

FROM THE THESAURUS OF THE MUSEUM COLLECTIONS. II. EARLY NORIAN AMMONOIDS FROM ROȘIA-SOHODOL REGION (APUSENI MTS.)

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Motto: "Să strângem și să strângem bine materialuri și date cât de multe, și decă nu noi, dero urmașii noștri voru avea cu ce să construiască edificiul geologică allu țerii."

Gregoriu Ștefănescu, 15 ianuarie 1872

Abstract: Early Norian ammonoids from the Codru Formation occurring in the Roșia-Sohodol outlier of the Finiș Nappe, in the south-western region of the Pădurea Craiului Mts., are described and figured, as follows: *Codruites* n. gen. *istocescui* n. sp., *Malayites paulckeii* (Diener, 1920), *Pseudocardioceras idunae* (Diener, 1920) and *Juvavites* spp.

These ammonoids, collected in the seventies of the last century, illustrate the value of the fossils that are locked in museum collections, waiting to be described, and provide a stimulus for further high-resolution biostratigraphic studies in the region.

Keywords: Ammonoids, Lower Norian, Upper Triassic, Codru Formation, Roșia-Sohodol, Finiș Nappe, Apuseni Mts.

INTRODUCTION

Triassic deposits are widespread in the Northern Apuseni Mts., both in the Bihor Autochthone and the Codru Nappes (Patrulius & Bleahu 1967, Patrulius 1971, 1976 a-b, 1979; Bleahu & al. 1981). They start in terrigenous facies in the basal Scythian, while the higher parts of the Triassic are characterized almost entirely by a range of Tethyan-type platform and basinal carbonate facies. At some levels and in some particular facies the Triassic deposits from the Northern Apuseni Mts. contain rich and varied assemblages of invertebrate macrofaunas, mainly cephalopods, brachiopods and bivalves. In spite of their abundance, there are only a few monographs or papers describing and illustrating the different groups of these Triassic faunas (Kittl 1912; Kutassy 1937; Preda 1962; Bleahu & al. 1972; Bordea & Bordea 1973; Panin & Tomescu 1974; Patrulius & Pajaud 1974; Patrulius & al. 1976; Bordea & al. 1978; Riedel & Senowbari-Daryan 1988). There are also some important papers giving more general references to the occurrences of Triassic invertebrate macrofaunas in the Northern Apuseni Mts. (Kutassy 1928 a-b; Bleahu & al. 1970; Bordea & al. 1975; Patrulius 1971, 1976 b, 1979).

Important collections of Triassic macrofossils from the Northern Apuseni Mts. are to be found in the palaeontological repositories in the universities, museums and Geological Surveys of Romania and Hungary, waiting to be described and illustrated. One of the most important is the collection made by Kutassy from the Triassic of the Vașcău region. This collection, which includes new ammonoid

species cited under *nomina nuda* by Kutassy (1928 b), is kept at the Magyar Állami Földtani Intézet in Budapest.

Besides the older collections in museums abroad, collections of Triassic invertebrate macrofaunas from the Northern Apuseni Mts. lie in university departments and museums in Romania awaiting classification and proper description. All these collections can provide important elements for biostratigraphic dating and correlations of the Triassic deposits in the region, and for palaeobiogeographic interpretations.

These collections fairly illustrates the state of so many collections of fossils whose fate was regretted already by Teichert & al. (1987) and Ziegler (1987), and discussed further by Erwin & Ziegler (1997), Erwin (2001), Allmon (1997, 2005) and NRC (2002). They draw attention to the immense amount of potentially valuable palaeontological information that is unavailable because it is locked up in undescribed collections in university departments and museums the world over. They draw from their own experience numerous examples of palaeontological treasures that have been lying in collections for decades, waiting to be described in print. In consequence, to the two categories defined by Newell (1959), namely the "published record" and the "undiscovered, potentially knowable, record", Teichert & al. (1987) added a third, the "discovered, but unpublished fossil record". They estimated that the number of species of fossil animals and plants that remain undescribed in the museum collections of the world may be about equal to that of all the fossil species described so far. Teichert & al. (1987) pointed out that

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theoretical studies in palaeobiology are totally dependent on a solid base in taxonomic and morphologic data, to which end much more systematic research resulting in descriptive monographic publications is needed. For this the museum collections represent a major source of undescribed material.

Allmon (1997, 2005) and NRC (2002) emphasized that, properly curated, the value of a collection will increase through time and its useful scientific value will last many decades or even generations. Besides well-curated collections, there are also two other kinds of fossil collections held at universities or other academic institutions: „orphaned” or „endangered collections”. Such collections, commonly neither cataloged nor curated, although potentially extremely valuable, are usually unknown and often inaccessible to the public and so face threats to their continued maintenance and even their existence. Emphasizing the importance of fossil collections as the final repositories of the evidence that underlies all stratigraphic and biological palaeontology, past, present and future, Allmon & Poulton (1997), Allmon (1997, 2005), Erwin (2001) and Johnson & *al.* (2005) stress not only the importance of current cataloging and indexing of the specimens but advocate also the publication and maintenance of electronic catalogues, not just of type, figured and cited material, but also of non-typological and stratigraphic collections. Webster & *al.* (2003) discussed the rich taxonomic value found in museum collections as an easy means of increasing the precision of measured sections and the biostratigraphic resolution obtainable by computer-assisted methods.

Nicholson's prediction (1986) that "Museum collections of today, properly maintained, documented, and conserved for long-term use, will be the jewels of scientific research in the 21st century" were long anticipated by the reputed Romanian geologist Gregoriu Ștefănescu when he stated (1872): "We have to collect as much as possible, and if not we, then our successors will have the material on which to build the geological edifice of the country".

In seventies of the last century the field-geologists Dumitru Istocescu and Mircea Diaconu collected an ammonoid fauna from the Codru Formation occurring in the Roșia-Sohodol outlier of the Finiș Nappe, in the south-western part of Pădurea Craiului Mts. The collection was given to Dan Patruțiu, who in turn gave it to the present author for taxonomic identifications. The ammonoids thus identified were listed in their papers by Patruțiu & Pajaud (1974), Patruțiu (1976 b, 1979) and Patruțiu & *al.* (1976).

The aim of the present paper is to describe and figure some important ammonoids in the collection of Istocescu and Diaconu that have been a keystone for the biostratigraphy of the Triassic deposits in the Finis Nappe.

GEOLOGICAL SETTING AND STRATIGRAPHY

The Codru Formation (Patruțiu 1979), formerly described as Codru Beds (Patruțiu & Pajaud 1974, Patruțiu 1976 b, Patruțiu & *al.* 1976), is a Norian lithostratigraphic unit included in the Triassic Series of the Finiș Nappe, belonging to the Codru Nappe System. It has no equivalent of similar age either in the Carpathians or in the Alps (Patruțiu 1979).

The known occurrences of the Codru Formation in the Ferice Nappe are in the Șeasa Valley in the Codru Mts., in the Roșia-Sohodol outlier on the south-western border of the Pădurea Craiului Mts., and in the Ferice Unit in the northern part of the Bihor Mts. (Patruțiu & Pajaud 1974; Patruțiu & *al.* 1976; Patruțiu 1976 b, 1979; Bordea & Bordea 1973; Bordea & *al.* 1978).

The ammonoids of the Istocescu and Diaconu collections are from the Codru Formation cropping out in the Roșia-Sohodol outlier, on the right bank of the Roșia valley, south of the Roșia village.

The lithology of the Codru Formation in this locality, as given by Patruțiu (1976 b), is as follows:

1 - a lower member, around 85 meters thick, made up of argillaceous and marly shales with interbedded black limestones and grey or yellowish calcareous sandstones;

2 - an upper member, around 115 meters thick, made up of silty marls to micaceous marly siltstones and marly limestones, yellowish-brown weathering, with interbedded coarse-grained, black limestones in the lower part.

Kutassy (1928 a) is the first to cite ammonoids from the Codru Formation cropping out in the Roșia section, as follows (under Kutassy's original taxonomic nomenclature): *Juvavites* cfr. *compressus* Mojsisovics, *Juvavites costatus* n. sp., *Dimorphites* sp., *Protrachyceras szontaghi* n. sp. The names of the two new species introduced by Kutassy (1928 a) are both *nomina nuda*, the species having never been described and figured.

Preda (1962) listed or described and figured other ammonoid species that he assigned to the new species of Kutassy (1928 a) without however seeing Kutassy's original specimens. Other ammonoids described and figured by Preda (1962) are all in a state of preservation making even generic assignments difficult.

On the basis of their reports, Kutassy (1928 a) and Preda (1962) gave a Carnian age to the detrital sequence from Roșia.

From the same beds Kittl (1912) described two new halobiid species: *Halobia striatissima* and *Halobia szontaghi*.

Patruțiu (in Patruțiu & Pajaud 1974) was the first to recognize that this formation was wrongly dated as Carnian. On the basis of the preliminary taxonomic identifications made by the present author of the ammonoids collected by Istocescu

and Diaconu (cf. Patruşius & al. 1976), it was shown that the Codru Formation is of Norian age (Patruşius & Pajaud 1974; Patruşius & al. 1976; Patruşius 1976 b, 1979). Among the most important elements was *Pseudocardioceras* (assigned to *Waldthausenites* in Patruşius, 1971) and the recognition that '*Protrachyceras szontaghi* n. sp.' of Kutassy (1928 a), treated here as a *nomen nudum* species, is also a Norian ammonoid (assigned to *Tibetites altus* Diener in Patruşius 1976 b; Patruşius & al. 1976).

The ammonoid collection of Istocescu and Diaconu from the Codru Formation, taxonomically revised and described in the present paper, includes the following taxa:

Codruites n. gen. *istocescui* n. sp.
Malayites paulckeii (Diener)
Pseudocardioceras idunae (Diener)
Juvavites spp.

Malayites paulckeii (Diener) and *Pseudocardioceras idunae* (Diener) are both representatives of the 'Zone des *Heinrichites Paulckeii*' of Diener (1921), primarily recognized at Feuerkogel (Austrian Alps) and later validated as the *Malayites paulckeii* Zone by Krystyn (1973). It corresponds to the *Malayites dawsoni* Zone established by Tozer (1965) in British Columbia (North America). Moreover, the genus *Pseudocardioceras* has a very restricted occurrence in the Dawsoni Zone, defining a distinct subzone with *Pseudocardioceras idunae* as index species (Tozer 1994).

The occurrence of *Juvavites* genus is closely restricted to the Magnus Zone, the last zone of the Laciian substage.

The range of cyrtopleuritids, to which *Codruites* n. gen. *istocescui* n. sp. is affiliated, starts from the base of the Laciian and extends into the Alaunian (Krystyn 1982; Tozer 1994). *Codruites* n. gen. has morphological features suggesting that it may be an ancestral representative of cyrtopleuritids, its first appearance being presumably in the middle or upper zone of the Laciian.

Taken together, the identified ammonoids in the collection of Istocescu and Diaconu confirm an Early Norian age for the lower part of the Codru Formation. However, the stratigraphic range of this formation is much larger as shown by the conodonts and forams studied by Patruşius & al. (1976).

A major shortcoming of the collection of Istocescu and Diaconu is the lack of data on the precise stratigraphic levels of the ammonoids within the Codru Formation. Even so, these ammonoids are very important for the biostratigraphy of the Late Triassic deposits in the Northern Apuseni Mts. Their occurrence also in the Northern Apuseni Mts. is significant for the palaeobiogeography of the Late Triassic ammonoids in southeastern Europe.

SYSTEMATIC PALAEOLOGY

Class **Cephalopoda** Cuvier, 1797
Subclass **Ammonoidea** Zittel, 1884
Order **Ceratitida** Hyatt, 1884

Family **CYRTOPLEURITIDAE** Diener, 1925

Genus ***Codruites*** n. gen.

Type species *Codruites* n. gen. *istocescui* n. sp.

Diagnosis: Discoidal shell with falcoid ribbing and three spiral rows of tubercles, umbilical, lateral and marginal. On the inner whorls the ribbing starts on the umbilical wall and the umbilical, lateral and marginal tubercles are spinose. The ribs, which are thickening laterally, are simple or bifurcate at the lateral row of tubercles. From the marginal nodes the ribs, some bifurcating, are strongly projected adorally and terminate in ventral clavate ears with rounded tops. The clavate ears form ventral keels bordering a narrow and smooth ventral furrow. There is no indication of strigation. Falcoid growth lines cover the shell, becoming more pronounced on the outer flank between the marginal nodes and the ventral ears. The same type of ornamentation persists on the bodychamber but it becomes attenuated adorally. On bodychamber the umbilical wall becomes smooth and the umbilical tubercles disappear. The suture line is ammonitic and the external saddle has a deep indentation on the outer side.

Species assigned to the genus: *Codruites* n. gen. *istocescui* n. sp.

Age: Lower Norian, probably Paulckeii and/or Magnus Zones.

Remarks: Morphologically the genus resembles both the tibetitids and cyrtopleuritids. From tibetitids, the genus *Paratibetites* Mojsisovics, 1896, is very close by its style of ornamentation both on phragmocone and on bodychamber. However, the suture line of *Codruites* n. gen. is ammonitic, with a deep indentation on the outer side of the external saddle, a feature common in cyrtopleuritids. From the genus *Cyrtopleurites* Mojsisovics, 1893, *Codruites* n. gen. differs in having an open umbilicus, non-denticulate clavate ventral ears and a smooth ventral furrow.

Codruites n. gen. has morphological features suggesting that it may be an ancestral representative of cyrtopleuritids.

Etymology: Genus name derived from the Codru Formation which yielded the specimens.

Codruites n. gen. *istocescui* n. sp.
(Plate 1, figs. 1-6)

Material: 5 specimens:

1 holotype: UBLG-I&D 090, Pl. 1, fig. 2, incomplete, with part of phragmocone preserved and most part of bodychamber

2 paratype: UBLG-I&D 091, Pl. 1, fig. 5, incomplete, with part of phragmocone preserved and adoral part of bodychamber

3 paratype: UBLG-I&D 092, Pl. 1, fig. 6, incomplete, with end of phragmocone preserved and part of bodychamber

4 paratype: UBLG-I&D 093, Pl. 1, fig. 1, incomplete, with end of phragmocone preserved and most part of bodychamber

5 paratype: LPB.III.A-2980, Pl. 1, fig. 3, incomplete, with most part of bodychamber

Diagnosis: The only known species shows the diagnostic characters of the genus as described above: discoidal shell with falcooid ribbing and three spiral rows of tubercles, umbilical, lateral and marginal; the ribs, which are simple or bifurcate at the lateral tubercles, terminate with non-denticulate, clavate ears giving ventral keels bordering a narrow and smooth ventral furrow. All features of the ornament attenuate on the adoral part of the bodychamber. The suture line is deeply incised, the external saddle having a deep indentation on the outer side (Text-fig. 1).

Description: The characters of the described species combine features observable on the holotype and on some of the paratypes. Due to lateral compression the state of preservation is not perfect, nevertheless the available material is seen as sufficient for specific description. All specimens preserve the test with no sign of strigation. The holotype, UBLG-I&D 090 (Pl. 1, fig. 2), is a nearly complete specimen attaining a diameter of about 95 mm. The suture line is not seen in the holotype, but two of the paratypes, UBLG-I&D 091 (Pl. 1, fig. 5) and UBLG-I&D 092 (Pl. 1, fig. 6), have well preserved ammonitic suture lines (Text-fig. 1). Paratype UBLG-I&D 093 (Pl. 1, fig. 1) preserves a significant part of the bodychamber and the end of the phragmocone showing no change of the ornamentation style in between. The paratype UBLG-I&D 092 (Pl. 1, fig. 5) is the largest specimen in the collection, attaining a diameter of about 150 mm. It contains the adoral part of the

bodychamber and parts of the inner septate whorls. It shows the reduction of lateral and marginal tuberculation on the adoral part of the bodychamber and the disappearance of the umbilical tuberculation. Umbilical wall becomes smooth on bodychamber. Although the venter of the bodychamber is not perfectly preserved, the attenuation of the ventral clavate ears is well visible and the shallowing or even loss of the ventral furrow is highly probable.

Remarks: In its style of ornamentation, *Codruites* n. gen. *istocescui* n. sp. resembles two tibetitids described by Diener (1923) from Timor as *Tibetites altus* and *Tibetites deliciosus*. On this basis, we formerly assigned the specimens from the Codru Formation to *Tibetites altus* (cf. Patruilius & al. 1976). However, the two species of Diener have a much stronger ribbing and tuberculation. These species show also a distinctive strigation, a common feature for tibetitids which is lacking in *Codruites* n. gen.

The paratype LPB.III.A-2980 (Pl. 1, fig. 3), preserving a part of the bodychamber, is a specimen collected, described and figured by Preda (1962, p. 77, Pl. 5, fig. 6) as *Protrachyceras szontaghi* Kutassy, 1928. This species was cited from the Codru Formation in the same region but was never described and figured by Kutassy. It was later referred to by Kutassy (1932) in *Fossilium Catalogus* as *?Trachyceras (Protrachyceras) szontaghi*. No indication was given of its repository, and the material on which this species was founded was probably lost in meantime.

Etymology: The name commemorates geologist Dumitru Istocescu, one of the two collectors of Early Norian ammonoids described in the present paper, who died in the earthquake that struck Bucharest on 4th March 1977.

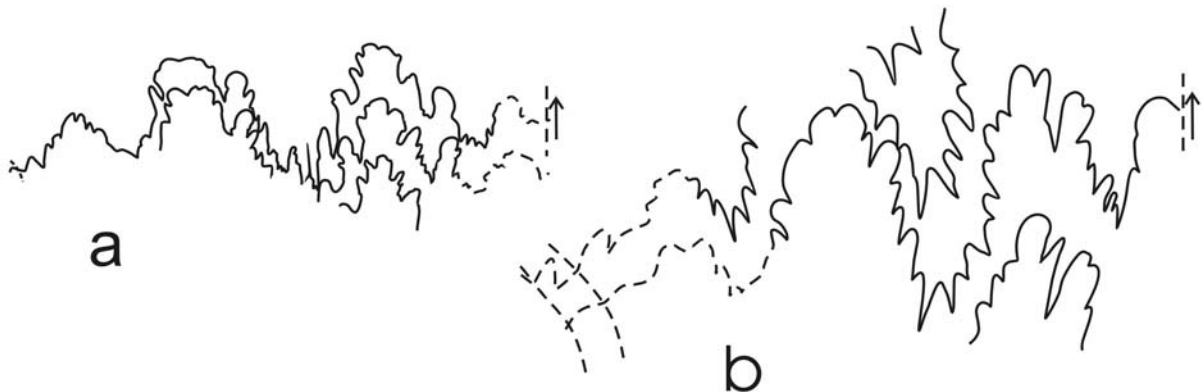


Fig. 1. Suture lines of *Codruites* n. gen. *istocescui* n. sp.:

a - last suture lines of paratype UBLG-I&D 092 (Pl. 1, fig. 6) x 3; shortness of individual elements points to adult stage.

b - suture lines of UBLG-I&D 091 (Pl. 1, fig. 5) x 3; suture lines are visible on last part of phragmocone, lower left side of figured specimen.

Family **JUVAVITIDAE** Tozer, 1971

Genus **Malayites** Welter, 1914

Type species *Malayites informis* Welter, 1914
(= *Heinrichites* Diener, 1920)

Malayites paulcke (Diener, 1920)
(Plate 1, fig. 8)

1920. *Heinrichites Paulcke* nov. sp.; Diener, p. 496, pl. 7, figs 1 a-c, 2 a-b, 3 a-b.

Material: One fragment of bodychamber, UBLG-I&D 099.

Description: In its style of ornamentation, the specimen, mostly a steinkern, closely resembles

the species described by Diener, showing weak falcoid ribs and pronounced strigation.

Age: Several species of *Malayites* were described from Timor (Welter 1914), from the Alps (Diener 1920), from the Himalayas (Wang & He 1976; Krystyn 1982) and from British Columbia (McLearn 1960, Tozer 1994).

As demonstrated by Tozer (1965, 1967) in British Columbia and by Krystyn (1973, 1982) in the Alps and Himalayas, *Malayites* occurs in the Lower Norian, defining a distinct zone, named *Malayites dawsoni* Zone in British Columbia and *Malayites paulcke* Zone in the Alps and Himalayas (Table 1).

SERIES	STAGE	SUBSTAGE	AMMONOID ZONES		
			Alpine	British Columbia	
UPPER TRIASSIC	NORIAN	U	Sevatian	<i>Sagenites quinquepunctatus</i>	<i>Gnomohalorites cordilleranus</i>
			M	Alaunian	<i>Halorites macer</i>
		<i>Himavatites hogarti</i>			
		<i>Cyrtopleurites bicrenatus</i>		<i>Drepanites rutherfordi</i>	
		L		Lacian	<i>Juvavites magnus</i>
			<i>Malayites paulcke</i>		<i>Malayites dawsoni</i>
				<i>Guembelites jandianus</i>	<i>Stikinoceras kerri</i>

Table 1 - Time scale of the Norian and correlative ammonoid zones for the Alpine Triassic and British Columbia (North America) compiled from Krystyn (1973, 1982), Krystyn & Kuerschner (2005) and Orchard & Tozer (1997).

Genus **Pseudocardioceras** Tozer, 1971
Type species *Waldthausenites idunae* Diener, 1920

Pseudocardioceras idunae (Diener, 1920)
(Plate 1, figs. 9 a-b, 10 a-c)

1920. *Waldthausenites Idunae* nov. sp.; Diener, p. 509, pl. 9, figs 8 a-b, 9 a-b.

1923. *Waldthausenites Leophanis* nov. sp.; Diener, p. 159, pl.19, figs 5 a-c.

1960. *Waldthausenites* cf. *leophanis* Diener; McLearn, 106, pl.17, figs 4 a-b.

1971. *Pseudocardioceras idunae* (Diener); Tozer, p. 1030.

1994. *Pseudocardioceras idunae* (Diener); Tozer, p. 243, pl. 121, figs 2 a-b.

Material: 2 specimens, UBLG-I&D 0100 and 0101.

Description: The first specimen, I&D 0100, attaining a diameter of about 28 mm, is near complete, with phragmocone and bodychamber. The ribbing weakens adorally. The second specimen, I&D 0101, with regular ribbing, is probably a phragmocone, having no visible suture lines.

Remarks: Tozer (1971) introduced the new genus *Pseudocardioceras* for ribbed, strigate juvavitids with crenulate keel, like that of Jurassic

Cardioceras. It is distinguished from *Waldthausenites* Walter, 1914, by absence of umbilical nodes. As originally defined, the genus *Pseudocardioceras* Tozer, 1971, includes two species: *Pseudocardioceras idunae* (Diener, 1920) and *Pseudocardioceras acutum* (Mojsisovics, 1893). The latter is more compressed and with ribbing that is less prominent or absent. Tozer (1994, p. 244) showed that the two species, despite the differences between the type specimens, may be merely variants of one species. He mentioned that both type specimens are from the Hallstatt Limestone of the Feuerkogel and are preserved in similar distinctive purple limestone.

Age: Type locality of both species of *Pseudocardioceras* is Feuerkogel (Austria) in the Hallstatt Limestone. Diener (1923) described *W. leophanis* from Timor and compared it to *W. idunae* from Feuerkogel. There is no recent record of *Pseudocardioceras* in the Alps (e.g., Krystyn 1973).

In Canada, both species of *Pseudocardioceras* occur in the Lower Norian, Dawsoni Zone, Subzone 2 (index species, *Pseudocardioceras idunae*), Pardonet Formation, northeastern British Columbia (Tozer, 1994).

Genus *Juvavites* Mojsisovics, 1879
Type species *Ammonites ehrlichi* Hauer, 1855

Juvavites spp.
(Plate 1, fig. 7)

Remarks: There are several specimens in the collection, mostly fragments and only a few complete. All are deformed and flattened due to sediment compaction. The figured specimen, UBLG-I&D 0102, attaining a diameter of about 65 mm, is probably a bodychamber with test, the phragmocone not preserved. It shows a ribbing style characteristic for the genus *Juvavites*. There is no strigation. Strong ribs branch at inner and outer flanks, tertiary ribs are frequent. Ribs appear to cross the venter with moderate peripheral projection. Due to the poor preservation it is not possible to give any specific assignments. Possibly several distinct species of *Juvavites* might be present in the collection.

Age: The genus *Juvavites* is known from the *Juvavites magnus* Zone both in the Alpine Triassic (Krystyn 1973, 1982) and in British Columbia (Tozer 1994).

CONCLUDING REMARKS

The ammonoids described and figured for the first time in the present paper were collected more than 30 years ago by field-geologists Dumitru Istocescu and Mircea Diaconu then working with Enterprise for Geological Prospecting in Bucharest. These ammonoids have proved to be very important for improving the biostratigraphy of the Triassic deposits in the Codru Nappes in the Northern Apuseni Mts., as given by Patruilius (1976 b, 1979), Patruilius & Pajaud (1974) and Patruilius & al. (1976).

Much more palaeontological material of similar value lies in repositories in university departments and museums in Romania, awaiting classification and description. These collections can be important sources of valuable informations for completing the palaeontological record and for biostratigraphy, particularly in regions where similar materials cannot be recollected. Such palaeontological material can be a stimulus for further systematic collecting and high-resolution biostratigraphic studies.

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CAPTIONS OF PLATE

All figures natural size. An arrow indicates the last septum of the phragmocone and the onset of the bodychamber. The specimens are in the collections of the Department of Geology, University of Bucharest, serial numbers prefixed UBLG-I&D, with the exception of specimen LPB.III.A-2980 which is kept in the collection of the Department of Palaeontology, University of Bucharest.

Fig. 1 - *Codruites* n. gen. *istocescui* n. sp.; paratype UBLG-I&D 093, incomplete, preserving most part of bodychamber and end of phragmocone showing ventral clavate ears with rounded tops, and three spiral rows of tubercles, umbilical, lateral and marginal.

Fig. 2 - *Codruites* n. gen. *istocescui* n. sp.; holotype UBLG-I&D 090, incomplete, preserving most part of bodychamber and part of phragmocone.

Fig. 3 - *Codruites* n. gen. *istocescui* n. sp.; paratype LPB.III.A-2980, incomplete, with most part of bodychamber.

Fig. 4 - *Codruites* n. gen. *istocescui* n. sp.; paratype UBLG-I&D 094, incomplete, with part of bodychamber and phragmocone.

Fig. 5 - *Codruites* n. gen. *istocescui* n. sp.; UBLG-I&D 091, incomplete, preserving some phragmocone and adoral part of bodychamber; interrupted white lines mark the umbilicus on bodychamber and on last whorl of phragmocone; suture lines are visible in lower left side; diameter of specimen, the largest in size, is around 150 mm.

Fig. 6 - *Codruites* n. gen. *istocescui* n. sp.; paratype UBLG-I&D 092, incomplete, preserving end of phragmocone and part of bodychamber.

Fig. 7 - *Juvavites* sp.; UBLG-I&D 0102, specimen preserving most part of bodychamber, with missing phragmocone.

Fig. 8 - *Malayites paulcke* (Diener); UBLG-I&D 099, fragment of bodychamber, with visible strigation.

Figs 9 a-b - *Pseudocardioceras idunae* (Diener); UBLG-I&D 0101, phragmocone with regular ribbing.

Figs 10 a-c - *Pseudocardioceras idunae* (Diener); UBLG-I&D 0100, a near complete specimen having phragmocone and bodychamber.

