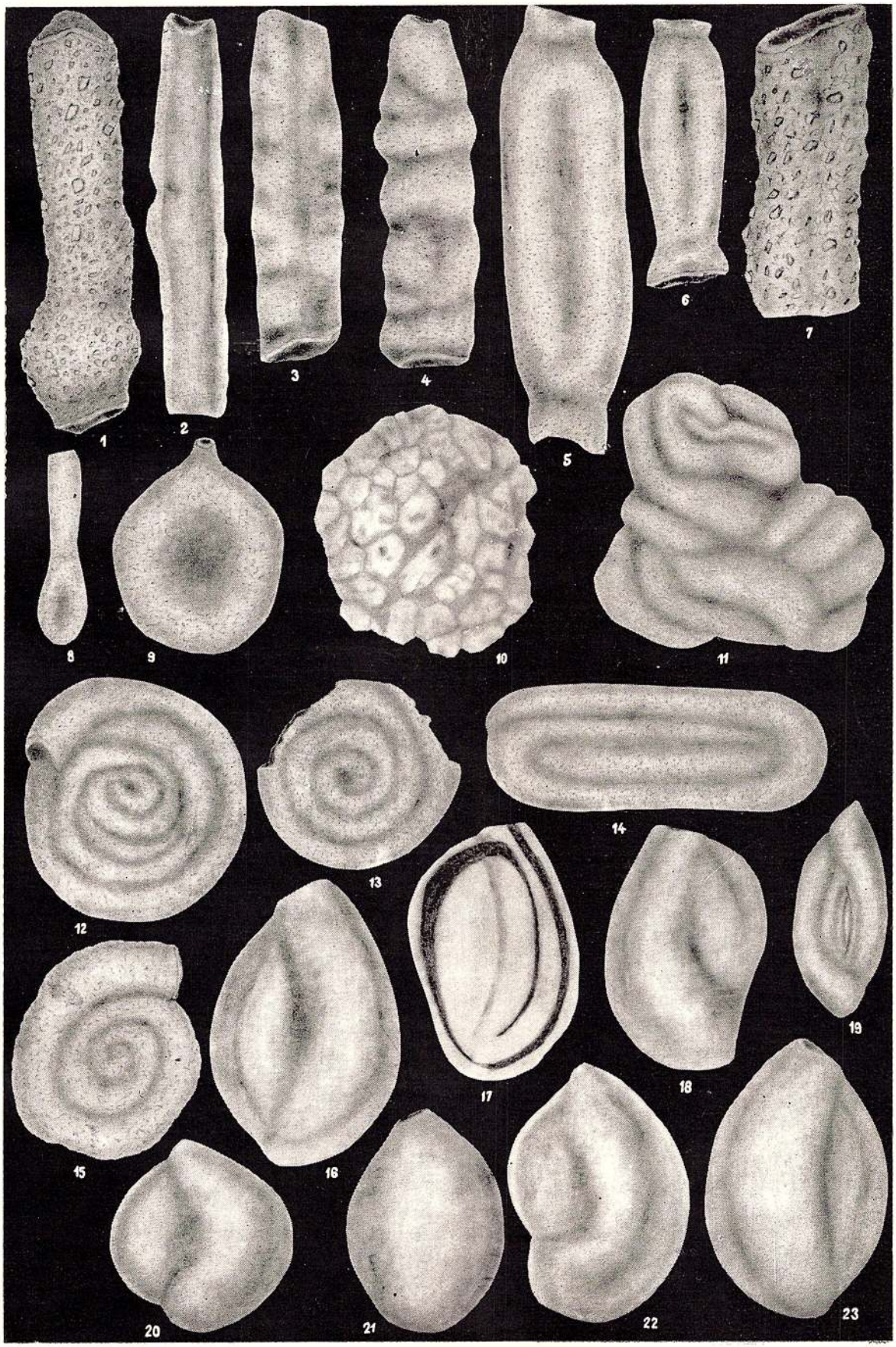


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PLATE II

Fig. 1. — *Ammodiscus cretaceus* (Reuss), Lower Maestrichtian, hypotype, L.P.B. 5481, × 65.

Fig. 2,3. — *Aschemonella carpathica* Neagu, Campanian, hypotype, L.P.B. 5389, × 65.

Fig. 4. — *Reophax minuta* Tappan, Turonian, hypotype, L.P.B. 5324, × 78.

Fig. 5. — *Reophax splendidus* Grzybowski, Lower Maestrichtian, hypotype, L.P.B. 5230, × 52.

Fig. 6. — *Reophax pilulifer* Brady, Lower Maestrichtian, hypotype, L.P.B., 5231, × 49.

Fig. 7. — *Reophax dentalinoides* (Reuss), Turonian, hypotype, L.P.B. 5232, × 49.

Fig. 8. — *Reophax clavulinus* (Reuss), Turonian, hypotype, L.P.B. 5335, × 82.

Fig. 9,10. — *Reophax pilulifer* Brady, Lower Maestrichtian, hypotypes, fig, 9, L.P.B. 5535, fig. 10, L.P.B. 5536, 49.

Fig. 11. — *Hormosina ovulum* (Grzybowski), Campanian, hypotype, L.P.B. 5202, × 65.

Fig. 12. — *Reophax duplex* Grzybowski, Campanian, hypotype, L.P.B. 5233, × 49.

Fig. 13. — *Hormosina ovulum gigantea* Geroch, Lower Maestrichtian, hypotype, L.P.B. 5531, × 65.

Fig. 14,15. — *Hormosina excelsa* (Dylazanka), Lower Maestrichtian, hypotypes, fig. 14, L.P.B. 5227; Campanian, fig. 15, L.P.B. 5494, × 65.

Fig. 16. — *Hormosina velascoensis* (Cushman), Campanian, hypotype, L.P.B. 5495, × 65.

Fig. 17. — *Trochamminoides irregularis* White, Campanian, hypotype, L.P.B. 5245, × 49.

Fig. 18. — *Trochamminoides irregularis heteromorpha* (Grzybowski), Campanian, hypotype, L.P.B. 5244, × 52.

Fig. 19. — *Trochamminoides proteus* (Karrer), Campanian, hypotype, L.P.B. 5247, × 49.

Fig. 20. — *Trochamminoides dubius* (Grzybowski), Turonian, hypotype, L.P.B. 5653, × 104.

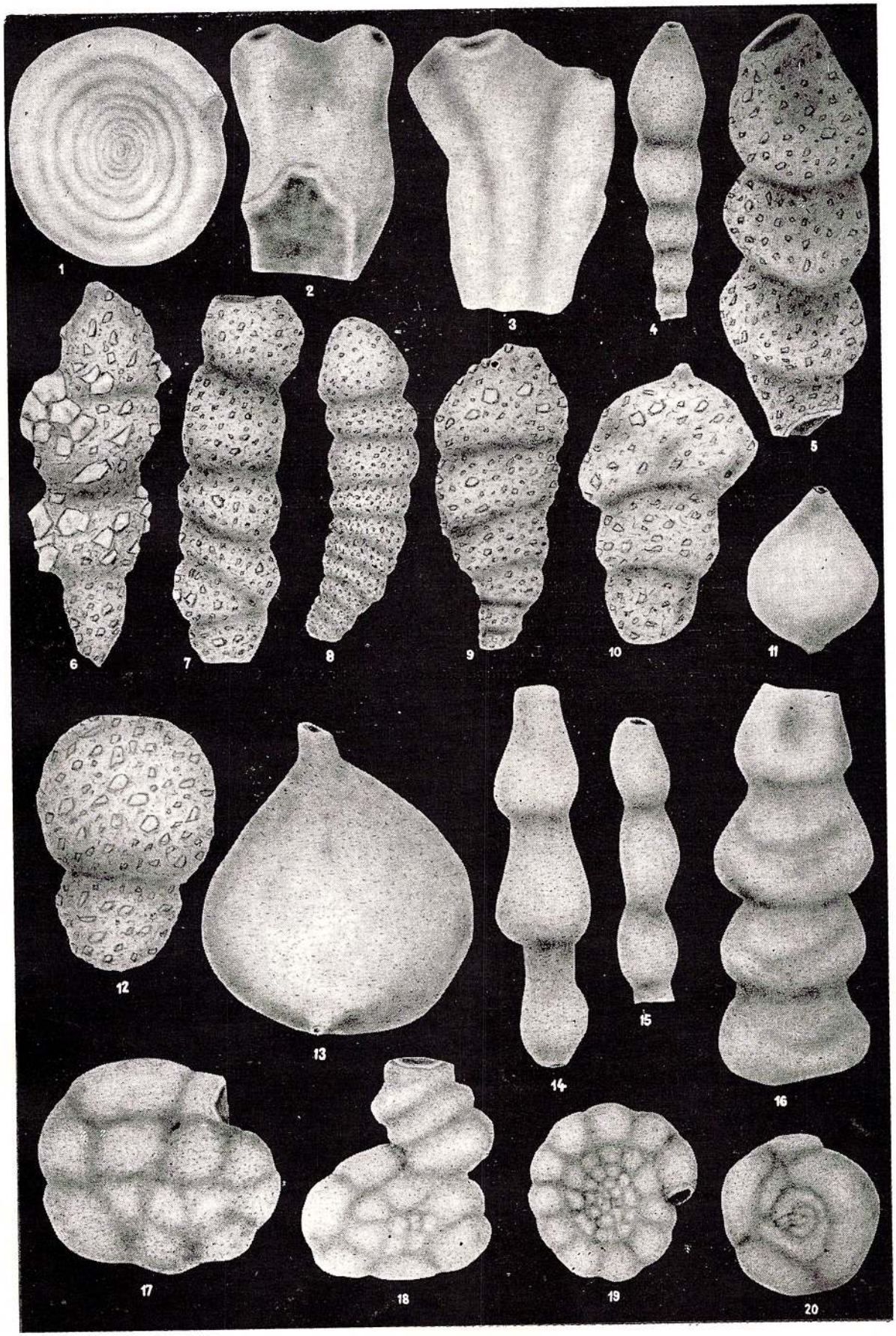

PLATE III

Fig. 1,2. — *Haplophragmoides gigas minor* Nauss, Cenomanian, hypotype, L.P.B. 5253, × 117.

Fig. 3,4. — *Haplophragmoides bulloides* (Beissel), Turonian, hypotype, L.P.B. 5653, × 104.

Fig. 5,6. — *Haplophragmoides eggeri* Cushman, Campanian, hypotype, L.P.B. 5268 × 33.

Fig. 7,8 — *Cribrostomoides trinitatensis* Cushman & Jarvis, Campanian, hypotype, L.P.B. 5342, × 65.

Fig. 9—15. — *Thalmannammina meandertornata* Neagu & Tocorjescu n. sp., Turonian, paratypes, L.P.B. 5221, × 130.

Fig. 16,17. — *Spiroplectammina semicomplanata* (Carsey), Campanian, hypotype, L.P.B. 5564, × 65.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. III.

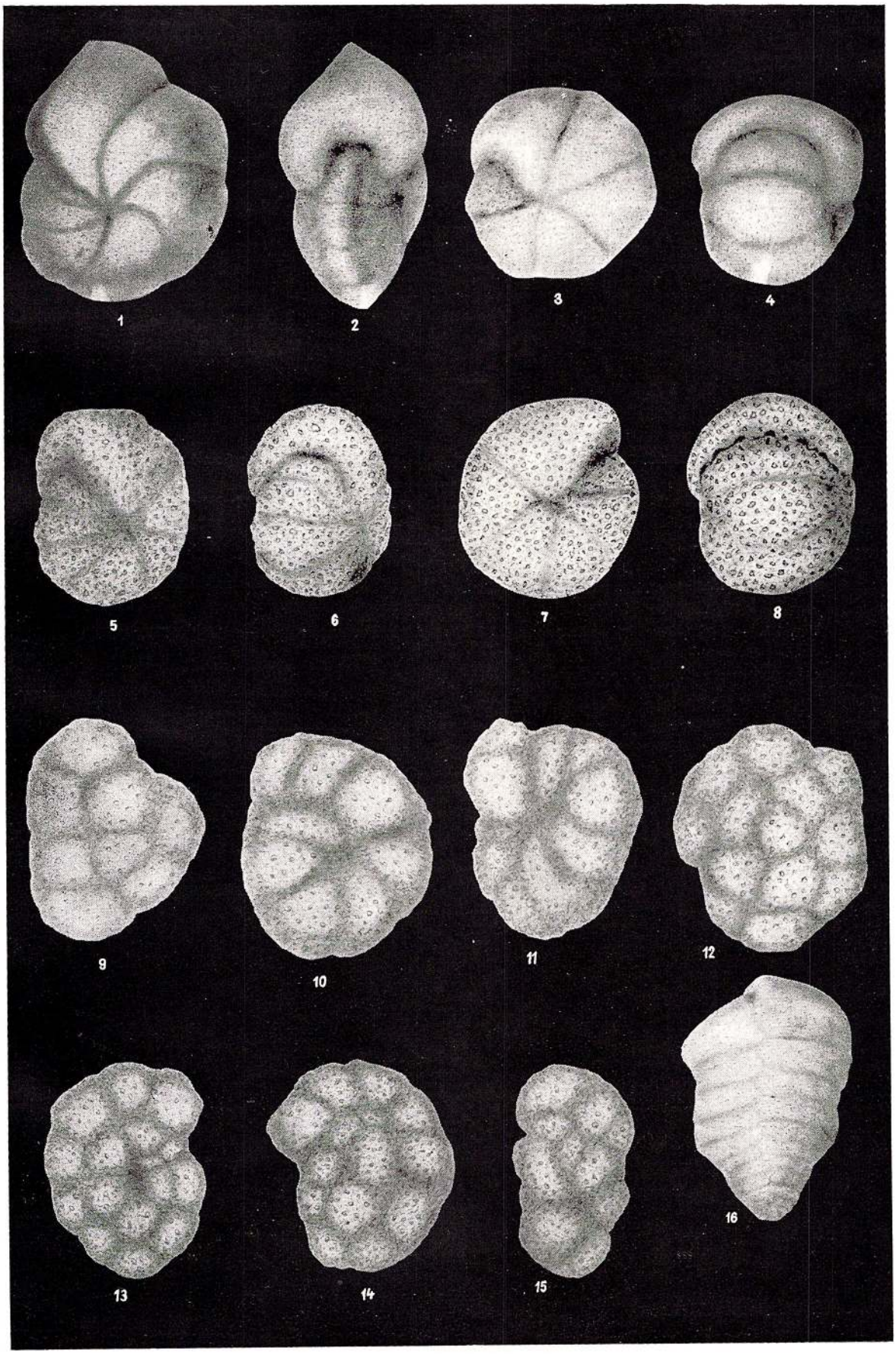

PLATE IV

Fig. 1—12. — *Thalmannammina recurvoidiformis* Neagu & Tocorjescu n.sp., Turonian, paratypes, L.P.B. 5220, × 65.

Fig. 13—16. — *Haplophragmoides herbichi* Neagu, Lower Turonian, holotype, fig. 13—14, L.P.B. 9009, × 111; paratype, fig. 15—16. L.P.B. 9010, × 117.

Fig. 17—18. — *Textularia plummerae* Lalicker, Lower Maestrichtian, hypotype, L.P.B. 5224, × 72.

Fig. 19,20. — *Spiroplectammina semicomplanata* (Carsey), Campanian, hypotypes, fig. 19, L.P.B. 5564, fig. 20, L.P.B. 5565, × 65.

Fig. 21. — *Spiroplectammina dentata* (Alth), Turonian, hypotype. L.P.B. 5777, × 65.

PLATE V

Fig. 1—3. — *Ammobaculites junceus* Cushman & Applin. Campanian, hypotypes, fig. 1. L.P.B. 5693; fig. 2, L.P.B. 5692, fig. 3, L.P.B. 5695, × 65.

Fig. 4—6. — *Spiroplectammina praelonga* (Reuss), Turonian, hypotypes, fig. 4, L.P.B. 5222, × 65, fig. 5—6, L.P.B. 5486, × 78.

Fig. 7—8. — *Spiroplectammina boudouniana* (d'Orbigny), Campanian, hypotypes, fig. 7 (macrosphaeric form), L.P.B. 5239, fig. 8 (microsphaeric form), L.P.B. 5559, × 78.

Fig. 9. — *Spiroplectammina flexuosa* (Reuss), Lower Maestrichtian, hypotype, L.P.B. 5555, × 78.

Fig. 10—12. — *Spiroplectammina subhaeringensis* (Grzybowski), Campanian, hypotypes, fig. 10, L.P.B. 5567, fig. 11—12, L.P.B. 5240, × 59.

Fig. 13—16. — *Pseudobolivina variabilis* (Vasicek), Upper-Cenomanian-Lower Turonian boundary, hypotypes, fig. 13, L.P.B. 5223, fig. 14—15, L.P.B. 6040, fig. 16, L.P.B. 6041, × 78.

Fig. 17. — *Trochammina bulloidiformis* Grzybowski, Lower Maestrichtian, hypotype, L.P.B. 5635, × 65.

Fig. 18, 19. — *Trochammina quadriloba* Grzybowski, Campanian hypotype, L.P.B. 5631, × 65.

Fig. 20, 21. — *Trochammina umiatensis* Tappan, Turonian, hypotype, L.P.B. 5573, × 65.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. V.

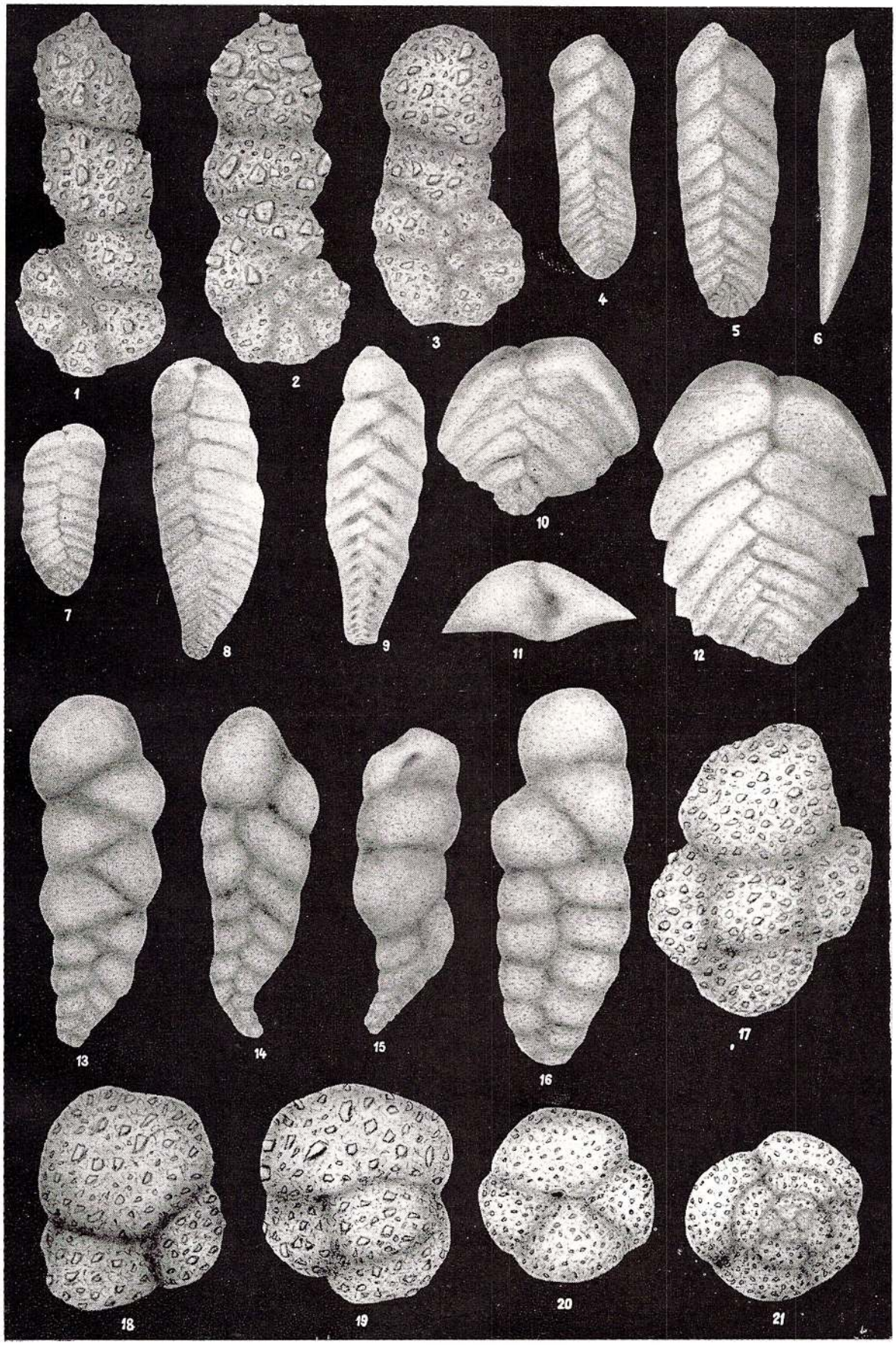

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PLATE VI

Fig. 1—5. — *Ammobaculites problematicus* (N e a g u), Lower Turonian, hypotypes, fig. 1, L.P.B. 5817, fig. 2, L.P.B. 5819, fig. 3, L.P.B. 5820, fig. 4, L.P.B. 5826, fig. 5, L.P.B. 5825, × 65.

Fig. 6—11. — *Ammobaculites haeckei* C u s h m a n & H e d b e r g, Campanian, hypotypes fig. 6, L.P.B. 5703, fig. 7, L.P.B. 5707, fig. 8, L.P.B. 5709, fig. 9, L.P.B. 5708, fig. 10, L.P.B. 5701, fig. 11, L.P.B. 5706, × 52.

Fig. 12. — *Ammobaculites gratus* C u s h m a n & A p p l i n, Campanian, hypotype L.P.B. 5248, × 59

Fig. 13. — *Ammobaculites coprolithiformis* (S c h w a g e r), Turonian, hypotype, L.P.B. 5249, × 65.

Fig. 14—17. — *Choffatella decipiens* S c h l u m b e r g e r, Lower Aptian, hypotypes, fig. 14—15, L.P.B. 9065, fig. 16—17, L.P.B. 9066, × 39.

Fig. 18, 19. — *Gaudryina subcretacea* C u s h m a n, Lower Aptian, hypotype, L.P.B. 9067, × 72.

Fig. 20, 21. — *Cystammina pauciloculata* (B r a d y), Turonian, hypotype, L.P.B. 6056, × 65.

Fig. 22. — *Verneuilina* sp., Lower Aptian, L.P.B. 9069, × 85.

Fig. 23. — *Gaudryina carinata* F r a n k e, Turonian, hypotype, L.P.B. 5853, × 82.

Fig. 24—27. — *Gaudryina benthonensis* (C a r r m a n), Lower Maestrichtian, hypotypes fig. 24—25, L.P.B. 5451, fig. 26—27, L.P.B. 5938, × 72.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. VI.

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PLATE VII

Fig. 1—4. — *Gaudryina cretacea* (K a r r e r), Campanian, hypotypes, fig. 1—2, L.P.B. 5459, × 72; Upper Turonian, fig. 3—5, L.P.B. 5863, × 72.

Fig. 5—12. — *Gaudryinella pseudoserrata* C u s h m a n, Turonian, hypotypes, fig. 5, L.P.B. 5900, fig. 6, L.P.B. 5904, fig. 7, L.P.B. 5897, fig. 8, L.P.B. 5898, fig. 9, L.P.B. 5899, fig. 10, L.P.B. 5456, fig. 11, L.P.B. 5457, fig. 12, L.P.B. 5895, × 63.

Fig. 13. — *Tritaxia amorpha* (C u s h m a n), Campanian, hypotype, L.P.B. 5496, × 33.

Fig. 14, 15. — *Tritaxia pyramidata* R e u s s, Lower Aptian, hypotype, L.P.B. 9068, × 49.

Fig. 16—21. — *Plectina* sp. cf. *P. taylleuri* (T a p p a n), Lower Turonian, hypotypes, fig. 16—17, L.P.B. 6107, fig. 18—19, L.P.B. 6108, fig. 20—21, L.P.B. 6112, × 104.

Fig. 22—24. — *Dorothia crassa* (M a r r s o n), Campanian, hypotypes, fig. 22, L.P.B. 5601, fig. 23, L.P.B. 5604, fig. 24, L.P.B. 5605, × 65.

Fig. 25—30. — *Goesella carpathica* L i s z k o w a, Campanian, hypotypes, fig. 25, L.P.B. 5622, fig. 26, L.P.B. 5619, fig. 27, L.P.B. 5618, fig. 28, L.P.B. 5611, fig. 29, L.P.B. 5609, fig. 30, L.P.B. 5608, × 59.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. VII.

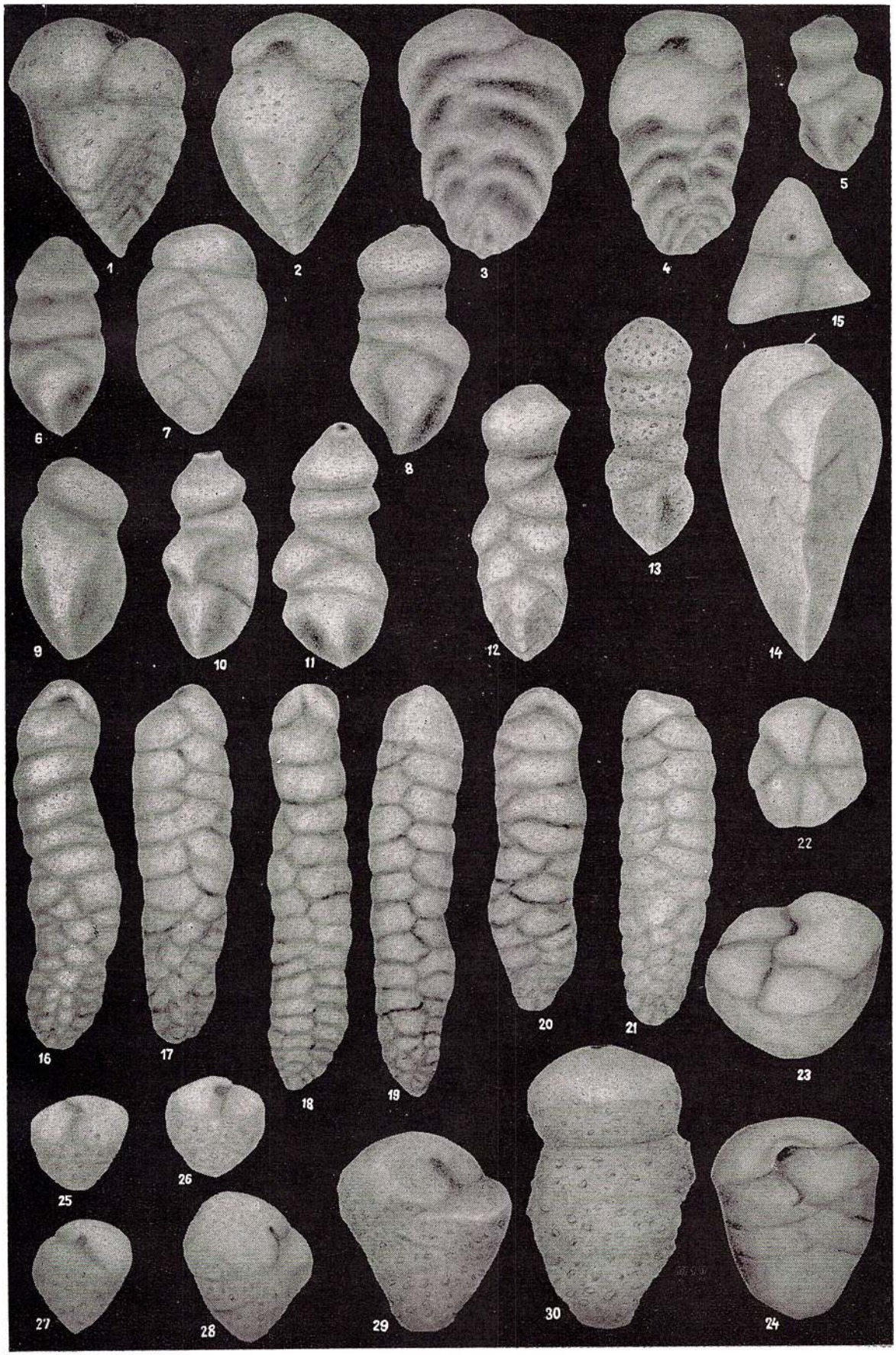

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PLATE VIII

Fig. 1, 2. — *Uvigerinammina jankoi* Majzon, Turonian, hypotype, L.P.B. 5751, × 65.
Fig. 3. — *Arenobulimina truncata* (Reuss), Lower Campanian, hypotype, L.P.B 5254, × 65.
Fig. 4. — *Arenobulimina preslii* (Reuss), Campanian, hypotype, L.P.B. 5256, × 65.
Fig. 5, 6. — *Arenobulimina macfadyeni* Cushman, Upper Albian, hypotypes, fig. 5, L.P.B. 9070/1, fig. 6, L.P.B. 9070/2, × 78.
Fig. 7. — *Dorothia oxycona* (Reuss), Campanian, hypotype, L.P.B. 6084, × 39.
Fig. 8, 9. — *Dorothia trochus* (d'Orbigny), Upper Albian, hypotype, L.P.B. 9071, × 78.
Fig. 10. — *Matanzia varians* (Glaessner), Lower Maestrichtian, hypotype, L.P.B. 5264, × 59.
Fig. 11—17. — *Tritaxia amorpha subparisiensis* (Grzybowski), Campanian, hypotypes 11, L.P.B. 5639, fig. 12, L.P.B. 5640, fig. 13, L.P.B. 5641, fig. 14, L.P.B., 5642, fig. 15, L.P.B. 5643, fig. 16, L.P.B. 5644, fig. 17, L.P.B. 5645, × 33.
Fig. 18. — *Tritaxia clavata* (Cushman), Lower Maestrichtian, hypotype, L.P.B. 5646, × 46.
Fig. 19, 20. — *Lagena globosa* (Montagu), Campanian, hypotypes, fig. 19, L.P.B. 6476, fig. 20, L.P.B. 6479, × 78.
Fig. 21, 22. — *Lagena emaciata* (Reuss), Campanian, hypotypes, fig. 21, L.P.B. 6472, fig. 22, L.P.B. 6474, × 52.
Fig. 23. — *Lagena vulgaris* Williamson, Campanian, hypotype, L.P.B. 6207, × 65.
Fig. 24, 25. — *Lagena apiculata* Reuss, Campanian, hypotypes, fig. 24, L.P.B. 6480 fig. 25, L.P.B. 6481, × 75.
Fig. 26. — *Lagena semilineata* Wright, Campanian, hypotype, L.P.B. 5309, × 78.
Fig. 27. — *Dentalina oligostegia* Reuss, Campanian, hypotype, L.P.B. 5295, × 46.
Fig. 28, 29. — *Nodosaria limbata* (d'Orbigny), Campanian, hypotypes, fig. 28, L.P.B. 6465, fig. 29, L.P.B. 6466, × 46.

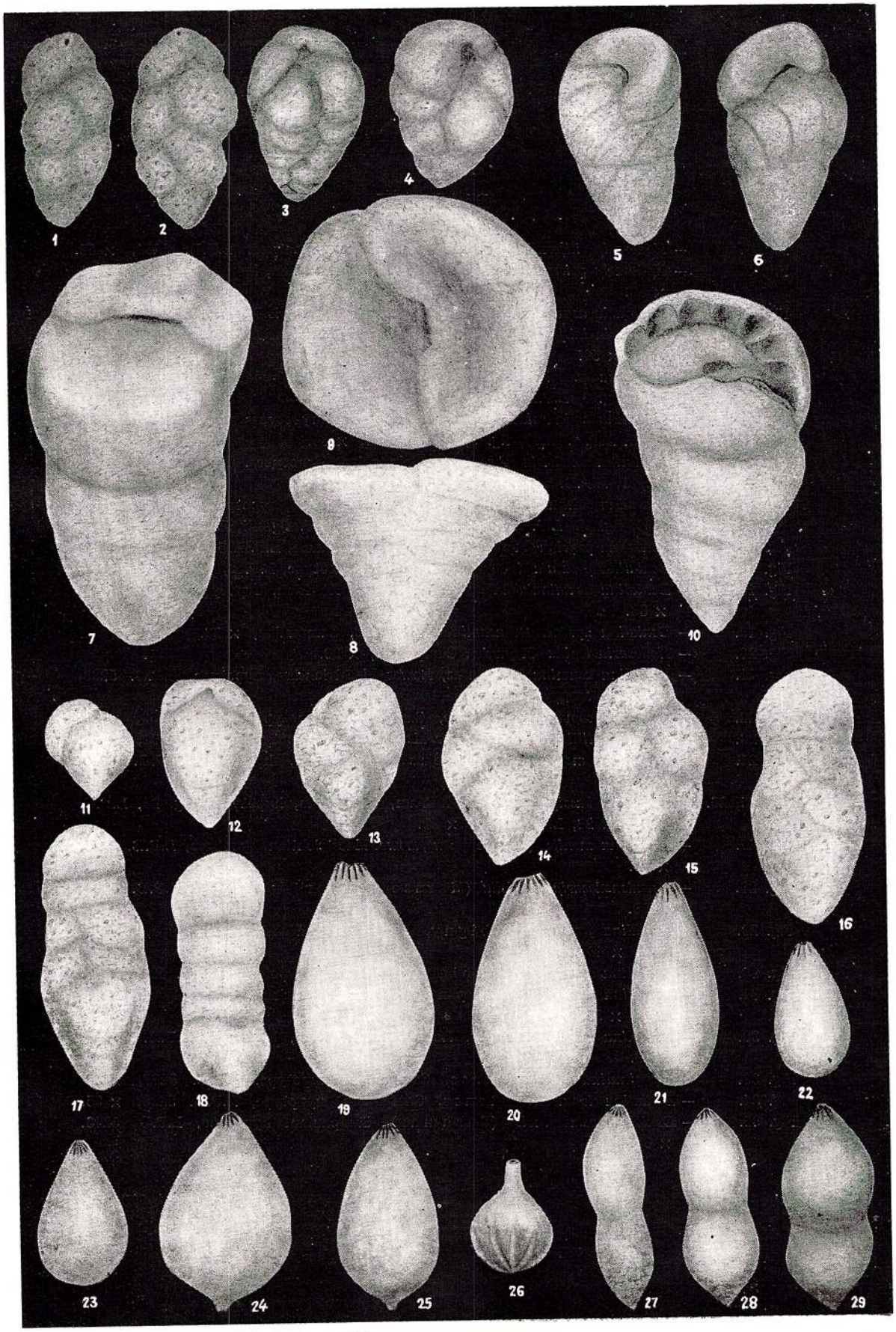

PLATE IX

Fig. 1. — *Nodosaria filiformis* Reuss, Campanian, hypotype, L.P.B. 6214, × 65.
Fig. 2. — *Nodosaria prismatica* Reuss, Lower Maestrichtian, hypotype, L.P.B. 5281, × 33.
Fig. 3. — *Nodosaria aspera* Reuss, Campanian, hypotype, L.P.B. 5282, × 33.
Fig. 4. — *Nodosaria latejugata* Gümbel, Lower Maestrichtian, hypotype, L.P.B. 6273, × 59.
Fig. 5, 6. — *Dentalina pseudochrysalis* Reuss, Campanian, hypotypes, fig. 5, L.P.B. 6224, fig. 6, L.P.B. 6226, × 46.
Fig. 7—9. — *Dentalina cylindroides* Reuss, Campanian, hypotypes, fig. 7, L.P.B. 5288, fig. 8, L.P.B. 6229, fig. 9, L.P.B. 6231, × 33.
Fig. 10, 11. — *Dentalina constricta* Franke, Campanian, hypotypes, fig. 10, L.P.B. 6461, fig. 11, L.P.B. 6462, × 42.
Fig. 12—15. — *Dentalina catenula* Reuss, Lower Maestrichtian, hypotypes, fig. 12, L.P.B. 6264, fig. 13, L.P.B. 6268, fig. 14, L.P.B. 6267, fig. 15, L.P.B. 6265, × 42.
Fig. 16. — *Dentalina concina* Reuss, Campanian, hypotype, L.P.B. 6227, × 42.
Fig. 17. — *Dentalina peracuta* (Reuss), Turonian, hypotype, L.P.B. 5290, × 42.
Fig. 18. — *Dentalina acuminata* Reuss, Lower Maestrichtian, hypotype, L.P.B. 5296, × 33.
Fig. 19. — *Dentalina* sp. cf. *D. acuminata* Reuss, Campanian, × 33.
Fig. 20. — *Nodosaria lepida* Reuss, Campanian, × 39.
Fig. 21. — *Dentalina acuminata* Reuss, Lower Maestrichtian, hypotype, L.P.B. 5296, × 52.
Fig. 22. — *Dentalina commutata* Reuss, Campanian, hypotype, L.P.B. 5259, × 33.
Fig. 23. — *Dentalina lilli* Reuss, Lower Maestrichtian, hypotype, L.P.B. 5291, × 33.
Fig. 24. — *Dentalina megalopolitana* Reuss, Campanian, hypotype, L.P.B. 5290, × 33.
Fig. 25, 26. — *Dentalina bassiplanata* Cushman, Campanian, hypotypes, fig. 25, L.P.B. 6181, fig. 26, L.P.B. 5286, × 29.
Fig. 27. — *Dentalina monile* (Hagenow), Lower Maestrichtian, hypotype, L.P.B. 5284, × 33.
Fig. 28. — *Pseudonodosaria paralella* (Marsson), Campanian, hypotype, L.P.B. 5305, × 29.
Fig. 29. — *Dentalina gracilis* d'Orbigny, Lower Maestrichtian, hypotype, L.P.B. 5285, × 49.
Fig. 30. — *Dentalina communis* d'Orbigny, Campanian, hypotype, L.P.B. 5287, × 46.
Fig. 31. — *Dentalina raristriata* Chapman, Lower Maestrichtian, hypotype, L.P.B. 5293, × 33.
Fig. 32. — *Dentalina marcki* Reuss, Lower Maestrichtian, hypotype, L.P.B. 5249, × 29.
Fig. 33. — *Marginulina armata* Reuss, Campanian, hypotype, L.P.B. 5277, × 49.
Fig. 34. — *Dentalina tenuicollis* Reuss, Campanian, hypotype, L.P.B. 5298, × 65.
Fig. 35. — *Dentalina velascoensis* (Cushman), Campanian, hypotype, L.P.B. 6248, × 85.

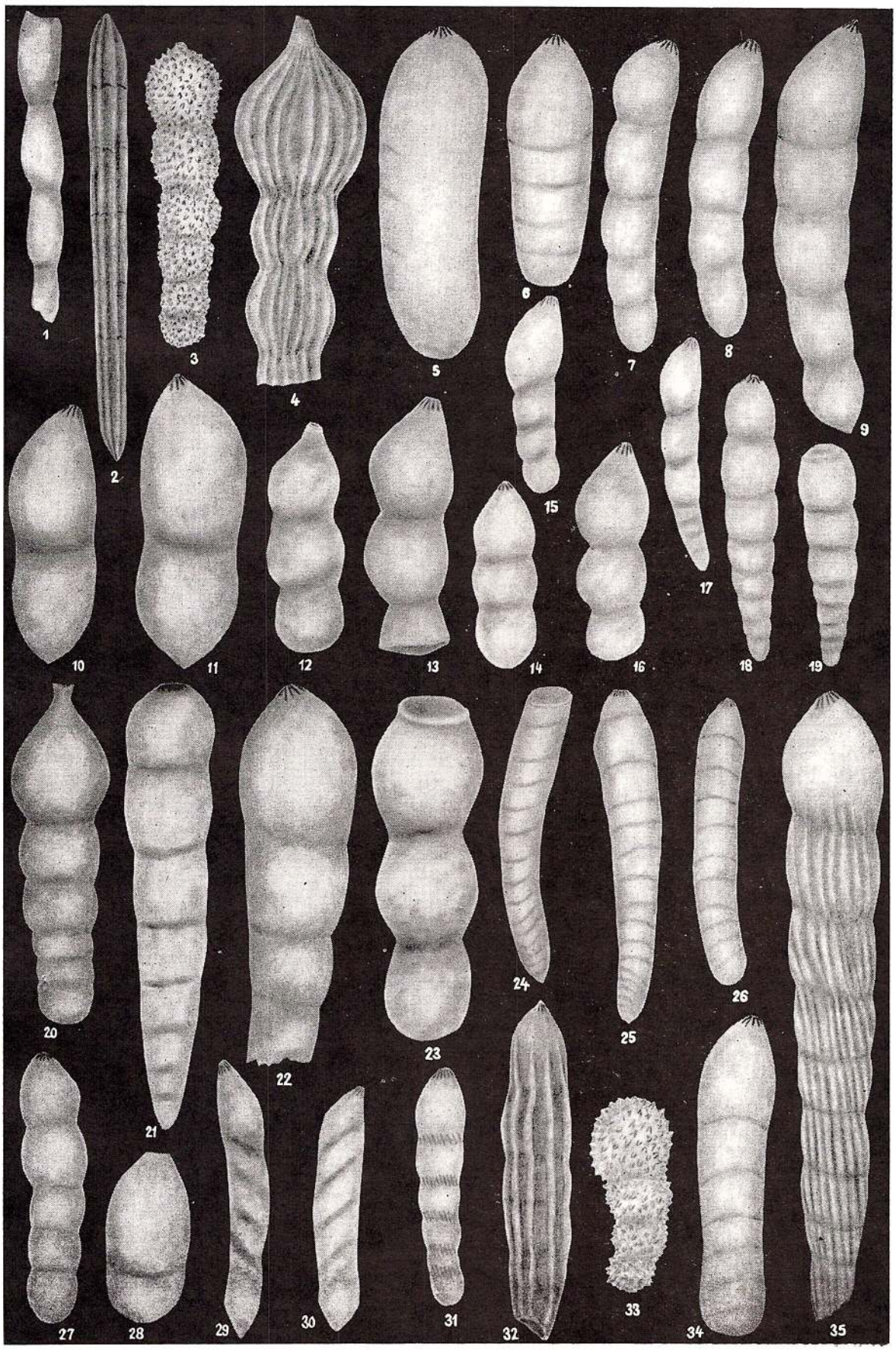

PLATE X

Fig 1. — *Dentalina communis* d'Orbigny, Campanian, hypotype, L.P.B. 5287 × 46.

Fig. 2. — *Dentalina nana*? Reuss, Campanian, × 33.

Fig. 3—5. — *Nodosaria cylindrica* (Alth), Campanian, hypotypes, fig. 3, L.P.B. 6172, × 49, fig. L.P.B. 5303, × 36, fig. 5, L.P.B. 6173. × 49.

Fig. 6—8. — *Pseudonodosaria bistegia* (Olszewski), Turonian, hypotypes, fig. 6, L.P.B. 6492, fig. 7, L.P.B. 6491, fig. 8, L.P.B. 6490, × 65.

Fig. 9, 10. — *Pseudonodosaria mutabilis* (Reuss), Campanian, hypotypes, fig. 9, L.P.B. 6454, fig. 10, L.P.B. 6455, × 49.

Fig. 11. — *Vaginulina trilobata* d'Orbigny, Lower Maestrichtian, hypotype, L.P.B. 5280, × 46.

Fig. 12. — *Pseudonodosaria* ? *cylindracea* (Reuss), Campanian, hypotype, L.P.B. 5304, × 39.

Fig. 13, 14. — *Pseudonodosaria obesa* (Loeblich & Tappan), Lower Maestrichtian, hypotypes, fig. 13, L.P.B. 6493, fig. 14, L.P.B. 5306, × 65.

Fig. 15, 16. — *Marginulina bullata* Reuss, Campanian, hypotypes, fig. 15, L.P.B. 6474, fig. 16, L.P.B. 6468, × 46.

Fig. 17. — *Pseudonodosaria manifesta* (Reuss), Campanian, hypotype, L.P.B. 5302, × 46.

Fig. 18. — *Marginulina modesta* Reuss, Lower Maestrichtian, hypotype, L.P..B 5279, × 46.

Fig. 19, 20. — *Lenticulina ovalis* (Reuss), Campanian, hypotype, L.P.B. 5271, × 46.

Fig. 21, 22. — *Lenticulina nodosa* (Reuss), Lower Aptian, hypotype, L.P.B. 9072, × 98.

Fig. 23, 24. — *Lenticulina collignoni* Espitalié & Sigal, Lower Aptian, hypotype L.P.B. 9077, × 91.

Fig. 25, 26. — *Lenticulina* sp., Lower Aptian, × 91.

Fig. 27, 28. — *Lenticulina gaultina* (Berthelin), Lower Aptian, hypotype, L.P.B. 9074, × 72.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. X.

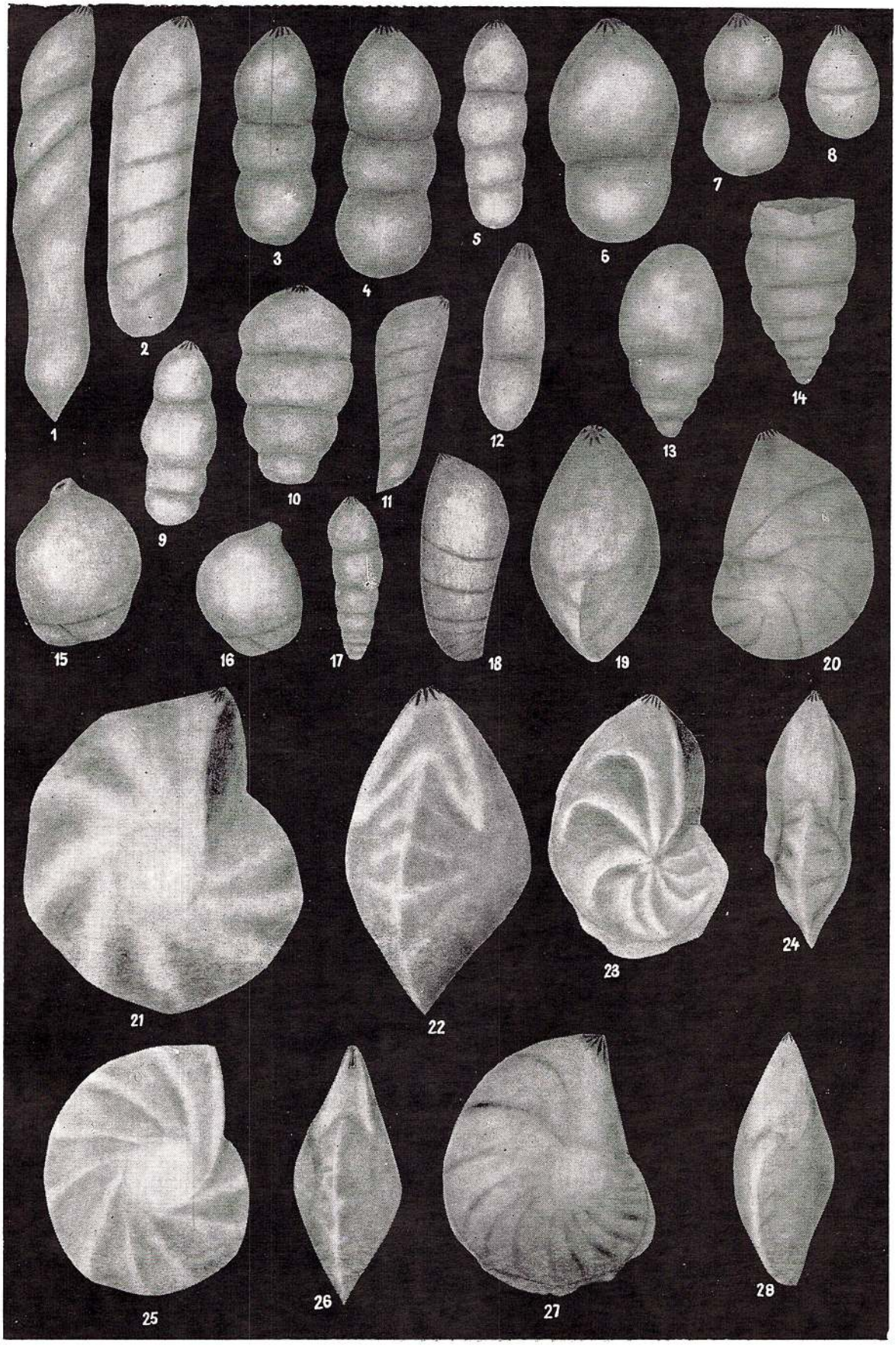

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PLATE XI

Fig. 1, 2. — *Lenticulina roemeri* (Reuss), Lower Aptian, hypotype, L.P.B. 9076, × 65.
Fig. 3. — *Lenticulina muensteri* (Reuss), Lower Aptian, hypotype, L.P.B. 9101, × 65.
Fig. 4, 5. — *Lenticulina macrodisca* (Reuss), Lower Aptian, hypotype, L.P.B., 9102, × 91.
Fig. 6. — *Citharina reticulata* (Cornuel), Lower Aptian, hypotype, L.P.B. 9071, × 52.
Fig. 7—9. — *Lenticulina ouachensis ouachensis* (Sigal), Lower Aptian, hypotypes, fig. 7, L.P.B. 9073/1, fig. 8—9, L.P.B. 9073/2, × 55.
Fig. 10. — *Marginulina austinana directa* Cushman, Turonian, hypotype, L.P.B. 5433, × 46.
Fig. 11. — *Astacolus cretaceus* (Cushman), Campanian, hypotype, L.P.B. 6572, × 46.
Fig. 12. — *Planularia harpa* (Reuss), Campanian, hypotype, L.P.B. 5273, × 33.
Fig. 13. — *Vaginulinopsis ensis* (Reuss), Campanian, hypotype, L.P.B. 5276, × 33.
Fig. 14, 15. — *Lenticulina muensteri* (Reuss), Campanian, hypotype, L.P.B. 6673, × 42.
Fig. 16, 17. — *Lenticulina acuta* (Reuss), Campanian, hypotype, L.P.B. 5275, × 40.
Fig. 18, 19. — *Lenticulina comptoni* (Sowerby), Campanian, hypotype, L.P.B. 5272, × 39.
Fig. 20. — *Lenticulina velascoensis* White, Campanian, hypotype, L.P.B. 5270, × 65.
Fig. 21. — *Marginulina curvatura* Cushman, Lower Maestrichtian, hypotype, L.P.B. 5278, × 65.
Fig. 22. — *Marginulina texasensis* Cushman, Campanian, hypotype, L.P.B. 6121, × 33.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. XI.

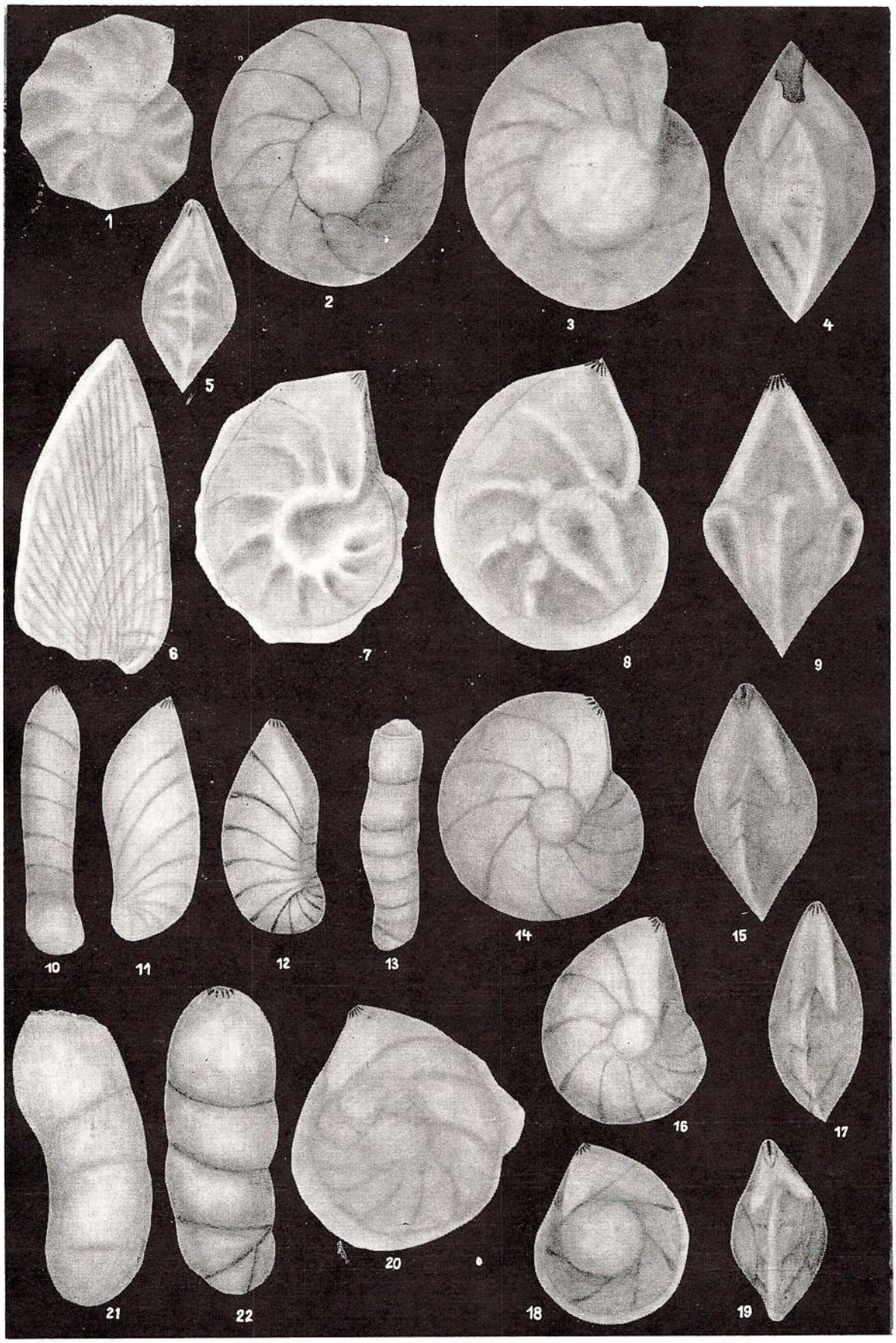

PLATE XII

Fig. 1, 2. — *Lenticulina praegaultina* Bartenstein, Bettenstaedt, Bolli, Lower Aptian, hypotype, L.P.B. 9075, × 72.
Fig. 3. — *Palmula primitiva* Cushman, Campanian, hypotype, L.P.B. 5301, × 33.
Fig. 4. — *Kyphopyxa jarvisi* Cushman, Campanian, hypotype, L.P.B. 5300, × 29.
Fig. 5. — *Ramulina novaculeata* Bullard, Campanian, hypotype, L.P.B. 6483, × 46.
Fig. 6, 7. — *Guttulina adherens cuspidata* Cushman & Ozawa, Campanian, hypotype, L.P.B. 6497, × 65.
Fig. 8, 9. — *Guttulina adherens adherens* (Olszewski), Lower Maestrichtian, hypotype, L.P.B. 5325, × 91.
Fig. 10—12. — *Guttulina trigonula* Reuss, Lower Maestrichtian, hypotypes, fig. 10, L.P.B. 6546, fig. 11—12, L.P.B. 6543, × 82.
Fig. 13. — *Guttulina spicaeformis* (Roemer), Campanian, hypotype, L.P.B. 6763, × 65.
Fig. 14. — *Globulina lacrima subsphaerica* (Bertheli n), Lower Maestrichtian, hypotype, L.P.B. 5319, × 78.
Fig. 15. — *Globulina lacrima lacrima* Reuss, Campanian, hypotype, L.P.B. 6509 × 82.
Fig. 16, 17. — *Globulina prisca* Reuss, Campanian, hypotype, fig. 16, L.P.B. 5318, fig. 17, L.P.B. 6539, × 59.
Fig. 18, 19. — *Parafissurina lageniformis* Neagu, Campanian, paratype, L.P.B. 8057, × 85.
Fig. 20, 21. — *Fissurina alata* Reuss, Campanian, hypotype, L.P.B. 5403, × 59.
Fig. 22, 23. — *Fissurina orbignyana orbignyana* (Seguenza), Campanian, hypotype, L.P.B. 5410, × 65.
Fig. 24, 25. — *Fissurina orbignyana inornata* Neagu, Campanian, holotype L.P.B. 5409, × 65.
Fig. 26, 27. — *Fissurina orbignyana bicornis* Neagu, Campanian, holotype, L.P.B. 5401, × 65.
Fig. 28, 29. — *Fissurina orbignyana praeclara* (Cushman & Renz), Campanian, hypotype, L.P.B. 5408, × 65.
Fig. 30—34. — *Parafissurina lageniformis* Neagu, Campanian, holotype, fig. 33—34, L.P.B. 8054, × 72, paratypes, fig. 31—32, L.P.B. 8055, × 62, fig. 30 (longitudinal section), L.P.B. 8056, × 98.
Fig. 35. — *Dentalina steenstrupi* Reuss, Campanian, hypotype, L.P.B. 6274, × 33.

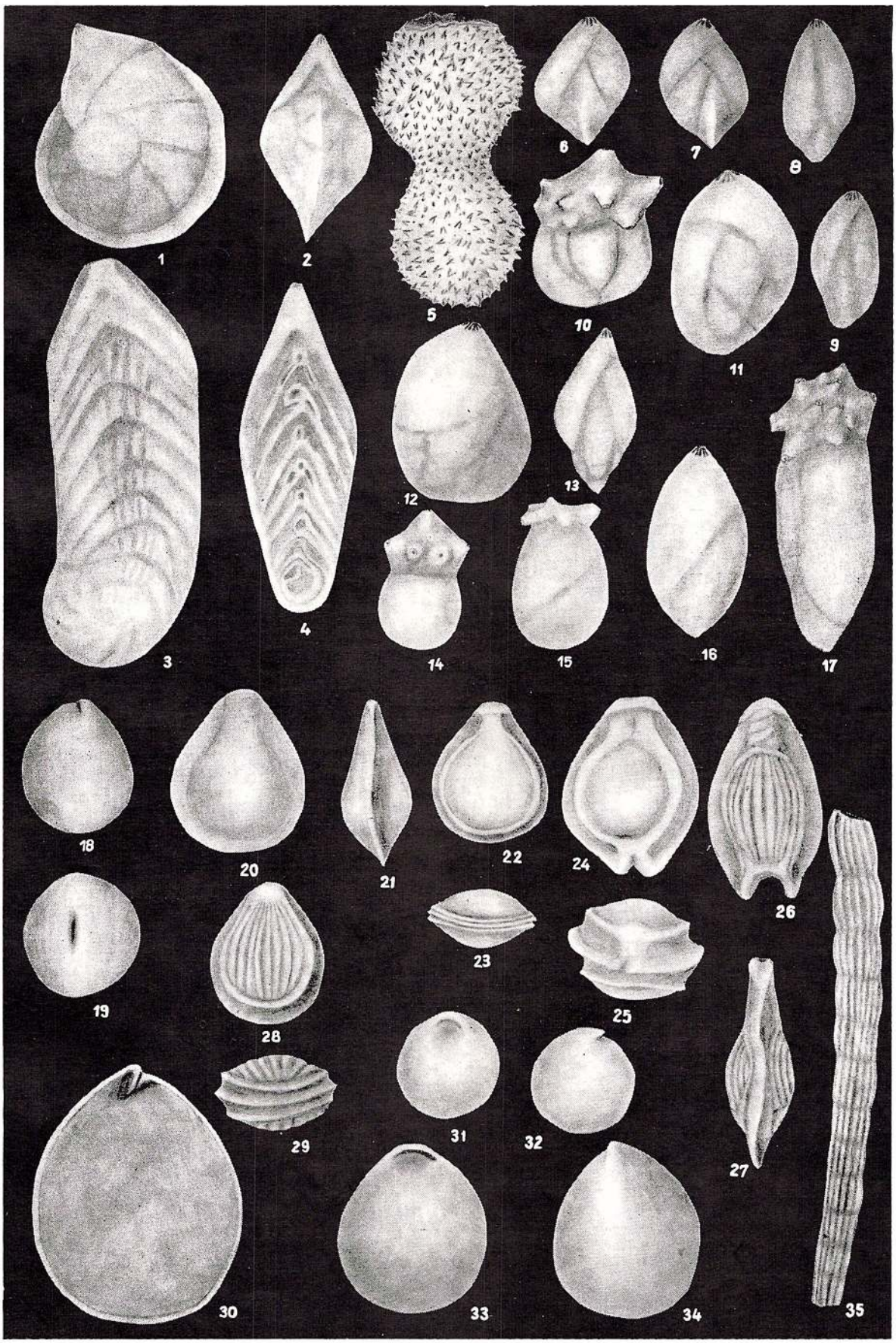

PLATE XIII

Fig. 1—3. — *Pyrulina cylindroides* (R o e m e r), Campanian, hypotypes, fig. 1—2, L.P.B. 6532, fig. 3, L.P.B. 6535, × 75.

Fig. 4, 5. — *Pseudopolymorphina leopolitana* (R e u s s), Lower Maestrichtian, hypotype, L.P.B. 5316, × 52.

Fig. 6, 7. — *Pseudopolymorphina digitata* (d'O r b i g n y), Campanian, hypotypes, fig. 6, L.P.B. 6593, fig. 7, L.P.B. 6537, × 46.

Fig. 8,11, 12. — *Praebulimina ventricosa* (B r o t z e n), Campanian, hypotypes, fig. 8, L.P.B. 5333, × 120, fig. 11—12, L.P.B. 9103, × 107.

Fig. 9, 10. — *Praebulimina ovulum* (R e u s s), Campanian, hypotypes, fig. 9, L.P.B. 6612, fig. 10, L.P.B. 5334, × 117.

Fig. 13—14. — *Praebulimina hofkeri* (B r o t z e n), Lower Coniacian, hypotype, L.P.B. 6821, × 107.

Fig. 15. — *Praebulimina laevis* (B e i s s e l), Campanian, hypotype, L.P.B. 6814, × 101.

Fig. 16. — *Praebulimina steokesi* (C u s h m a n), Lower Maestrichtian, hypotype, L.P.B. 5332, × 101.

Fig. 17, 18. — *Praebulimina imbricata* (R e u s s), Campanian, hypotypes, fig. 17, L.P.B. 6661, fig. 18 L.P.B. 6660, × 101.

Fig. 19, 20. — *Bolivina textilaroides* R e u s s, Campanian, hypotypes, fig. 19, L.P.B. 6793, fig 20, L.P.B. 6792, × 75.

Fig. 21. — *Bolivina plaita* C a r s e y, Campanian, hypotype, L.P.B. 6797, × 75.

Fig 22. — *Bolivina incrassata incrassata* R e u s s, Campanian, hypotype. L.P.B. 5329, × 75.

Fig. 23. — *Eouvigerina crisstata* (M a r s s o n), Campanian, hypotype, L.P.B. 6776, × 101.

Fig. 24—26. — *Pyramidina szajnochae* (G r z y b o w s k i), Campanian, hypotypes, fig. 24, L.P.B. 6740, fig. 25, L.P.B. 6739, fig. 26, L.P.B. 5331, × 52.

Fig. 27. — *Pyramidina pseudospinulosa* (T r o e l s e n), Lower Maestrichtian, hypotype, L.P.B. 5330, × 65.

Fig. 28. — *Praebulimina carseyae* (P l u m m e r), Campanian, hypotype, L.P.B. 6623, × 117.

Fig. 29, 30. — *Pyramidina cushmani* (B r o t z e n), Campanian, hypotype, L.P.B. 5329, × 120.

Fig. 31—33. — *Heterohelix globulosa* E h r e n b e r g, Campanian, hypotypes, fig. 31—32, L.P.B. 6825, × 88, fig. 33, L.P.B. 6826, × 65.

Fig. 34—36. — *Heterohelix planata* (C u s h m a n), Lower Coniacian, hypotypes, fig. 35, L.P.B. 7087, fig. 34, L.P.B. 7089, fig. 36, L.P.B. 7090, × 104.

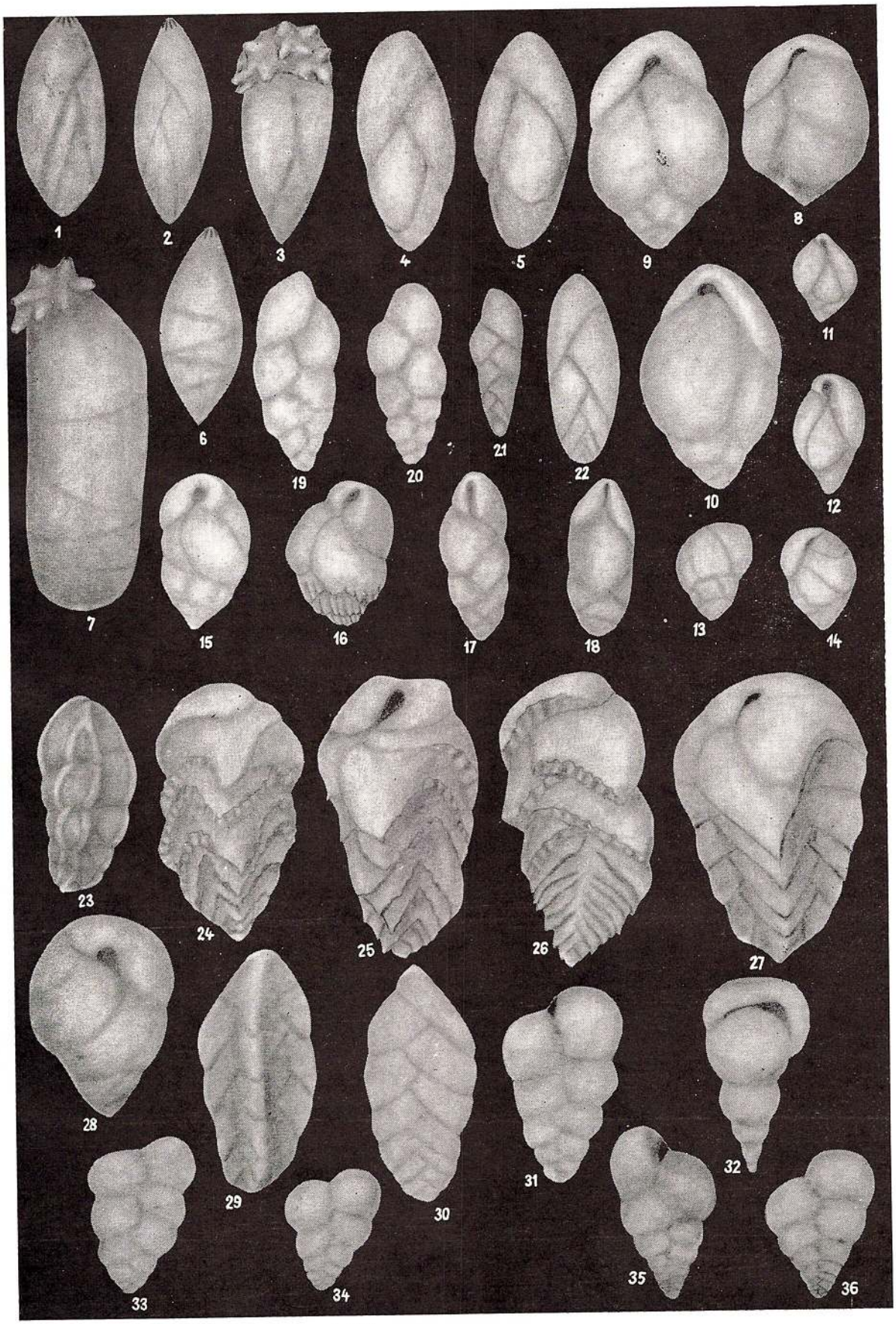

PLATE XIV

Fig. 1. — *Pseudotextularia elegans* Rzehak, Lower Maestrichtian, hypotype, L.P.B. 6918, × 153.

Fig. 2. — *Planoglobulina glabrata* (Cushman), Lower Maestrichtian, hypotype, L.P.B. 5405, × 101.

Fig. 3. — *Racemiguembelina fructicosa* (Egger), Lower Maestrichtian, hypotype, L.P.B. 5406, × 117.

Fig. 4, 5. — *Pseudoguembelina striata* (Ehrenberg), Upper Campanian, hypotypes, fig. 4, L.P.B. 6888, fig. 5, L.P.B. 6889, × 146.

Fig. 6—8. — *Heterohelix pulchra* (Brotzen), Campanian, hypotypes, fig. 6—7, L.P.B. 6868, fig. 8, L.P.B. 6869, × 65.

Fig. 9, 10. — *Heterohelix moremani* (Cushman), Campanian, hypotype, L.P.B. 7079, × 65.

Fig. 11. — *Gublerina ornatissima* (Cushman & Church), Upper Campanian, hypotype, L.P.B. 6993, × 65.

Fig. 12. — *Pseudoguembelina costulata* (Cushman), Lower Maestrichtian, hypotype L.P.B. 6895, × 65.

Fig. 13, 14. — *Planoglobulina carseyae* (Plummer), Lower Maestrichtian, hypotypes fig. 13, L.P.B. 6910, fig. 14, L.P.B. 6911, × 65.

Fig. 15—23. — *Schackoina cenomana cenomana* (Schacko), Cenomanian, hypotypes, fig. 15—16, L.P.B. 6696, fig. 17—18, L.P.B. 6694, fig. 19, L.P.B. 6692, fig. 20, L.P.B. 6695, fig. 21—22, L.P.B. 6693, fig. 23, L.P.B. 6691, × 150.

Fig. 24. — *Bifarina texana* (Cushman), Campanian, hypotype, L.P.B. 6984, × 65.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. XIV.

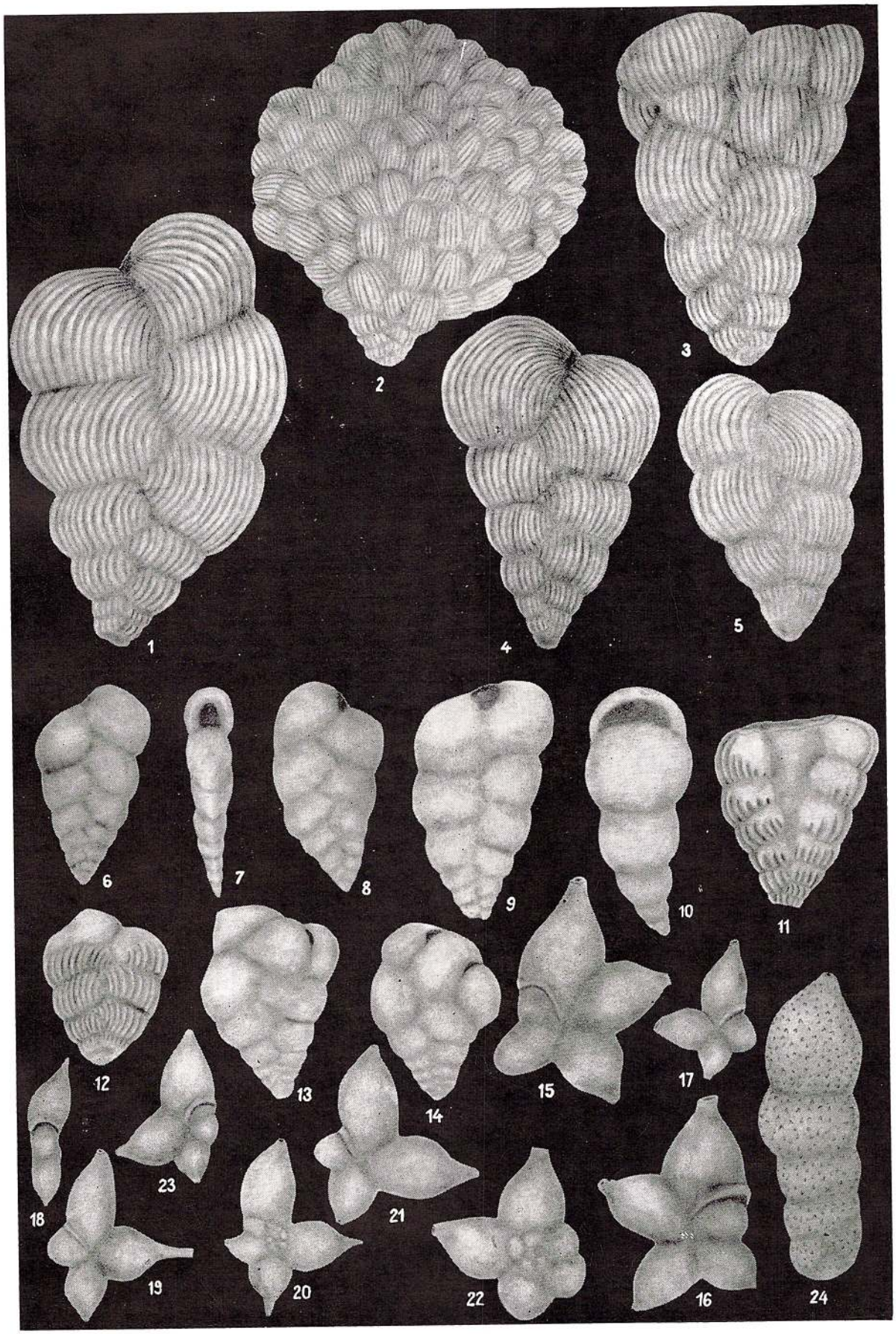

PLATE XV

Fig. 1—6. — *Schackoina cenomana gandolfi* (R e i c h e l), Cenomanian, hypotypes, fig. 1—3, L.P.B. 6709, fig. 4—5, L.P.B. 6791, fig. 6, L.P.B. 6716, × 150.

Fig. 7—26. — *Schackoina multispinata bicornis* (R e i c h e l), Cenomanian, hypotypes, fig. 7—8, L.P.B. 6723, fig. 9—11, L.P.B. 6722, fig. 12, 15, L.P.B. 6728, fig. 13, 26, L.P.B. 6726, fig. 14, L.P.B. 6729, fig. 16—17, L.P.B. 6725, fig. 20—21, L.P.B. 6725, fig. 18, L.P.B. 6721, fig. 19, 24, L.P.B. 6719, fig. 22, L.P.B. 6721, fig. 23, L.P.B. 6730, fig. 25, L.P.B. 6727, × 150.

Fig. 27—29. — *Globotruncana lapparenti angusticarinata* (G a n d o l f i), Upper Turonian hypotype, L.P.B. 5290, × 85.

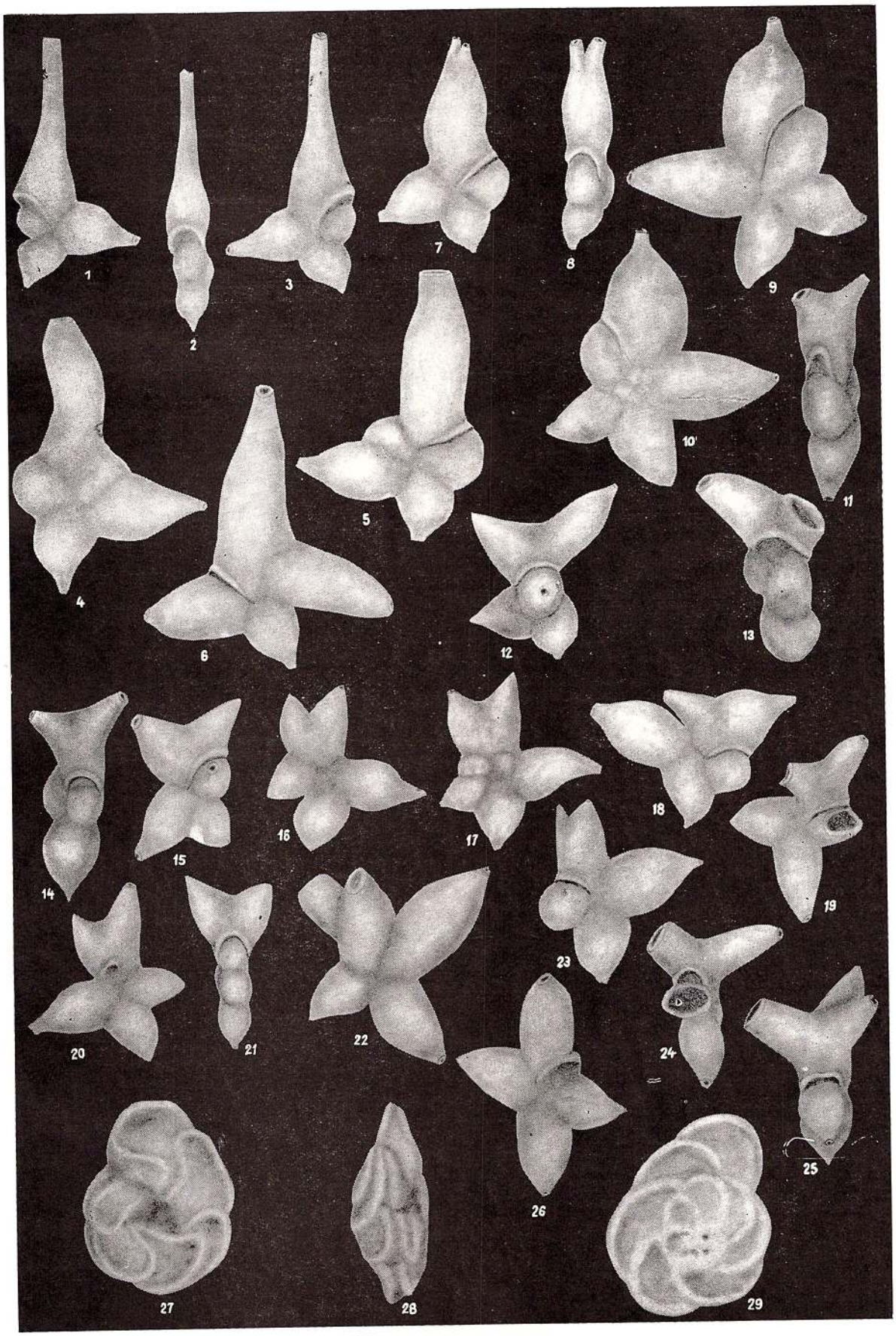

PLATE XVI

Fig. 1—3. — *Globotruncana renzi* Gandolfi, Middle-Upper Turonian, hypotype, L.P.B. 7915, × 78.

Fig. 4—6. — *Globotruncana lapparenti tricarinata* (Quereau), Middle-Upper Turonian, hypotype, L.P.B. 5393, × 78.

Fig. 7—9. — *Globotruncana lapparenti lapparenti* Brotzen, Middle-Upper Turonian, hypotype, L.P.B. 5395, × 72.

Fig. 10—12. — *Globotruncana marginata* (Reuss), Middle-Upper Turonian hypotype, L.P.B. 5392, × 111.

Fig. 13—17. — *Globotruncana area* (Cushman), Lower Maestrichtian, hypotypes, fig. 13—15, L.P.B. 5381, × 98, fig. 16—17, L.P.B. 7719, × 65.

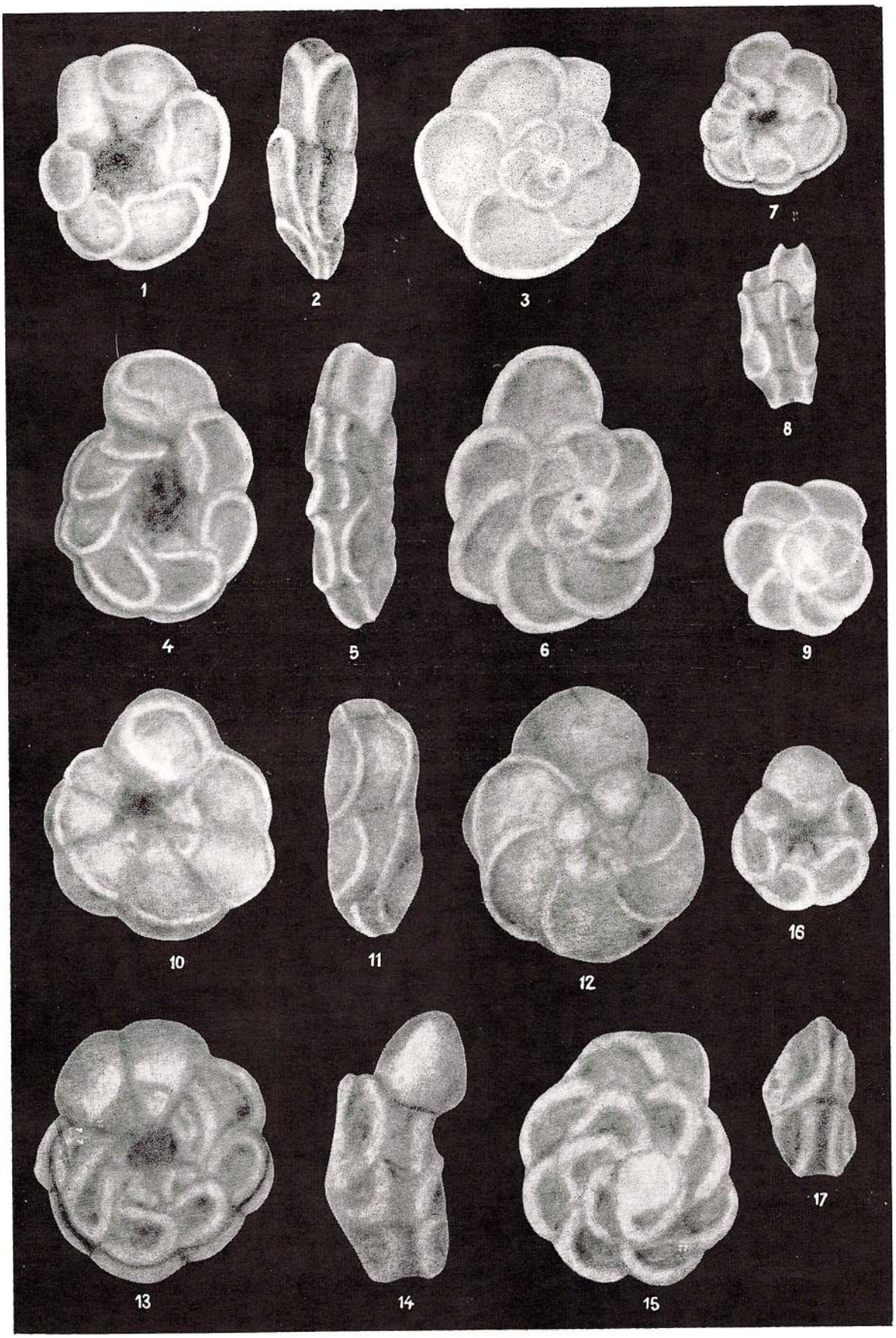

PLATE XVII

Fig. 1—3. — *Globotruncana lapparenti coronata* Bolli, Middle-Upper Turonian, hypotype, L.P.B. 5394, × 65.

Fig. 4—6. — *Globotruncana lapparenti bulloides* (Vogler), Middle-Upper Turonian, hypotype, L.P.B. 5390, × 98.

Fig. 7—9. — *Globotruncana fornicata* Plummer, Upper Turonian, hypotype, L.P.B. 7446, × 85.

Fig. 10—14. — *Globotruncana arca* (Cushman), Campanian, hypotypes, fig. 10—12, L.P.B. 7720, fig. 13—14, L.P.B. 7721, × 124.

Fig. 15—17. — *Globotruncana rugosa* (Marie), Lower Maestrichtian, hypotype, L.P.B. 7484, × 98.

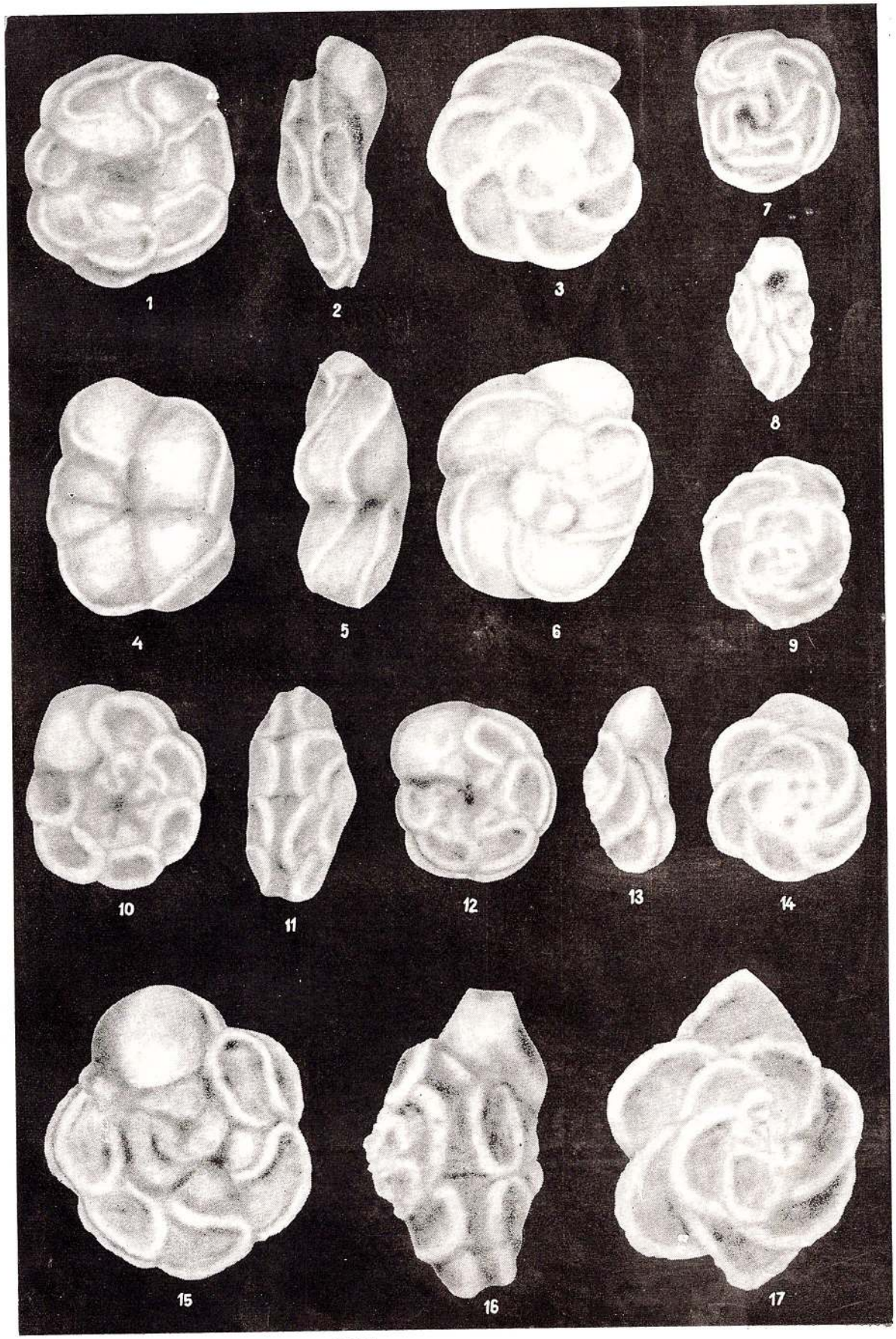

PLATE XVIII

Fig. 1—3. — *Globotruncana stuarti stuarti* (L a p p a r e n t), Lower Maestrichtian, hypotype, L.P.B. 5379, × 72.

Fig. 4—6. — *Globotruncana stuarti stuartiformis* (D a l b i e z), Lower Maestrichtian, hypotype, L.P.B. 7365, × 72.

Fig. 7—9. — *Globotruncana contusa* (C u s h m a n), Lower Maestrichtian, hypotype, L.P.B. 5380, × 91.

Fig. 10—14. — *Globotruncana stuarti elevata* (B r o t z e n), Lower Maestrichtian, hypotypes, fig. 10—12, L.P.B. 5397, fig. 13—14, L.P.B. 7322, × 78.

Fig. 15—17. — *Globotruncana caliciformis* (L a p p a r e n t), Lower Maestrichtian, hypotype, L.P.B. 5374, × 85.

Fig. 18—25. — *Globotruncana havanensis* V o o r w i j k, Upper Campanian, hypotypes, fig. 18—19, L.P.B. 7376, fig. 20—22, L.P.B. 7377, fig. 23—25, L.P.B. 7378, × 78.

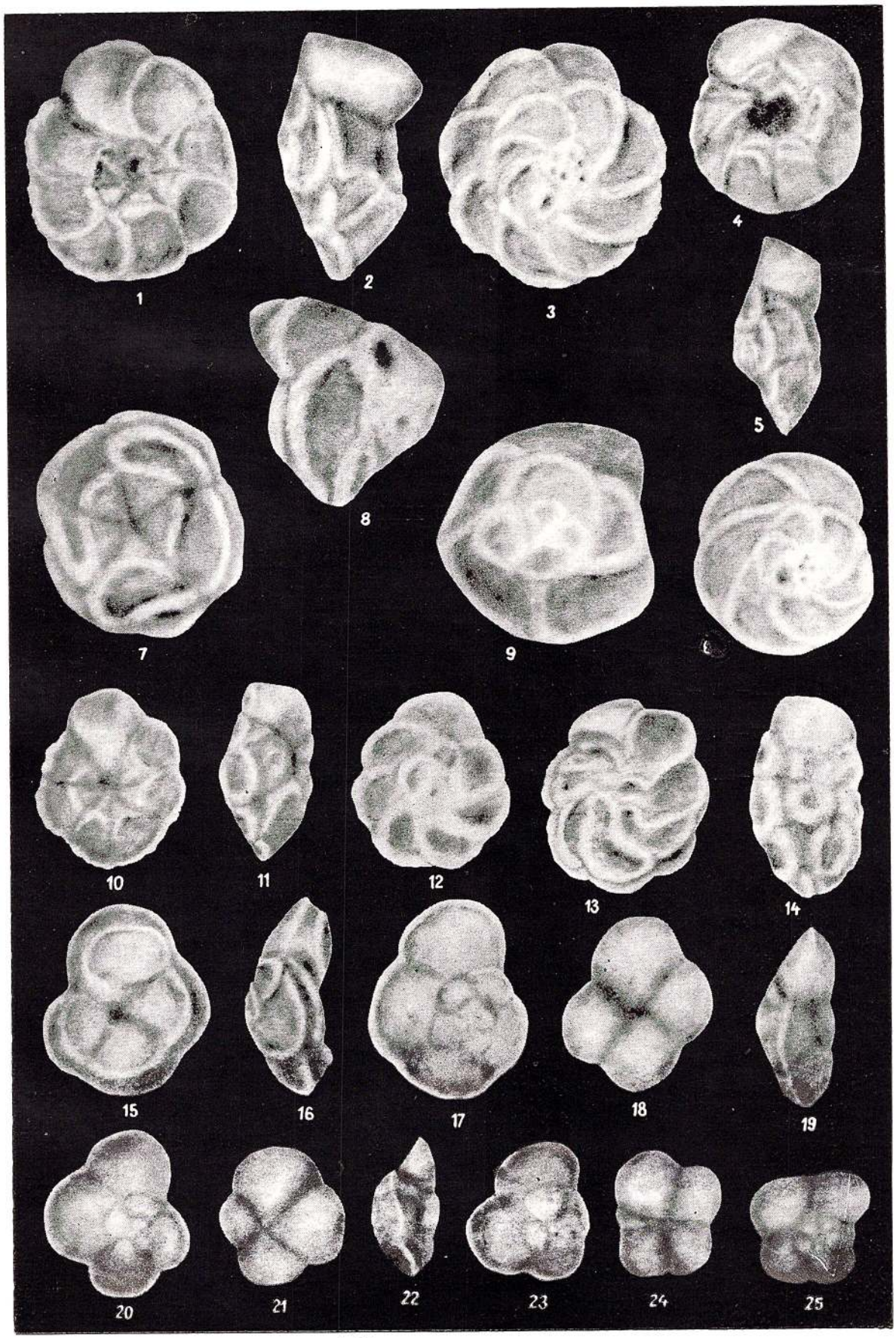

PLATE XIX

Fig. 1—5. — *Globotruncana havanensis* Voorwijk, Lower Maestrichtian, hypotypes, fig. 1—3, L.P.B. 5378, fig. 4—5, L.P.B. 7379, × 78.

Fig. 6—8. — *Abatomphalus mayaroensis* (Bolli), Lower Maestrichtian, hypotype, L.P.B. 5377. × 78.

Fig. 9—11. — *Abatomphalus intermedia* (Bolli), Lower Maestrichtian, hypotype, L.P.B. 7447, × 78.

Fig. 12—16. — *Hedbergella delrioensis* (Carsey), Cenomanian, hypotypes, fig. 12—14. L.P.B. 9075/1, fig. 15—16, L.P.B. 9075/2, × 120.

Fig. 17—19. — *Clavihedbergella simplicissima* (Magné & Sigal), Cenomanian, hypotype. L.P.B. 9076/1 × 150.

Fig. 20—22. — *Hedbergella planispira* (Tappan), Cenomanian, hypotype, L.P.B. 9072/1, × 150.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. XIX.

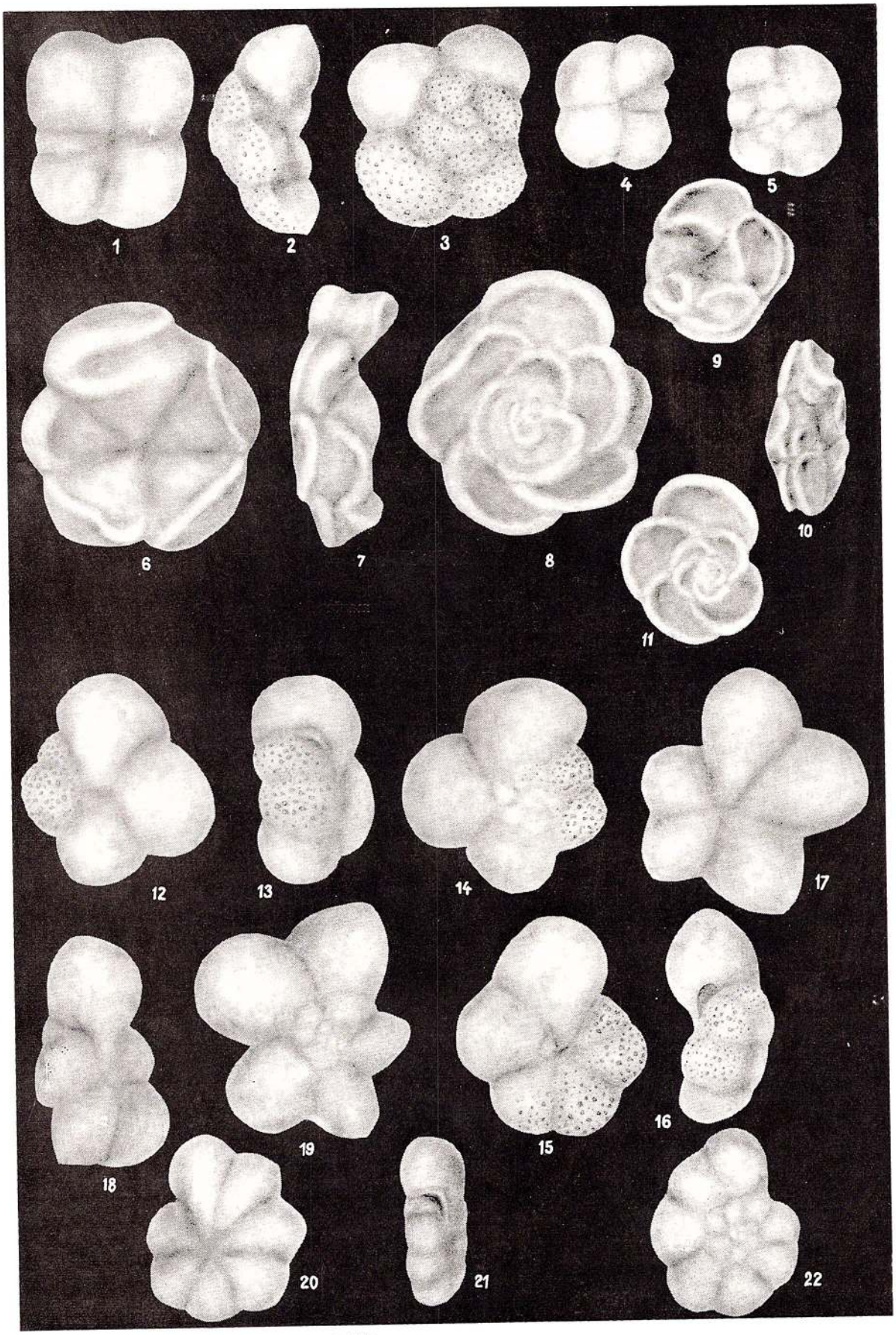

PLATE XX

Fig. 1—6. — *Hedbergella delrioensis* (C a r s e y), Cenomanian, hypotypes, fig. 1—3, L.P.B. 9075/2, fig. 4—6, L.P.B. 9075/3, × 120.

Fig. 7—15. — *Clavihedbergella simplicissima* (M a g n é & S i g a l), Cenomanian, hypotypes fig. 7—9, L.P.B. 9076/2, fig. 10—12, L.P.B. 9076/3, fig. 13—15, L.P.B. 9076/4, × 150.

Fig. 16—18. — *Hedbergella delrioensis* (C a r s e y), Cenomanian, hypotype, L.P.B. 9075/4, × 120.

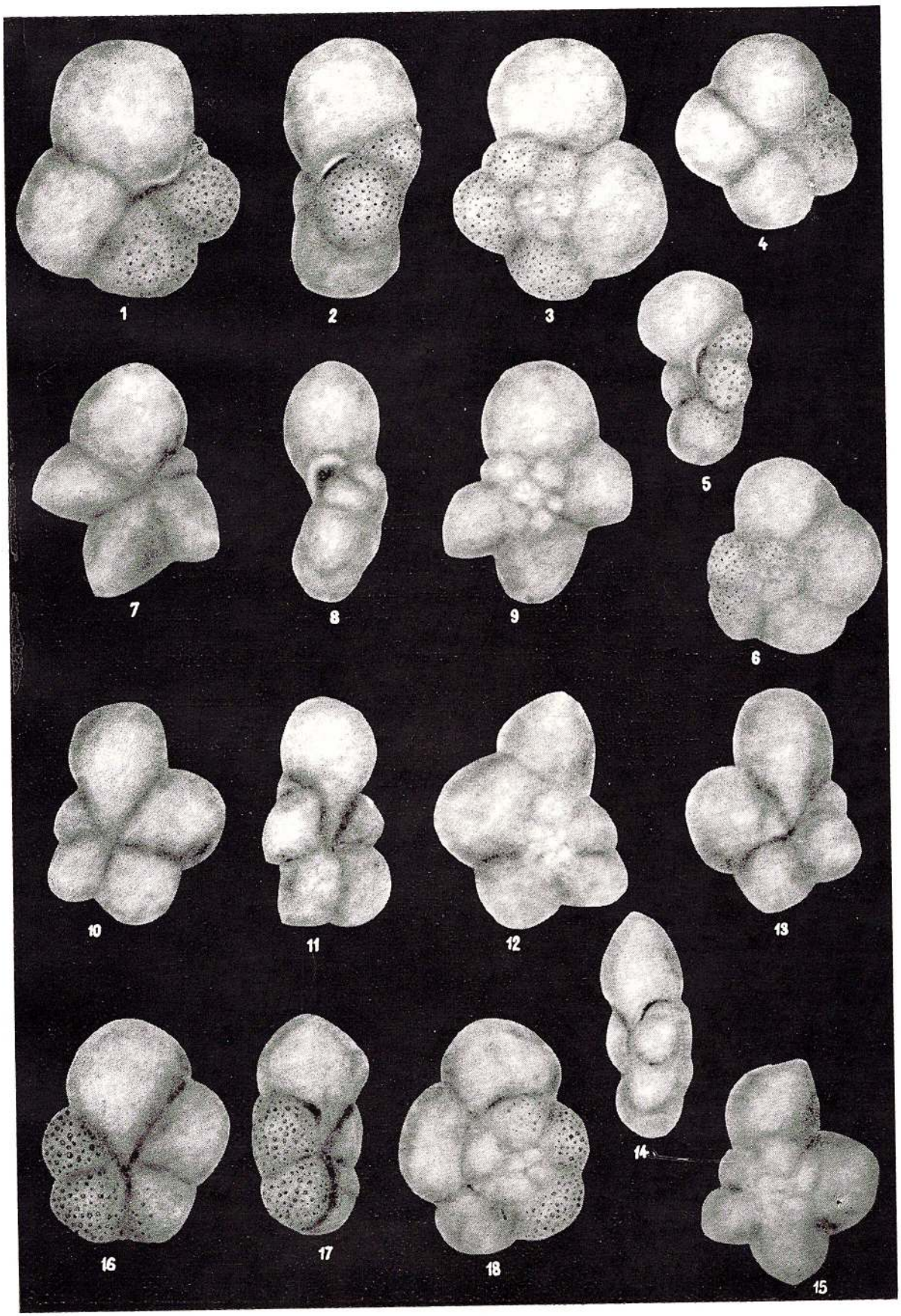

PLATE XXI

Fig. 1—6. — *Hedbergella amabilis* Loeblich & Tappan, Cenomanian, hypotypes, fig. 1—3, L.P.B. 9074/1, fig. 4—6, L.P.B. 9074/2, × 150.

Fig. 7—9. — *Hedbergella delrioensis* (Carsey), Cenomanian, hypotype, L.P.B. 9075/5, × 120.

Fig. 10—12. — *Rotalipora appenninica appenninca* (Renz), Cenomanian, hypotype, L.P.B. 9080/1, × 94.

Fig. 13—15. — *Hedbergella amabilis* Loeblich & Tappan, Cenomanian, hypotype L.P.B. 9074/3, × 150.

Fig. 16—17. — *Hedbergella delrioensis* (Carsey), Cenomanian, hypotype, L.P.B. 9075/6, × 150.

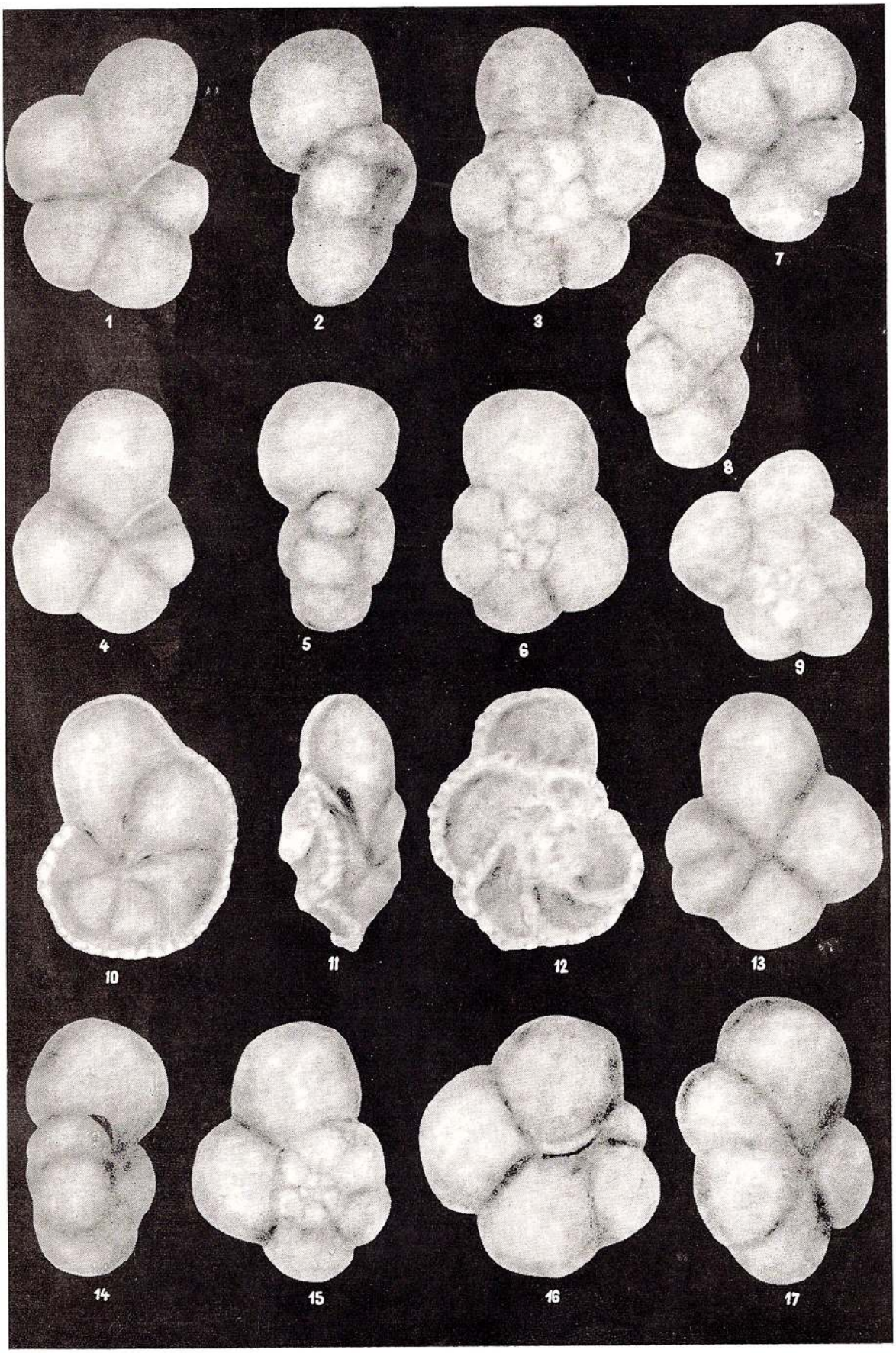

PLATE XXII

Fig. 1—3. — *Rotalipora appenninica evoluta* (S i g a l), Cenomanian, hypotype, L.P.B. 9084, × 91.

Fig. 4—6. — *Hedbergella delrioensis* (C a r s e y), Cenomanian, hypotype, L.P.B. 9075/7, × 120.

Fig. 7—9. — *Rotalipora reicheli* M o r n o d, Cenomanian, hypotype, L.P.B. 9088, × 85.

Fig. 10—12. — *Rotalipora cushmani cushmani* (M o r r o w), Cenomanian, hypotype, L.P.B. 9086/1, × 85.

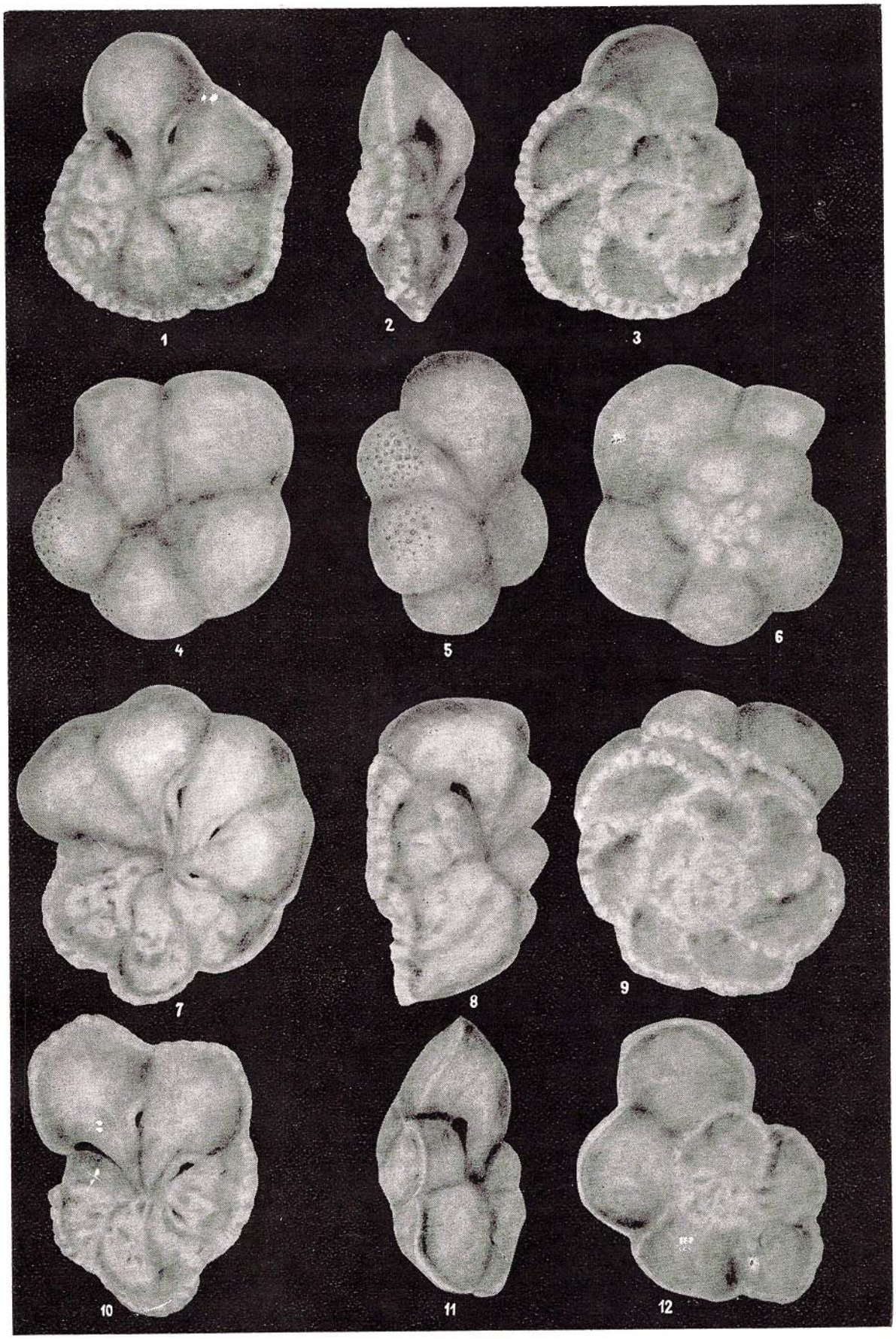

PLATE XXIII

Fig. 1—9. — *Rotalipora cushmani turonica* (B r o t z e n), Cenomanian, hypotypes, fig. 1—3, L.P.B. 9087/1, fig. 4—6, L.P.B. 9087/2, fig. 7—9, L.P.B. 9087/3, × 88.

Fig. 10—12. — *Rotalipora appenninica gandolfi* L u t e r b a c h e r & P r e m o l i S i l v a, Cenomanian, hypotype, L.P.B. 9082, × 85.

PLATE XXIV

Fig. 1—6. — *Rotalipora cushmani cushmani* (M o r r o w), Cenomanian, hypotypes, fig. 1—3, L.P.B. 9086/2, fig. 4—6, L.P.B. 9086/3, × 85.

Fig. 7—13. — *Rotalipora appenninica appenninca* (R e n z), Cenomanian, hypotypes, fig. 7—9, L.P.B. 9081/2, fig. 10, L.P.B. 9081/3, fig. 11—13, L.P.B. 9081/4, × 94.

Fig. 14—15. — *Globigerinelloides echeri clavata* (B r ö n n i m a n n), Lower Coniacian, hypotype, L.P.B. 7662, × 75.

Fig. 16—20. — *Pseudobolivina parvissima* N e a g u, n.sp., Lower Turonian, holotype, fig. 16—17, L.P.B. 5241, × 94, parataypes, fig. 18, L.P.B. 9034/1, fig. 19, L.P.B. 9034/2, fig. 20, L.P.B. 9034/3, × 94.

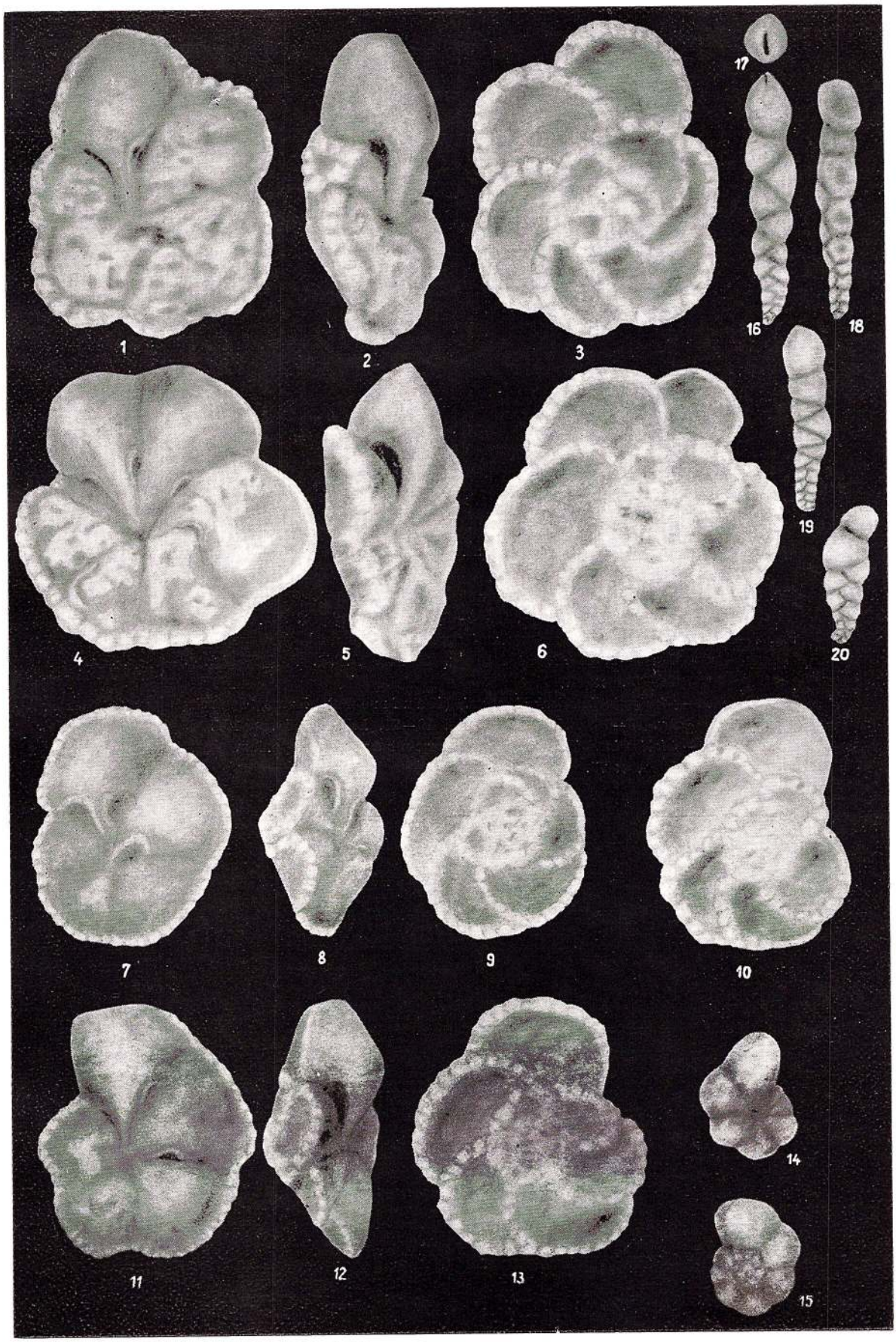

PLATE XXV

Fig. 1—6. — *Rotalipora appenninica appenninica* (R e n z), Cenomanian, hypotypes, fig. 1—3, L.P.B. 9080/2, fig. 4—6, L.P.B. 9080/5, × 95.

Fig. 7—15. — *Praeglobotruncana stephani stephani* (G a n d o l f i), Cenomanian, hypotypes, fig. 7—9, L.P.B. 9077/1, fig. 10—12, L.P.B. 9077/2, fig. 13—15, L.P.B. 9077/3, × 98.

Fig. 16—21. — *Globigerinoides echeri echeri* (K a u f m a n n), Lower Coniacian, hypotypes, fig. 16—18, L.P.B., 7650, fig. 19—21, L.P.B. 7651, × 124.

Fig. 22, 23. — *Globigerinelloides aspera* (E h r e n b e r g), Campanian, hypotype, L.P.B. 5353, × 75.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. XXV.

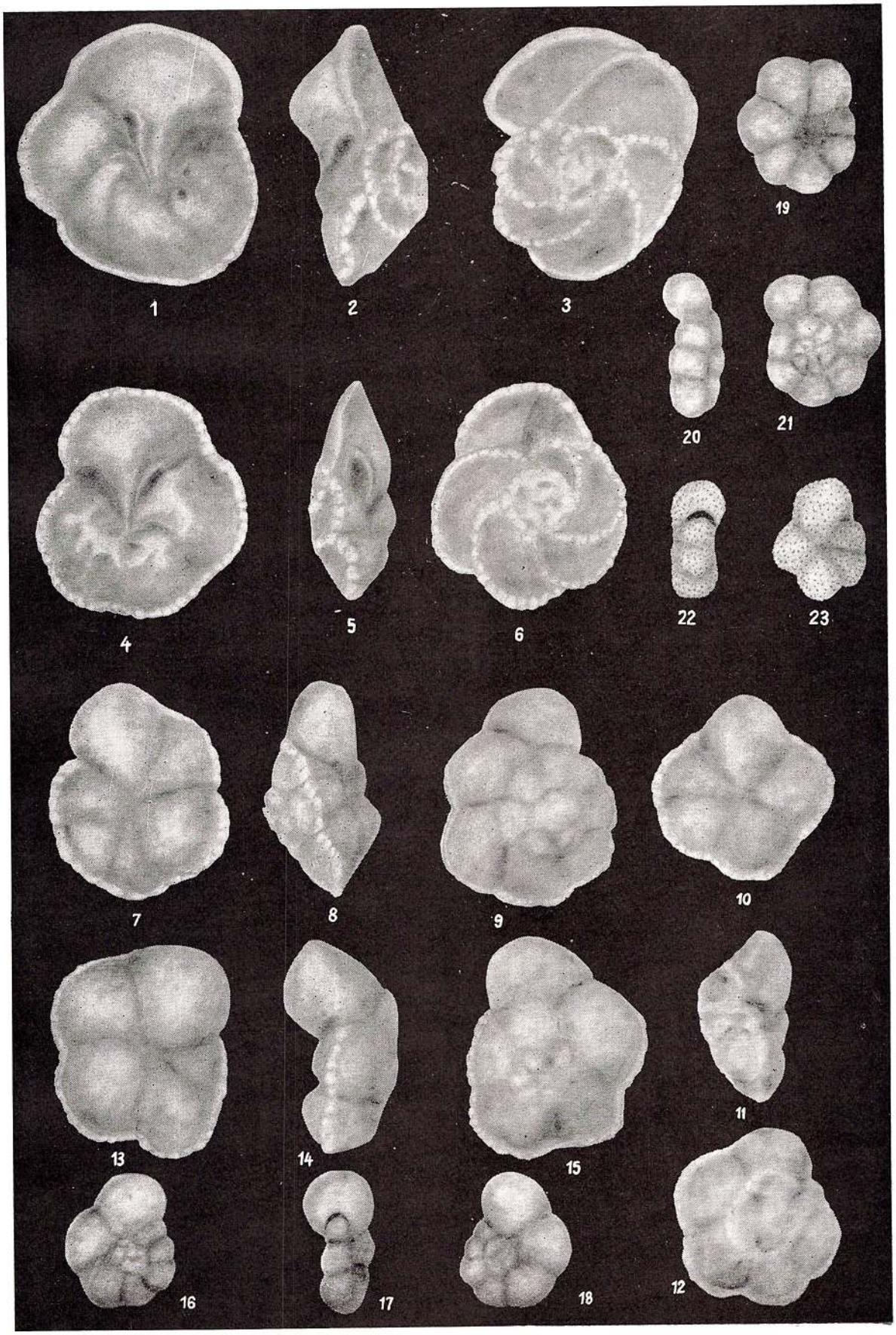

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PLATE XXVI

Fig. 1—11. — *Rotalipora globotruncanoides* S i g a l, Cenomanian, hypotypes, fig. 1—3, L.P.B. 9089/1, fig, 4—6, L.P.B. 9089/2, fig. 7—9, L.P.B. 9089/3, fig. 10—11, L.P.B. 9089/4, × 85.

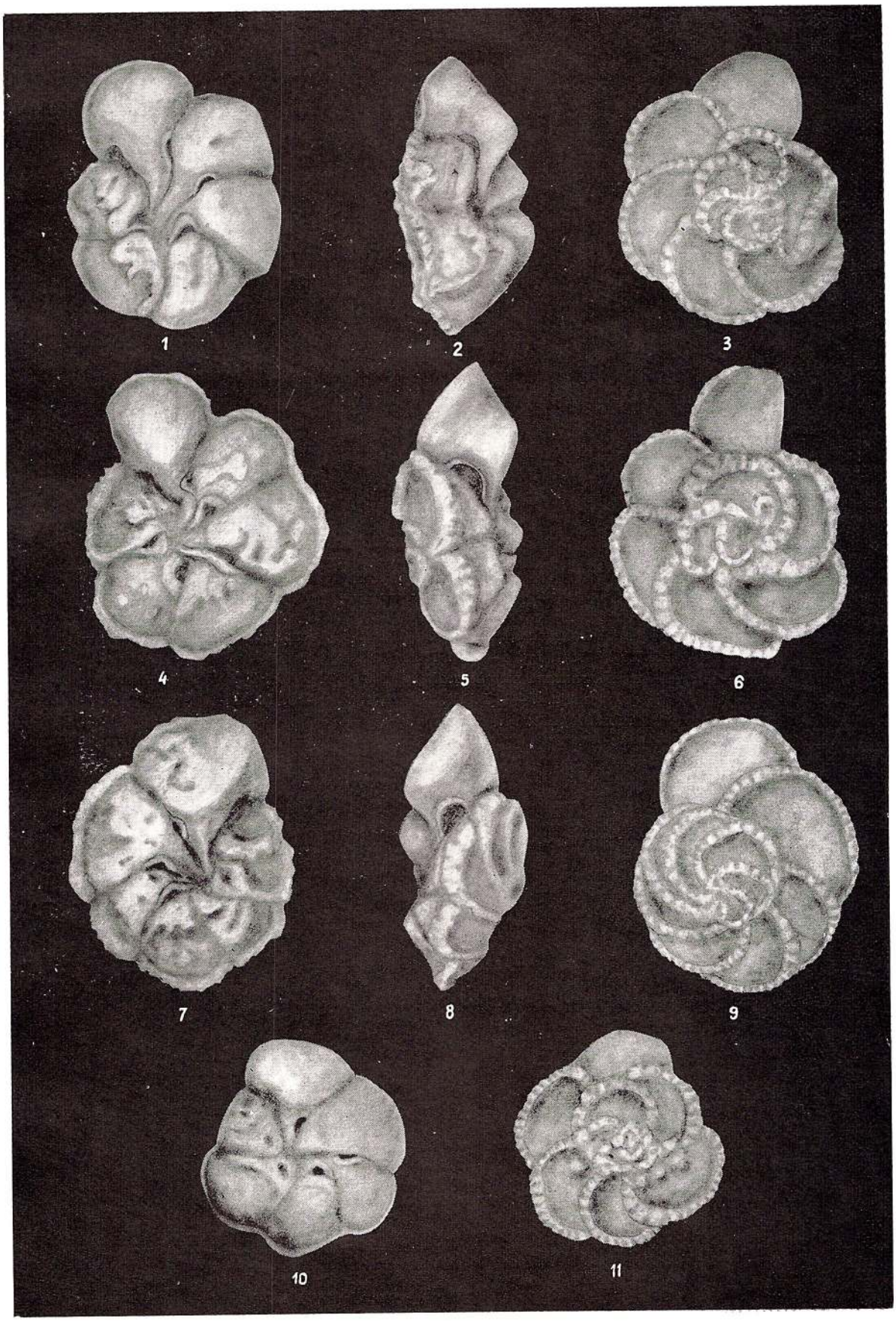


PLATE XXVII

Fig. 1—6. — *Praeglobotruncana stephani gibba* Klauss, Cenomanian, hyotypes, fig. 1—3, L.P.B. 9078/1, fig. 4—6, L.P.B. 9078/2, × 91.

Fig. 7—15. — *Praeglobotruncana marginoaculeata* (Loeblich & Tappan), Cenomanian, hypotypes, fig. 7—9, L.P.B. 9079/1, fig. 10—13, L.P.B. 9079/2, fig. 14—15, L.P.B. 9079/3, × 91.

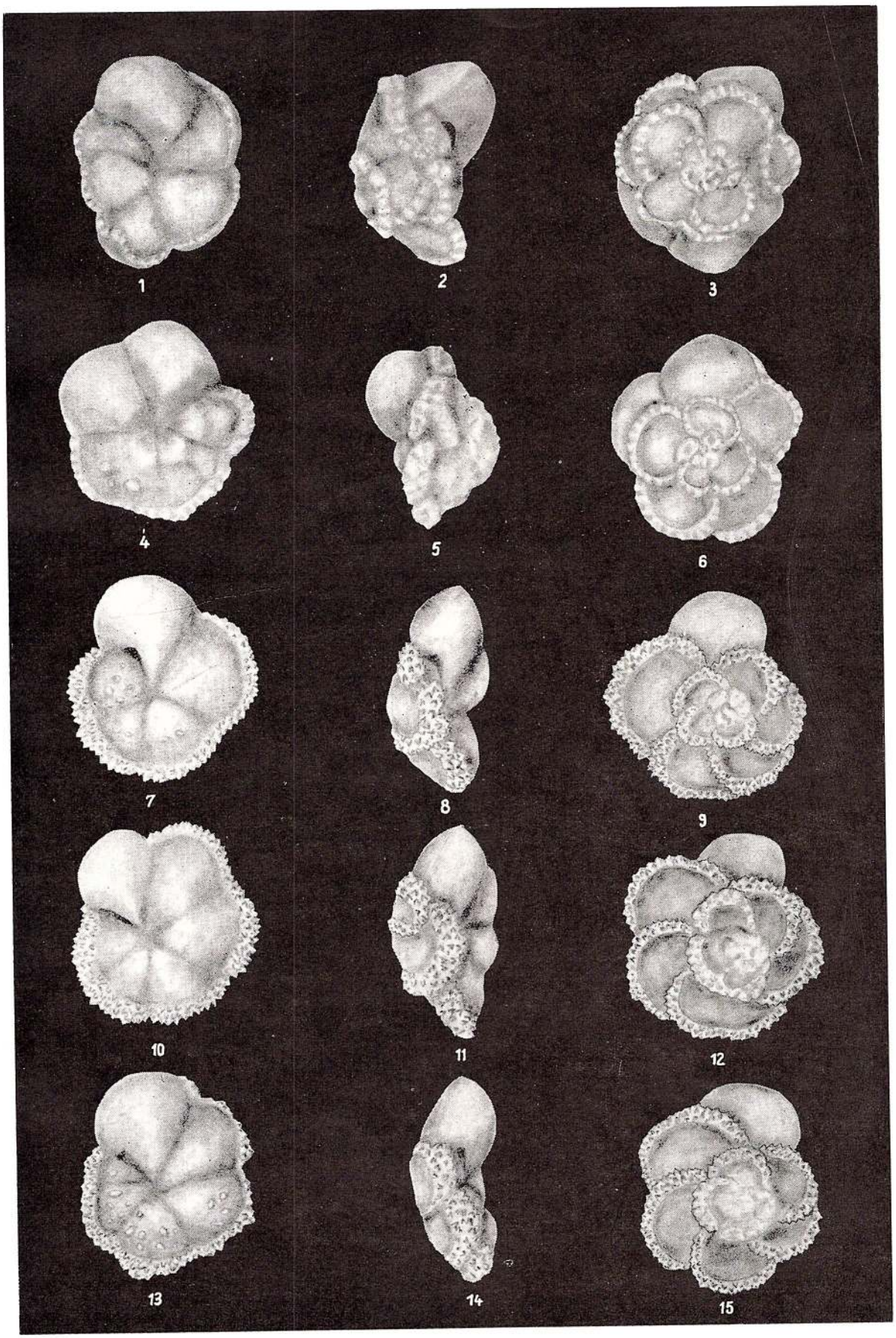


PLATE XXVIII

Fig. 1—3. — *Hedbergella amabilis* Loeblich & Tappan, Cenomanian, hypotype L.P.B. 9075/4, × 150.

Fig. 4—6. — *Hedbergella delrioensis* (Carsey), Cenomanian, hypotype, L.P.B. 9074/8, × 120.

Fig. 7—11. — *Globigerinelloides cretacea* (d'Orbigny), Lower Coniacian, hypotypes, fig. 7—9, L.P.B. 7669, × 12; Lower Maestrichtian, fig. 10—11, L.P.B. 5354, × 82.

Fig. 12—14. — *Globigerinelloides escheri escheri* (Kaufmann), Lower Coniacian, hypotype, L.P.B. 7652, × 214.

Fig. 15—18. — *Biglobigerinella* sp.cf. *B. algeriana* Dam & Sigal, Lower Maestrichtian, hypotypes, fig. 15, L.P.B. 5382, fig. 16, L.P.B. 7717, fig. 17, L.P.B. 7718, fig. 18, L.P.B. 7719, × 130.

Fig. 19, 20. — *Globigerinelloides biforaminata* (Hofker), Lower Maestrichtian, hypotype L.P.B. 5383, × 130.

Fig. 21—23. — *Rugoglobigerina rugosa rugosa* (Plummer), Lower Maestrichtian, hypotype, L.P.B. 5386, × 88.

Fig. 24—26. — *Rugoglobigerina rugosa rotundata* Brönnimann, Lower Maestrichtian hypotype, L.P.B. 5385, × 88.

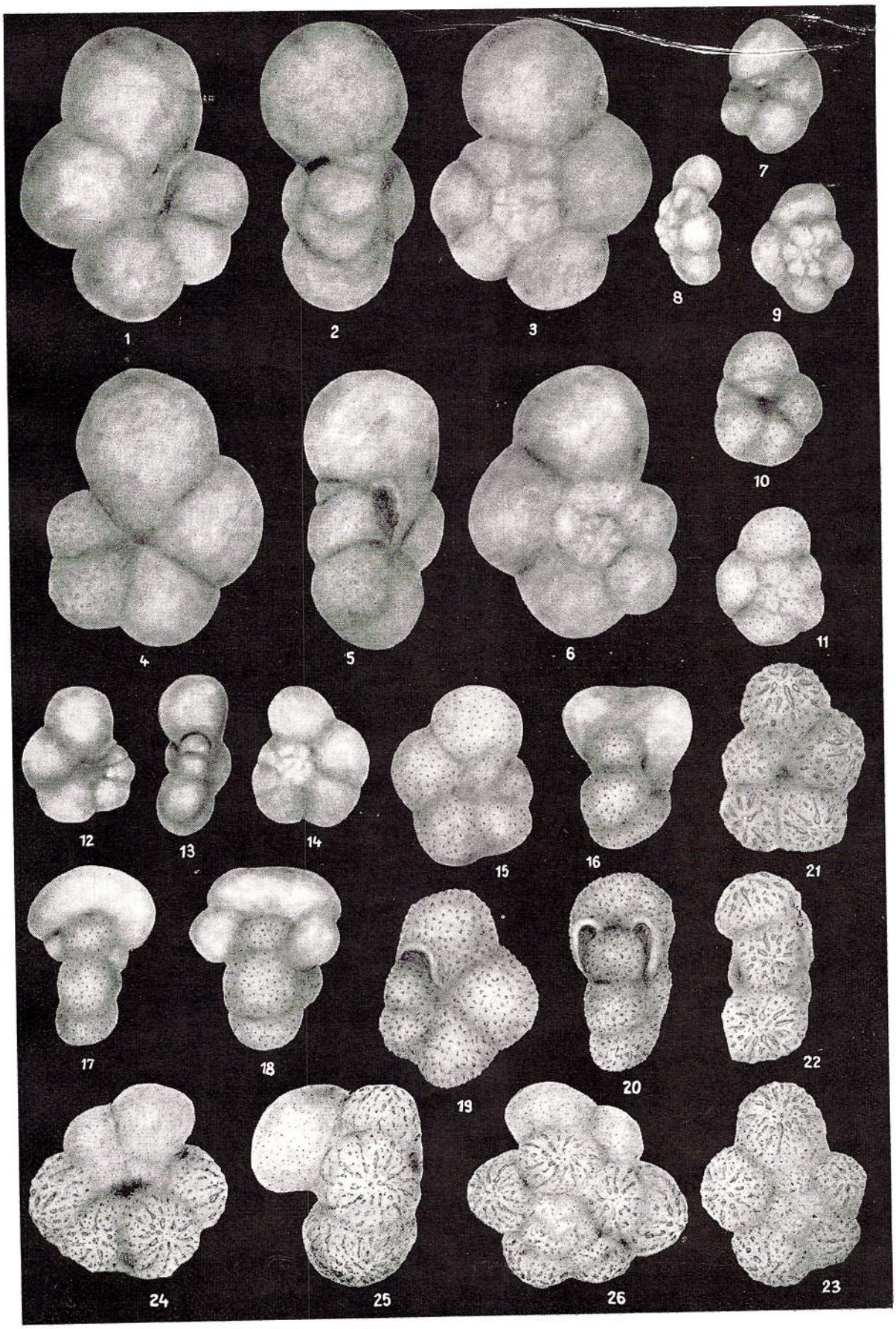


PLATE XXIX

Fig. 1—2. — *Rugoglobigerina rugosa rotundata* Brönnimann, Lower Maestrichtian, hypotype, L.P.B. 7598, × 78.

Fig. 3—5. — *Rugoglobigerina rugosa pennyi* Brönnimann, Lower Maestrichtian, hypotype, L.P.B. 7635, × 88.

Fig. 6—8. — *Eponides monterelensis* Marie, Campanian, hypotype, L.P.B. 7118, × 120.

Fig. 9—20. — *Eponides praemegastoma* (Mjatlyuk), Lower Maestrichtian, hypotypes, fig. 9—11, L.P.B. 7212, fig. 12—14, L.P.B. 7216, fig. 15—17, L.P.B. 7210, fig. 18—20, L.P.B. 7218, × 59.

Fig. 21—23. — *Eponides biconvexa* Marie, Campanian hypotype, L.P.B. 7158, × 88.

Fig. 24, 25. — *Eponides brönnimanni* Cushman & Renz, Upper Campanian, hypotype, L.P.B. 5366, × 78.

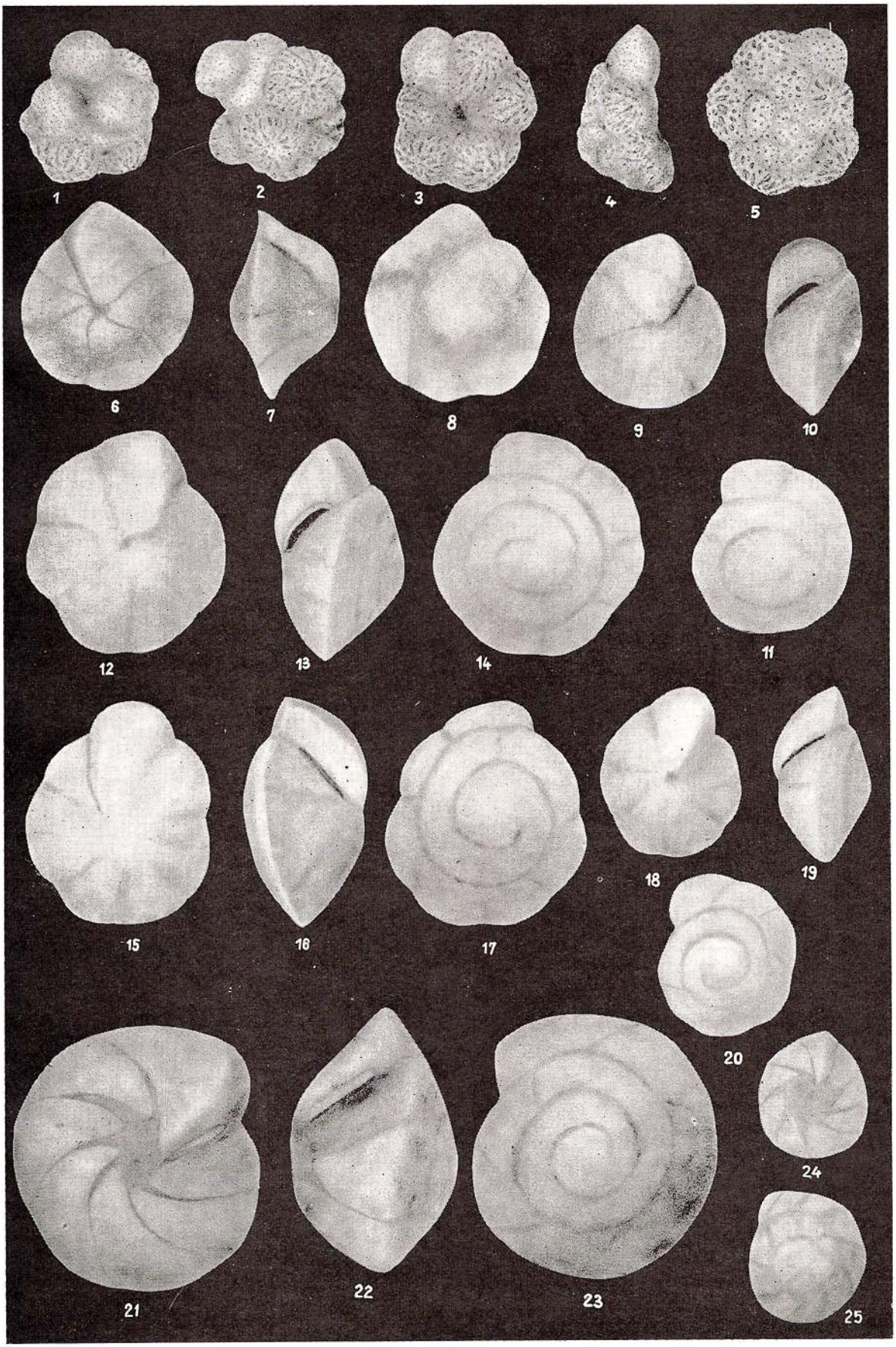


PLATE XXX

Fig. 1—7. — *Pleurostomella dacica* Neagu, Lower Maestrichtian, holotype, fig. 1—2, L.P.B. 4561, paratypes, fig. 3, L.P.B. 5462, fig. 4, L.P.B. 5463, fig. 5, L.P.B. 5464, fig. 6, L.P.B. 5465, fig. 7, L.P.B. 5466, × 78.

Fig. 8. — *Ellipsoglandulina ellissi* Said & Kenawy, Campanian, hypotype, L.P.B. 5439, × 59.

Fig. 9. — *Ellipsoglandulina chilostoma* (Rzehak), Campanian, hypotype, L.P.B. 5348, × 65.

Fig. 10—22. — *Pleurostomella pseudocurta* Neagu, Campanian, holotype, fig. 10—12, L.P.B. 8019, × 65, paratypes, fig. 13—14, L.P.B. 8020, fig. 15—16, L.P.B. 8021, fig. 17, L.P.B. 8022, fig. 18, L.P.B. 8023, fig, 19, L.P.B. 8024, fig. 20, L.P.B. 8025, fig. 21, L.P.B. 8026, fig. 22, L.P.B. 8027, × 65.

Fig. 23—25. — *Ellipsoidella kugleri* (Cushman & Renz), Campanian, hypotypes, fig. 23—24, L.P.B. 8013, fig. 25, L.P.B. 8014, × 65.

Fig. 26—28. — *Ellipsopolymorphina* sp. cf. *E. schlichli* (Silvestri), Campanian, hypotypes, fig. 26, L.P.B. 9090/1, fig. 27, L.P.B. 9090/2 fig. 28, L.P.B. 9090/3, × 78.

Fig. 20, 30. — *Pleurostomella globulifera* Franke. Campanian, hypotype, L.P.B. 7959, × 78.

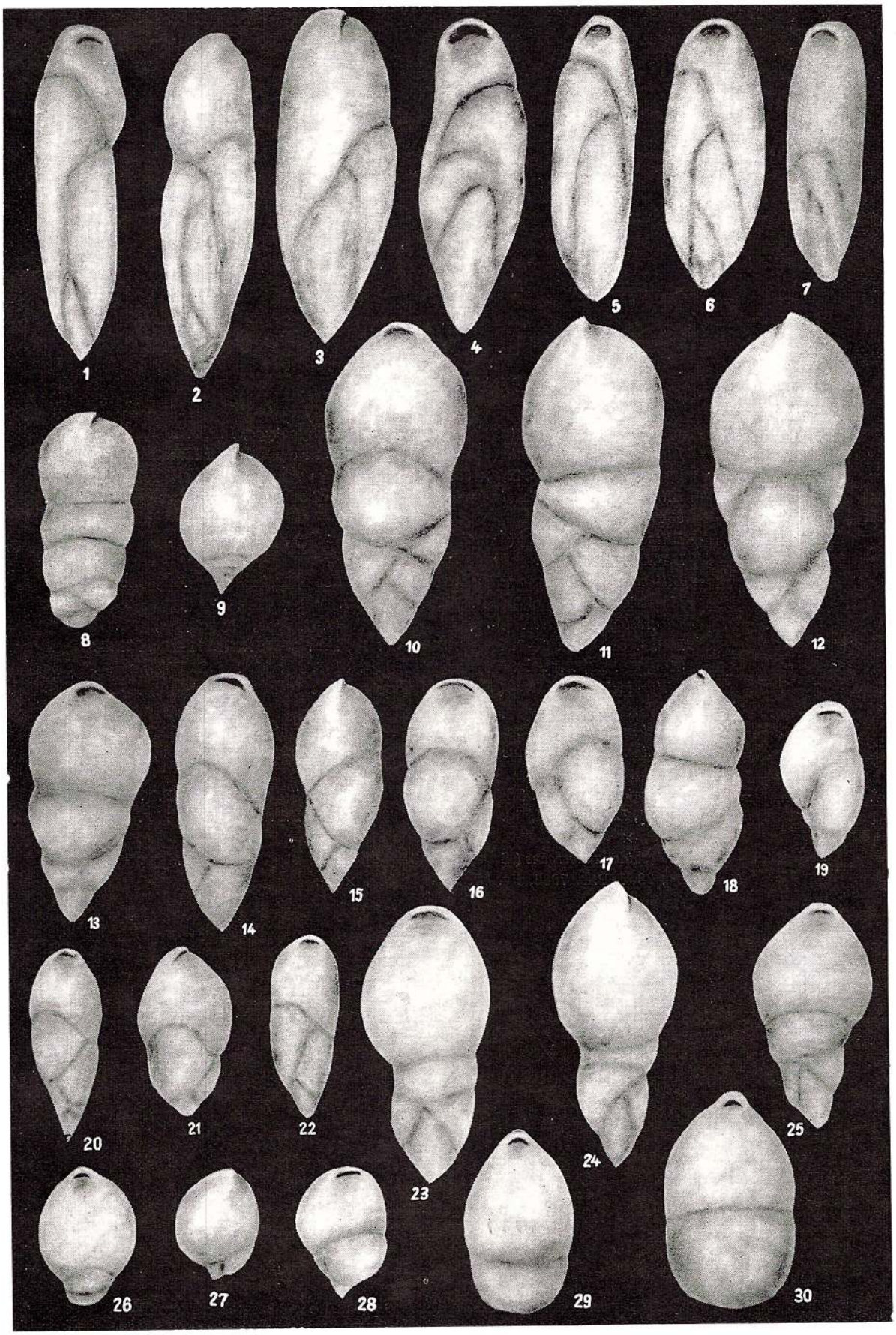


PLATE XXXI

Fig. 1. — *Ellipsoidella divergens* (Storm), Campanian, hypotype, L.P.B. 7986, × 59.

Fig. 2. — *Ellipsoidella multicostata* (Galloway & Morrey), Lower Maestrichtian, hypotype, L.P.B. 5342, × 65.

Fig. 3. — *Ellipsoglandulina „laevigata* Silvestri", Campanian hypotype, L.P.B. 5347, × 55.

Fig. 4, 5. — *Ellipsoidella kugleri* (Cushman & Renz), Campanian, hypotype, L.P.B. 8015, × 49.

Fig. 6. — *Ellipsoidella pleurostomelloides* Heron-Allen & Earland, Lower Maestrichtian, hypotype, L.P.B. 5345, × 59.

Fig. 7—15. — *Pleurostomella zuberi* Grzybowski, Campanian, hypotypes, fig. 7, L.P.B. 8109, fig. 8—9, L.P.B. 8103, fig. 10, L.P.B. 8104, fig. 11—12, L.P.B. 8105, fig. 13, L.P.B. 8106, fig. 14, L.P.B. 8107, fig. 15, L.P.B. 8108, × 78.

Fig. 16. — *Ellipsoidella subnodosa* (Guppy), Lower Maestrichtian hypotype, L.P.B. 5443, × 33.

Fig. 17—19. — *Cibicides ribbingi* Brotzen, Lower Coniacian, hypotype, L.P.B. 5387, × 82.

Fig. 20—22. — *Cibicides beaumontianus* (d'Orbigny), Campanian, hypotype, L.P.B. 5372, × 130.

Fig. 23—27. — *Ellipsoidella elongata* (Storm), Campanian, hypotypes, fig. 23, L.P.B. 7975, fig. 24, L.P.B. 7994, fig. 25, L.P.B. 7996, fig. 26, L.P.B. 7997, fig. 27, L.P.B. 7998, × 78.

Fig. 28—30. — *Ellipsoidella divergens* (Storm), Campanian, hypotypes, fig. 28, L.P.B. 7985, fig. 29, L.P.B. 7986, fig. 30, L.P.B. 7987, × 59.

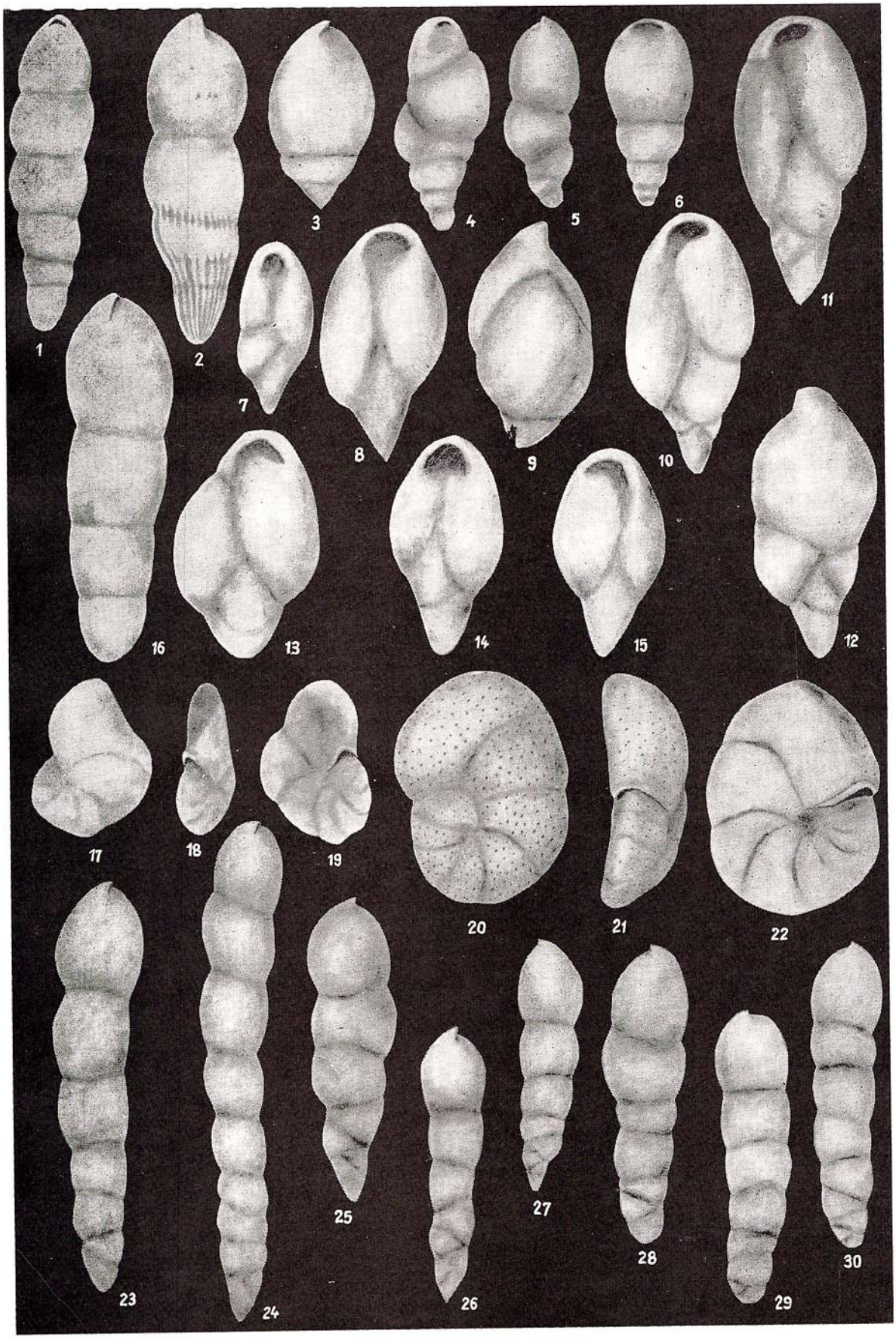


PLATE XXXII

Fig. 1—2. — *Pleurostomella velascoensis* Cushman, Campanian, hypotype, L.P.B. 7939, × 65.

Fig. 3—7. — *Ellipsoidella kugleri* (Cushman & Renz), Campanian, hypotypes, fig. 3—4, L.P.B. 8016, fig. 5, L.P.B. 8017, fig. 6, L.P.B. 8017/1, fig. 7,L.P.B. 8017/2, × 49.

Fig. 8, 9. — *Ellipsoidella* sp., Campanian, × 49.

Fig. 10—12. — *Trocholina aptiensis* Iovcheva, Lower Aptian, hypotypes, fig. 10, L.P.B. 9092/1, fig. 11—12, L.P.B. 9092/2, × 98.

Fig. 13—14. — *Trocholina infragranulata* Noth, Lower Aptian, hypotype, L.P.B. 9091, × 98.

Fig. 15. — *Allomorphina trigona* Reuss, Campanian, hypotype, L.P.B. 5352, × 72.

Fig. 16, 17 — *Allomorphina cretacea* Reuss, Turonian, hypotype, L.P.B. 8269, × 72.

Fig. 18—23. — *Quadrimorphina allomorphinoides polycamerata* Neagu n. ssp., Campanian, holotype, fig. 18—20, L.P.B. 5324, × 112, paratypes, fig. 21, L.P.B. 5325, fig. 22, L.P.B 8338, fig. 23, L.P.B. 8339, × 112.

Fig. 24, 25. — *Quadrimorphina minuta* (Cushman), Campanian, hypotype L.P.B. 8882, × 78.

Fig. 26. — *Quadrimorphina allomorphinoides allomorphinoides* (Reuss), Campanian, hypotype, L.P.B. 5326, × 78.

Fig. 27, 28. — *Pullenia dampelae* Dain, Lower Maestrichtian, hypotype, L.P.B. 5338, × 65.

Fig. 29, 30. — *Pullenia americana* Cushman, Lower Maestrichtian, hypotype, L.P.B. 5321, × 65.

Fig. 31, 32. — *Pullenia minuta* Cushman, Lower Maestrichtian, hypotype, L.P.B. 8174, × 78.

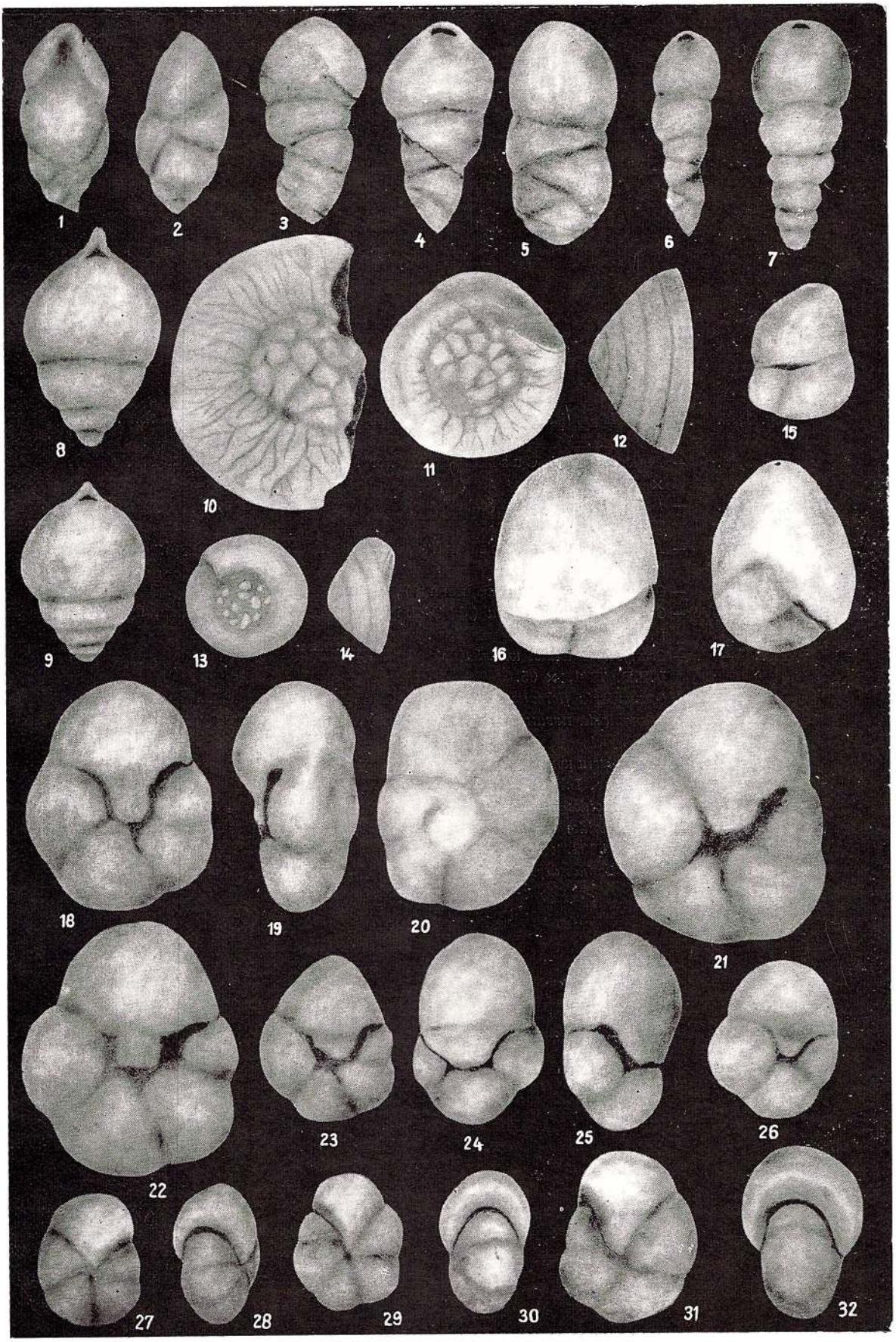


PLATE XXXIII

Fig. 1, 2. — *Pullenia jarvisi* Cushman, Lower Maestrichtian, hypotype, L.P.B. 5340, × 78.

Fig. 3, 4. — *Pullenia reussi* Cushman, Lower Maestrichtian, hypotype, L.P.B.5337, × 78.

Fig. 5, 6. — *Pullenia quaternaria* (Reuss), Lower Maestrichtian, hypotype, L.P.B. 8241, × 78.

Fig. 7,8. — *Pullenia cretacea* Cushman, Lower Maestrichtian, hypotype, L.P.B. 5339, × 78.

Fig. 9, 10. — *Osangularia spinea* (Cushman), Campanian, hypotype, L.P.B. 8496, × 65.

Fig. 11—13. — *Osangularia cordieriana* (d'Orbigny), Lower Maestrichtian, hypotype, L.P.B. 5558, × 49.

Fig. 14—16. — *Osangularia whitei whitei* (Brotzen), Middle-Upper Turonian, hypotype, L.P.B. 7641, × 65.

Fig. 17—19. — *Osangularia florealis* (White), Campanian, hypotype, L.P.B. 8525, 65.

Fig. 20—22. — *Osangularia navarroana* (Cushman), Campanian, hypotype, L.P.B. 8587, × 65.

Fig. 23, 24. — *Osangularia whitei polycamerata* (Vassilenko), Middle-Upper Turonian, hypotype, L.P.B. 5359, × 65.

Fig. 25—27. — *Gyroidinoides nitidus* (Reuss), Campanian, hypotype, L.P.B. 8843, × 65.

Fig. 28—30. — *Gyroidinoides quadratus* (Cushman), Lower Maestrichtian, hypotype, L.P.B. 5663, × 85.

Fig. 31—33. — *Gyroidinoides depressus* (Alth), Campanian, hypotype, L.P.B. 8491, × 65.

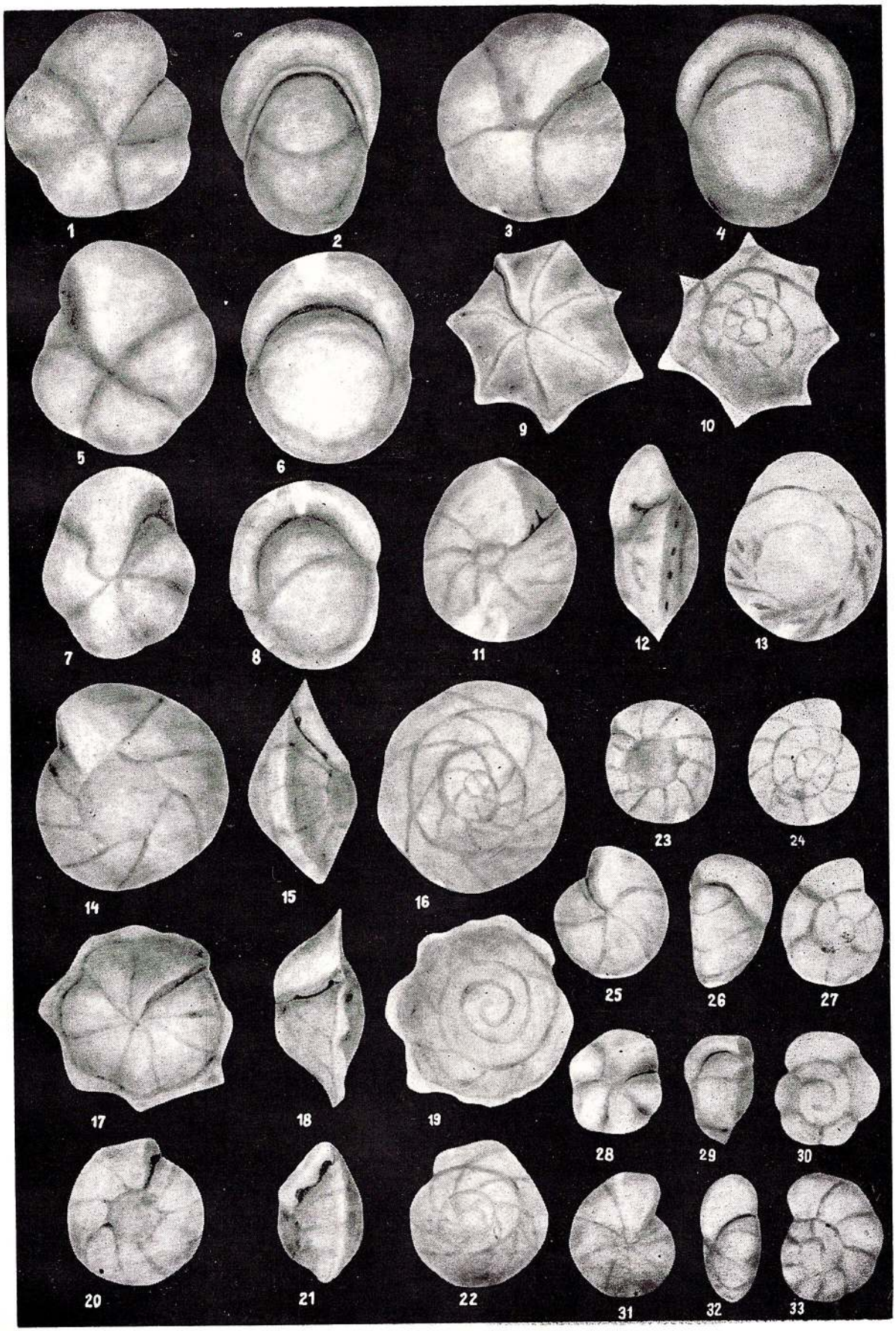


PLATE XXXIV

Fig. 1—3. — *Gyroidinoides globosus* (Hagenow), Lower Maestrichtian, hypotype, L.P.B. 8383, × 82.

Fig. 4—6. — *Gyroidinoides umbilicatus* (d'Orbigny), Lower Maestrichtian, hypotype, L.P.B. 5352, × 59.

Fig. 7—12. — *Gavelinella clementiana laevigata* (Marie), Lower Maestrichtian, hypotypes, fig. 7—9, L.P.B. 5367, fig. 10—12, L.P.B. 8697, × 78.

Fig. 13—18. — *Gavelinella clementiana clementiana* (d'Orbigny), Lower Maestrichtian, hypotypes, fig. 13—15, L.P.B. 5368, fig. 16—18, L.P.B. 8673, × 65.

Fig. 19—26. — *Gavelinella cayeuxi mangshlakensis* (Vassilenko), Lower Maestrichtian, hypotypes, fig. 19—21, L.P.B. 5370, × 98, Upper-Campanian, fig. 22—24, L.P.B. 8740, × 85, fig. 25—26, L.P.B. 8741, × 65.

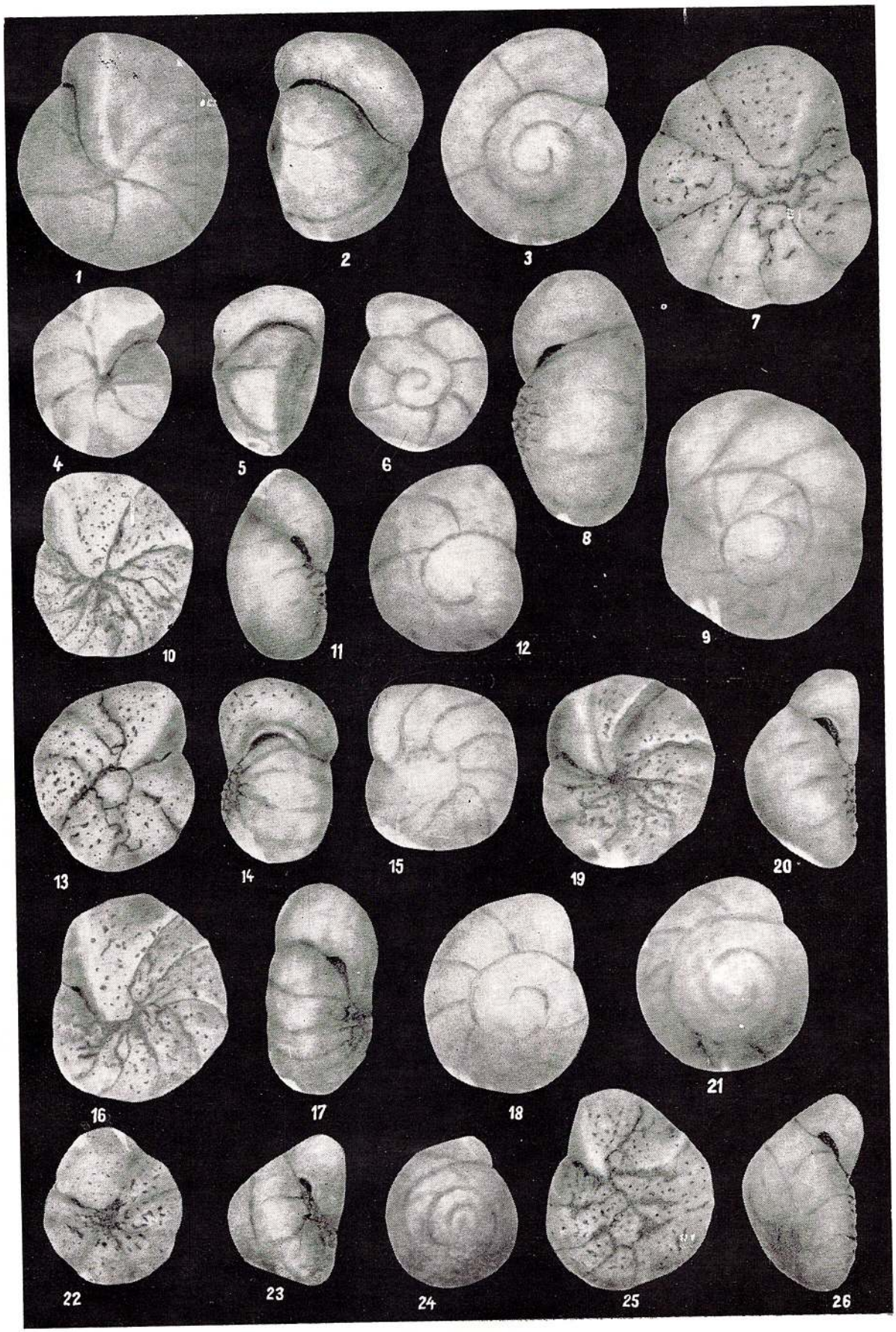


PLATE XXXV

Fig. 1—6. — *Gavelinella intermedia* (Berthelin), Upper Albian, hypotypes, fig. 1—3, L.P.B. 9095/1, fig. 4—6, L.P.B. 9095/2, × 110.

Fig. 7—12. — *Osangularia cretacea* (Carbonier), Vraconian, hypotypes, fig. 7—9, L.P.B. 9093/1, fig. 10—12, L.P.B. 9093/2, × 130.

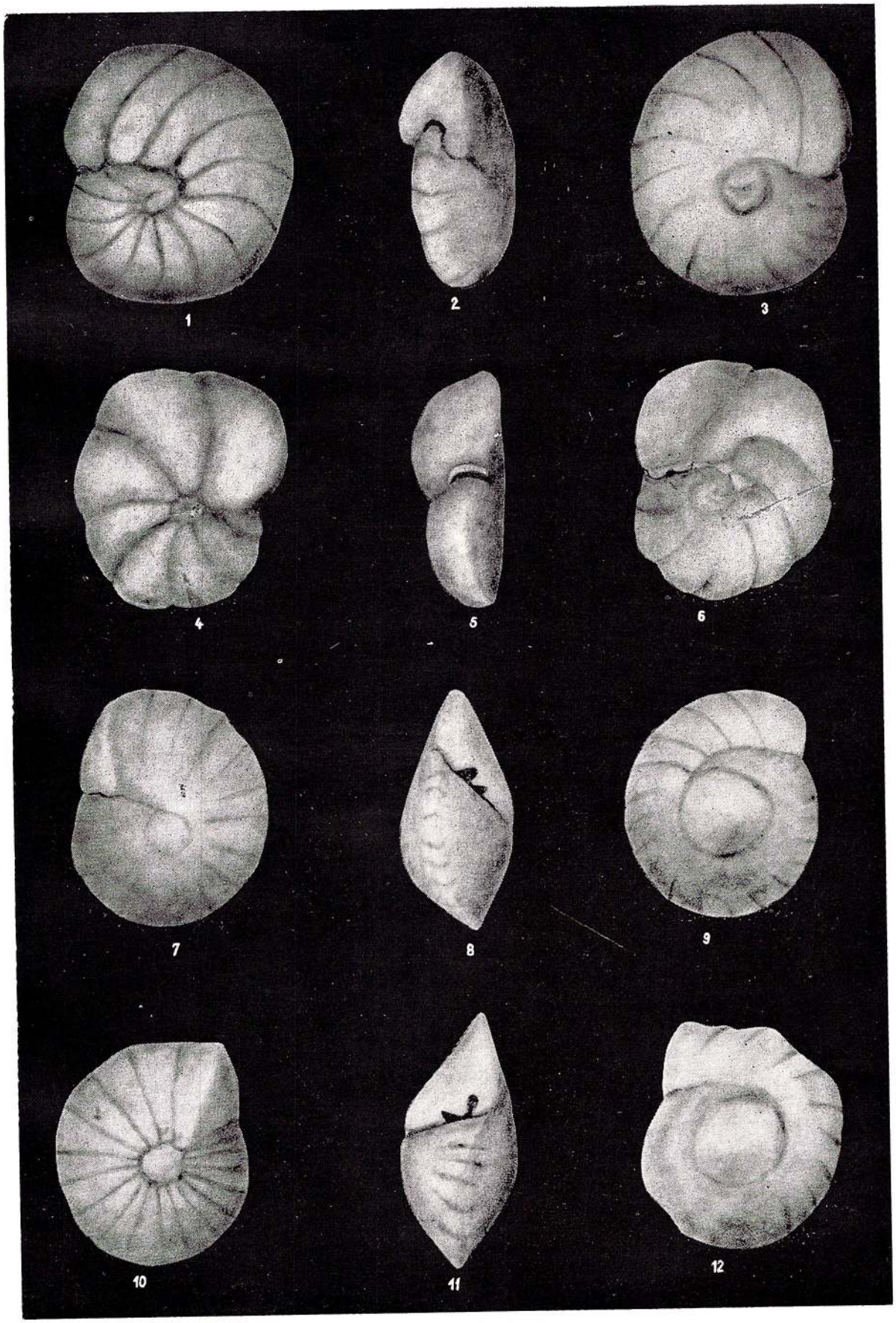


PLATE XXXVI

Fig. 1—3. — *Globorotalites conicus rarisepta* (Goel), Campanian, hypotype, L.P.B. 7862, × 111.

Fig. 4—6. — *Globorotalites conicus conicus* (Carsey), Campanian, hypotype, L.P.B. 7848, × 130.

Fig. 7—9. — *Globorotalites conicus cushmani* (Goel), Campanian, hypotype, L.P.B. 7855, × 117.

Fig. 10—15. — *Globorotalites conicus laffittei* (Goel), Campanian, hypotypes, fig. 10—12, L.P.B. 7850, fig. 13—15, L.P.B. 7851, × 111.

Fig. 16—18. — *Globorotalites conicus conicus* (Carsey). Campanian, hypotype, L.P.B. 7849, × 130.

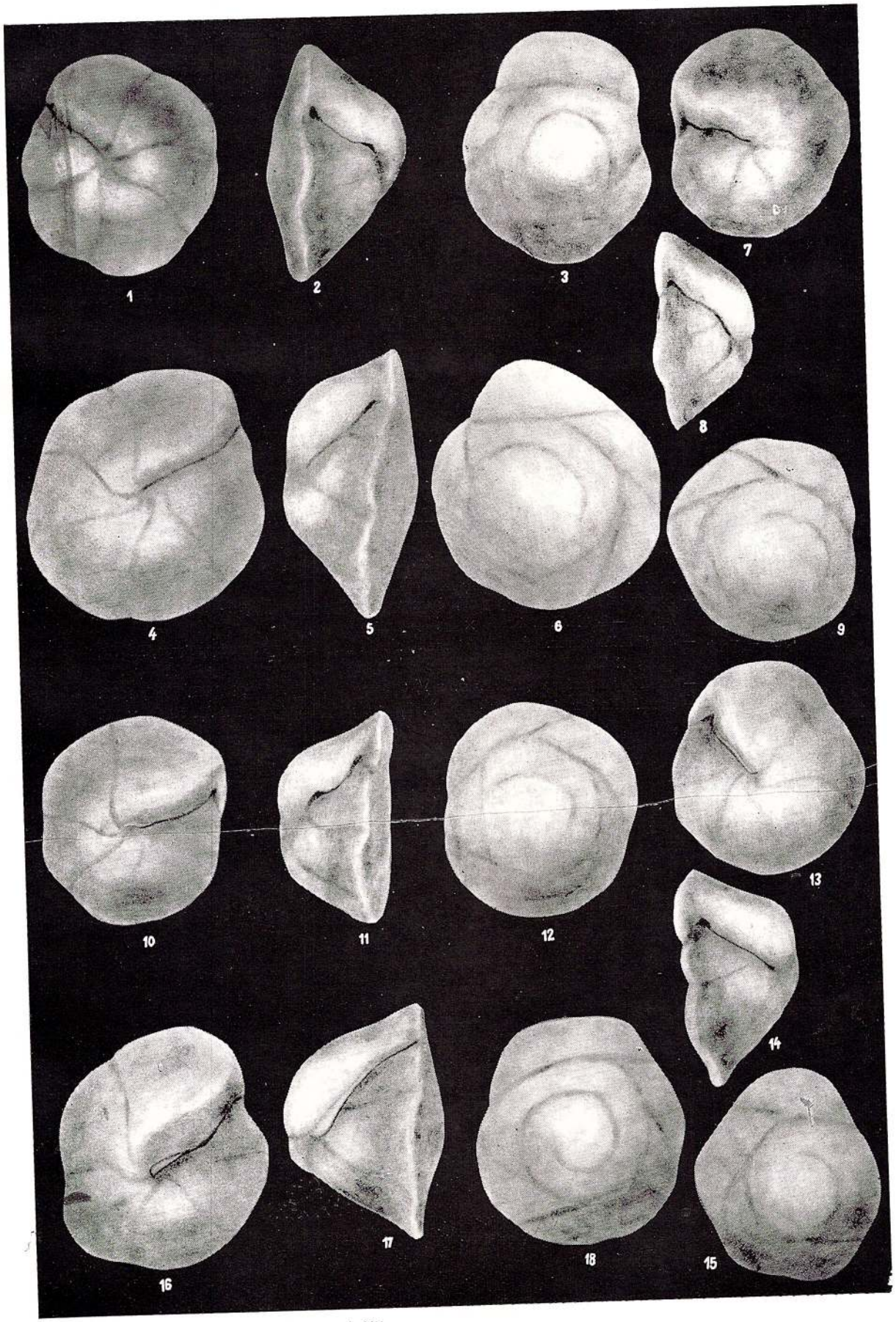


PLATE XXXVII

Fig. 1—6. — *Globorotalites conicus plummerae* (Goel), Campanian, hypotypes, fig. 1—3, L.P.B. 7836, fig. 4—6, L.P.B. 7837, × 120.

Fig. 7—12. — *Globorotalites morrowi* Goel, Cenomanian, hypotypes, fig. 7—9, L.P.B. 7860, fig. 10—12, L.P.B. 7861, × 91.

Fig. 13—15. — *Gavelinella barremiana* Bettenstaedt, Lower Aptian, hypotype, L.P.B. 9095, × 72.

Fig. 16—18. — *Gavelinella pertusa* (Marsson), Campanian, hypotype, L.P.B. 5367, ×85.

Fig. 19—20. — *Gavelinella bembix* (Marsson), Campanian, hypotype, L.P.B. 5355, × 98.

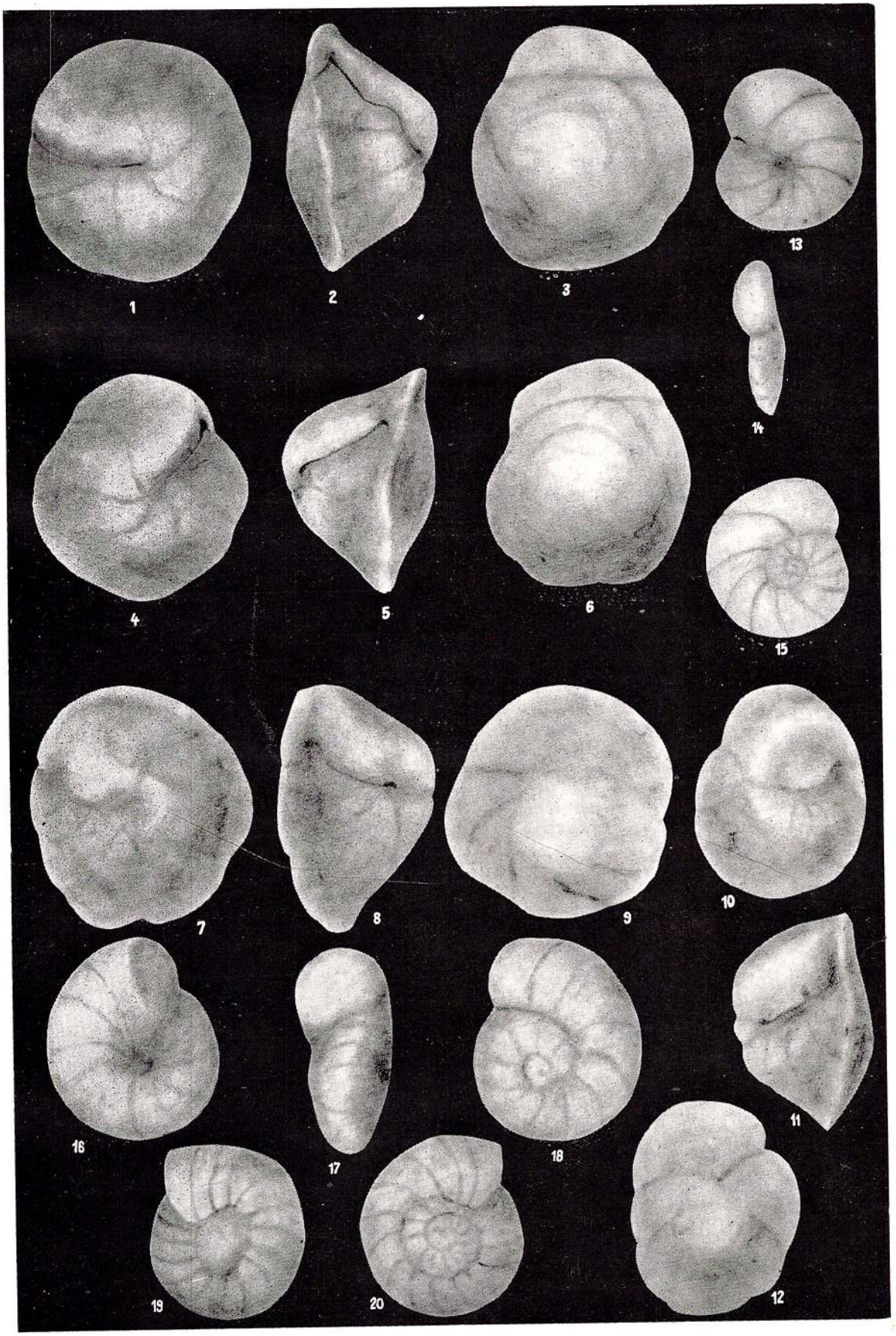


PLATE XXXVIII

Fig. 1—3. — *Gavelinella bembix* (Marsson), Campanian, hypotype, L.P.B. 8850, × 150.

Fig. 4—6. — *Cibicides voltzianus* (d'Orbigny), Campanian, hypotype, L. P.B. 5400, × 104.

Fig. 7—9. — *Epistomina ventriosa* Espitalié & Sigal, Lower Aptian, hypotype, L.P.B. 9097, × 62.

Fig. 10—15. — *Epistomina spinulifera* (Reuss), Lower Aptian, hypotypes, fig. 10—12, L.P.B. 9098/1, fig. 13—15, L.P.B. 9098/2, × 65.

Fig. 16—18. — *Epistomina* sp., Upper Albian, × 65.

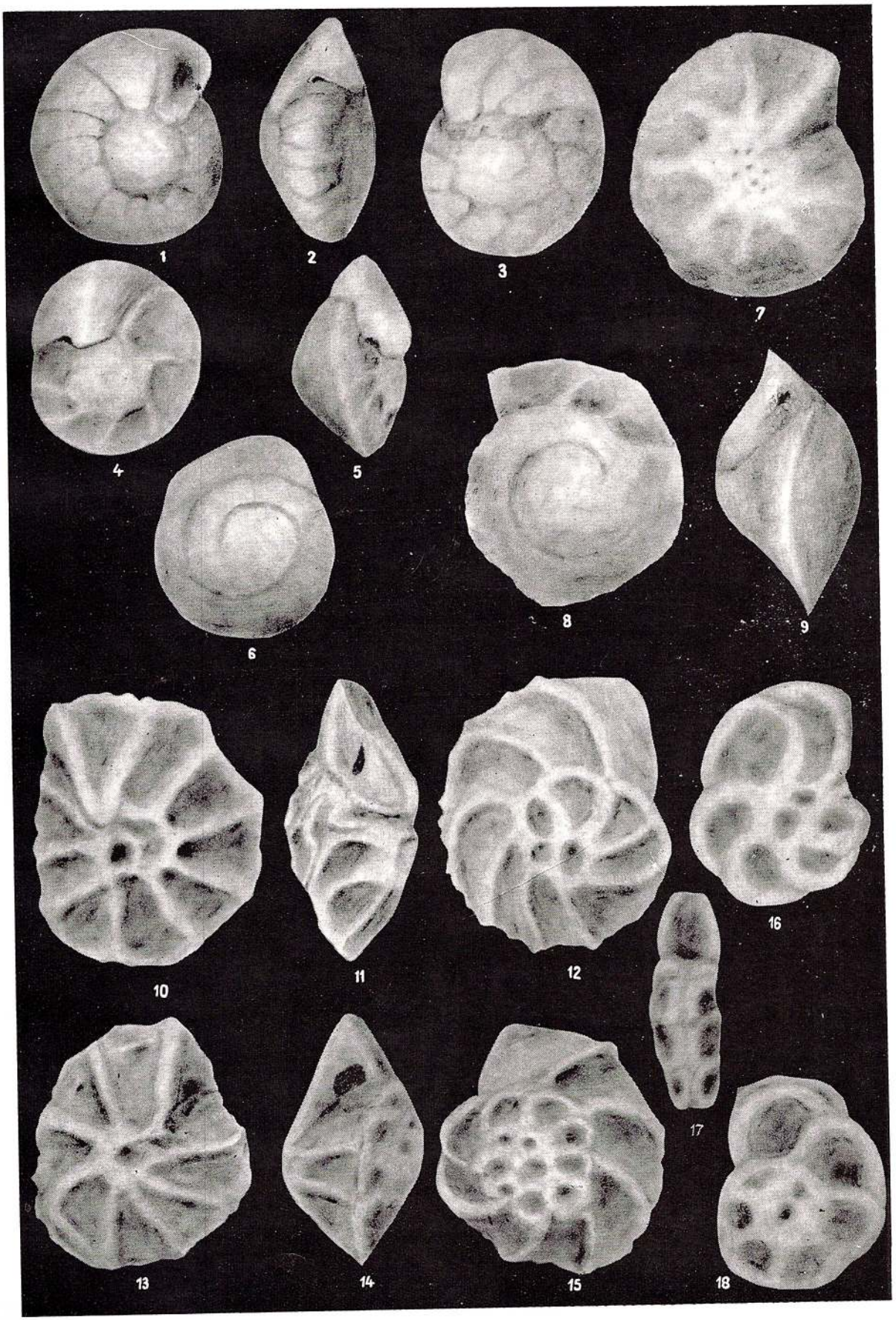


PLATE XXXIX

Fig. 1–6. – *Epistomina juliae* Mjatlyuk, Lower Aptian, hypotypes, fig. 1–3, L.P.B. 9099/1, fig. 4–6, L.P.B. 9099/2, × 72.

Fig. 7, 8. – *Aragonia ouezzanensis* (Rey), Campanian, hypotype, L.P.B. 6805, × 91.

Fig. 9–11. – *Osangularia cretacea* (Carboniер), Vraconian, hypotype, L.P.B. 9093/3, × 130.

Fig. 12–15. – *Plectorecurvoides alternans* Noth, Cenomanian, hypotypes, fig. 12–13, L.P.B. 9051/1, fig. 14–15, L.P.B. 9051/2, × 78.

Fig. 16–18. – *Recurvoides imperfectus* Hanzlikowa, Cenomanian, hypotype, L.P.B. 9050, × 85.

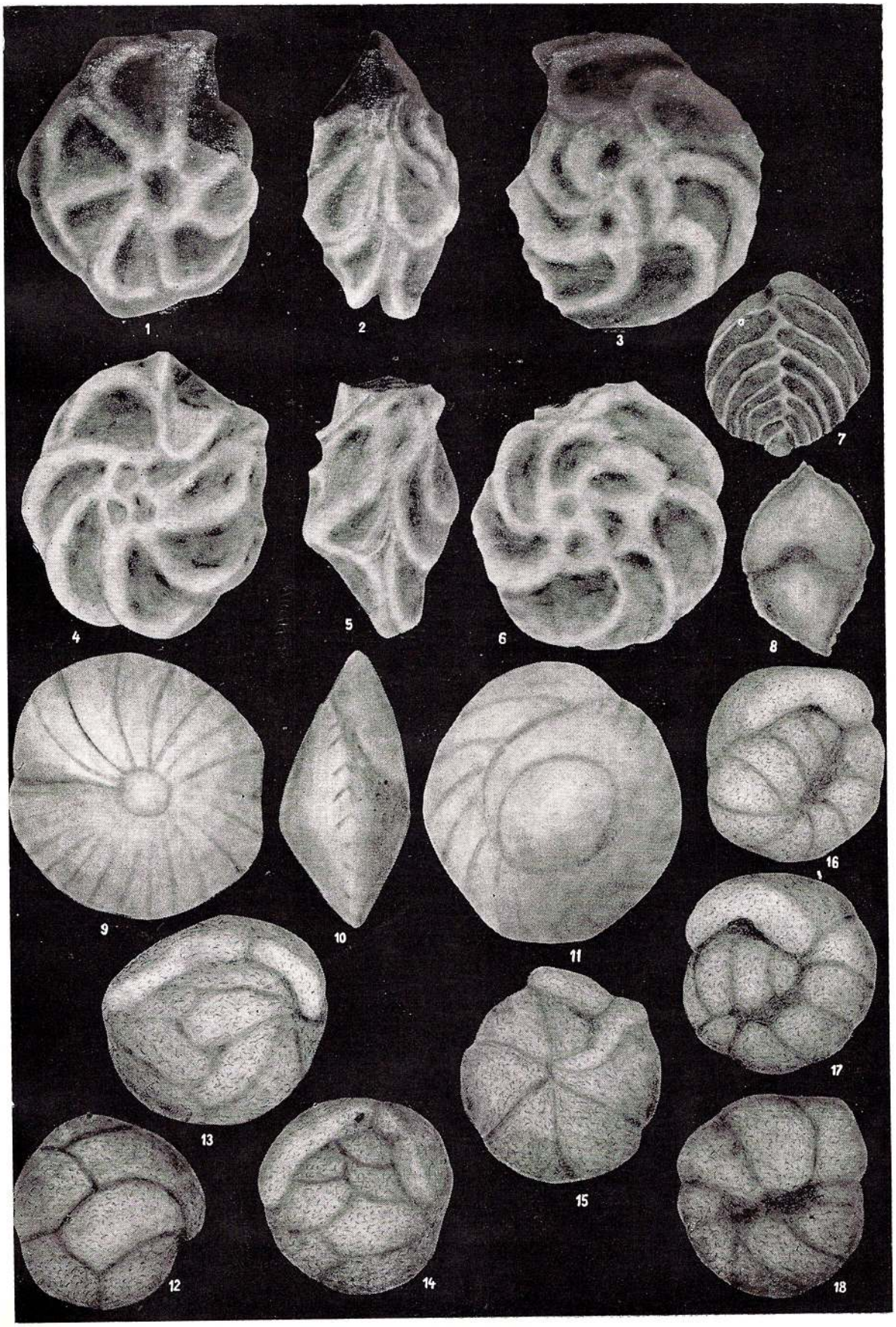
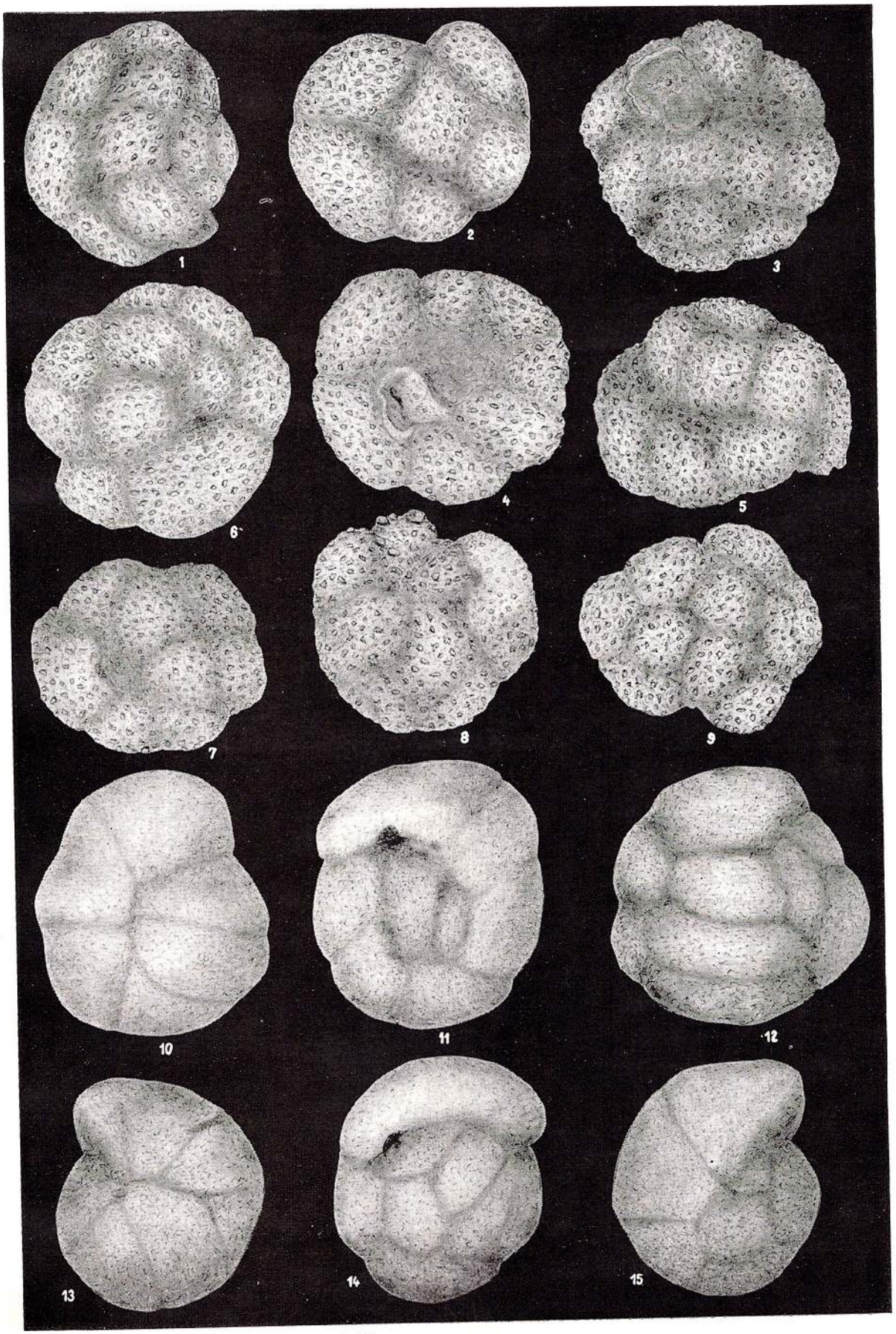


PLATE XL

Fig. 1—9. — *Thalmannammina meandertornata* Neagu & Tocorjescu n.sp., Turonian, holotype, fig. 3—5, L.P.B. 9052, × 163, paratypes, fig. 1—3, L.P.B. 9053, fig. 6, L.P.B. 9054, fig. 7—9, L.P.B. 9055, × 163.

Fig. 10—15. — *Thalmannammina recurvoidiformis* Neagu & Tocorjescu n.sp., Turonian, holotype, fig. 13—15, L.P.B. 9058, × 143, paratypes, fig.10—12 L.P.B. 9059, × 140.

T. NEAGU. Micropaleontological and stratigraphical study of the Upper Cretaceous deposits. Pl. XL.



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MEMORII

VOL. XII

THEODOR NEAGU

STUDIUL MICROPALEONTOLOGIC ȘI STRATIGRAFIC AL DEPOZITELOR CRETACICULUI SUPERIOR INTRE VALEA BUZĂULUI ȘI RIUL NEGRU (CARPAȚII ORIENTALI)

BUCUREȘTI 1970