

SEVERAL DATA CONCERNING THE DOLOMITIC TRIASSIC MICROFACIES FROM THE CRYSTALLINE-MESOZOIC ZONE (THE EASTERN CARPATHIANS)

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Câteva date privind microfaciesurile dolomitice triasice din zona cristalino-mezozoică (Carpații Orientali). În eșafodajul structural al Dacidelor mediane din compartimentul moldav al zonei cristalino-mezozoice se disting următoarele unități: Pânzele Infrabucovinice, Pânza Sub-bucovinică și Pânza Bucovinică. Ultima dintre pânze suportă resturile unor depozite sedimentare ce revin Pânzelor Transilvane. Studiul nostru se referă la sedimentarul autohton de origine carbonatică ce aparține celor trei pânze. Observațiile vizează cu precădere depozitele dolomitice de pe trei profile, două din sinclinalul Rarău și unul din sinclinalul Hăghimaș.

Pânza Infrabucovinică, care ocupă poziția cea mai de jos în ansamblul structural al zonei cristalino-mezozoice, aflorază discontinuu, unul dintre profilele caracteristice acestei unități fiind scos la zi prin eroziune în fereastra tectonică Iacobeni-Vatra Dornei. Succesiunea litologică triasică care apare astfel în cariera Puciosu este reprezentată în bază printr-un nivel rudito-arenitic peste care se dezvoltă predominant un nivel dolomit. Acesta din urmă aflorază în carieră pe aproximativ 200 m. Dolomitele dure de culoare cenușie prezintă microfaciesuri diferite:

- dolomicrite cu aspect poros;
- dolomicrite cu asociație de microforaminifere constituită din *Aeolisaccus (Earlandia) amplimuralis* Pantic, *Aeolisaccus (Earlandia) tintiniformis* Misik.

Triasicul *Pânzei Sub-bucovinice*, care apare în peticul de rabotaj de la Gura Dămuului din sinclinalul Hăghimaș, este dezvoltat numai în facies carbonat, lipsind nivelul detritic din bază. Dolomitele aflorază pe o grosime de aproximativ 22 m, din care primii 7 m au aspect litat. Microfacial acest nivel este caracterizat prin:

- biopelmicrosparite cu *Aeolisaccus (Earlandia) amplimuralis* Pantic, *A. tintiniformis* Misik, *A. gracilis* Elliott, *Diplotremina* sp., *Glomospira* sp. *aff. roesingi* Blau;
- biodolomicrite cu radiolari și filamente;
- dolomicrite nefosilifere;
- dolopelmicrite.

Unul din punctele de aflorare ale *Pânzei Bucovinice* din sinclinalul Rarău este cariera Pecîștea din localitatea Pojorâta (Suceava). Sedimentarea începe în Scisianul detritic și continuă cu Triasicul mediu carbonat. Grosimea dolomitelor este greu de apreciat, microfacial fiind descrise niște dolopelmicrite și dolodismicrite cu o asociație de microforaminifere - *Glomospirella sinensis* Pantic, *Involutina cf. planidiscoides* Pantic, *I. eomesozoica* Oberhauser, la care se adaugă o specie de algă cloroficee - *Baccanella floriformis* Pantic.

Asociațiile descrise de pe fiecare din profilele discutate atestă vârsta triasic medie a dolomitelor din autohtonul zonei cristalino-mezozoice. Prezența microforaminiferelor în aceste depozite demonstrează originea lor secundară, respectiv formarea lor prin procese de dolomitizare a calcarelor preexistente.

In the structure of Median Dacides from the moldavian region of the crystalline-mesozoic zone we can distinguish the following units: the Infrabucovinian Nappes, the Subbucovinian Nappe and the Bucovinian Nappe. The last one supports the remains of some sediments deposits which come from the Transilvanian Nappes.

Our study refers to the native sediments of carbonated origin and which belong to the three layers. The observattion concern especially the dolomitic deposits which appear on three profiles, two from Rarău Syncline and one from Hăghimaș Syncline.

The Infrabucovinian Nappe is the lowest in the structure of the crystalline-mesozoic area outcropping discontinuously. One of the most interesting profiles was brought to the daylight by erosion in the tectonic window Iacobeni - Vatra Dornei where the lithologic succesion specific to this layer appears in Puciosu quarry located on the right bank of the river Goldeen Bistrița.

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Here the triassic sediment, disposed transgressively and jarringly over the crystalline schist slates of Bretila group (Balintoni, 1981) is represented by two facies: an inferior one rudaceous-arenitic and a superior one, mostly dolomitic.

The rudaceous facies is characterized by the presence of several conglomerate blocks with some microconglomerate oligomictic varieties (sample A – fig. 1). Besides these conglomerates there are, open westside of the dolomites hard sandstones, grey-whitish, muscovito-sericite (sample B – fig.1). Thanks to its stratigraphic position, gained especially from the correlations with other areas belonging to the other two units of the crystalline-mesozoic zone, the rudaceous-arenitic level was considered to be from Werfenian (Lower Triassic).

On top of this level is disposed another one, dolomitic, and the contact between them is not visible in the field. The hard dolomites, grey-dark coloured, outcrop in quarry on approximately 200 m, and they can be differentiated macro and microscopic in three areas.

In the south-west part of the quarry the grey dolomites are lithified, presenting themselves as layers of various thicknesses (5 – 40 cm), separated by pelitic pelliculas that mark the stratification plans. Microfacial are some dolomicrites, intensely diaclosed, in which appears fragments of organic matter with outlines mostly round and oval, giving to the rock a porous aspect. Some of these fragments resemble very much to the longitudinal and transversal sections through thalluses of alga.

In the second area (fig. 1), the dolomites appear in beds 2-3 m thick, with some lithified separations, the dolomicrites dominate (sample 166) in which we identified an association of microforaminifera formed by *Aeolisaccus (Earlandia) amplimuralis* Pantic and *Aeolisaccus (Earlandia) tintiniformis* Misik. Besides these there is a series of other forms possibly fossil but which are hard to determine because of the lack of an intern structure.

The triassic structure ends with black dolomites, lithified, disposed on the superior part, in 5 – 30 cm thick layers. The presence of the two fossil forms permits us to ascribe the whole layer of dolomites from the Infrabuconian at Puciosu to Middle Triassic. A characteristic of these deposits is their bituminous nature fact which led their assimilation to black limestones of Guttenstein. Regarding this particularity, Grasu et al. (1995) proved that the organic matter which gives the dark colour to dolomites corresponds to a kerogen of coal nature.

The triassic of the Subbuconian Nappe appears on the Gura Dămucului dislodged slice from the Hăghimaş Syncline (fig. 3). The deposits assigned to this age are developed only in the carbonated facies, as the detrital level lacks from the base. The carbonated facies is represented by dolomitic limestones and especially hard dolomites which unfold an 22 m. In the first 7 m of the triassic succession base, the dolomites are grey to black, with fine diaclosed of lüne spar and with an obvious stratification, the layers being from 2 – 3 cm to 15 – 20 cm thick. From this lithified level we reveal several types of microfacies:

- biopelmicrosparites with an association of *Aeolissaccus amplimuralis* Pantic, *Aeolissaccus tintiniformis* Misik, *Aeolissaccus gracilis* Elliott, *Diplotremina sp.*, *Glomospira sp. aff. roesingi* Blau (samples 54, 55);
- biodolomicrites with radiolars and sections of juvenile bivalve (samples 56,57);
- dolomicrites non-fossil (sample 58);
- dolopelmicrosparites (sample 60).

Above the lithified level follows a superior one, formed by massive grey dolomites, sometimes yellow, which outcrop on a thickness of 15 m. The study of the thin sections realised through these dolomites led to the separation of several microfacial types: diaclosed dolomicrites (sample 61), dolomicrosparites (samples 62, 63), dolosparites and intradolosparites (sample 64, 65), breccia with a sublithographic aspect. These massive deposits lack the stratigraphic indicators. Still, the micropaleontologic association we mentioned above certifies the campilian – anissian age of the entire deposit of subbuconian dolomites.

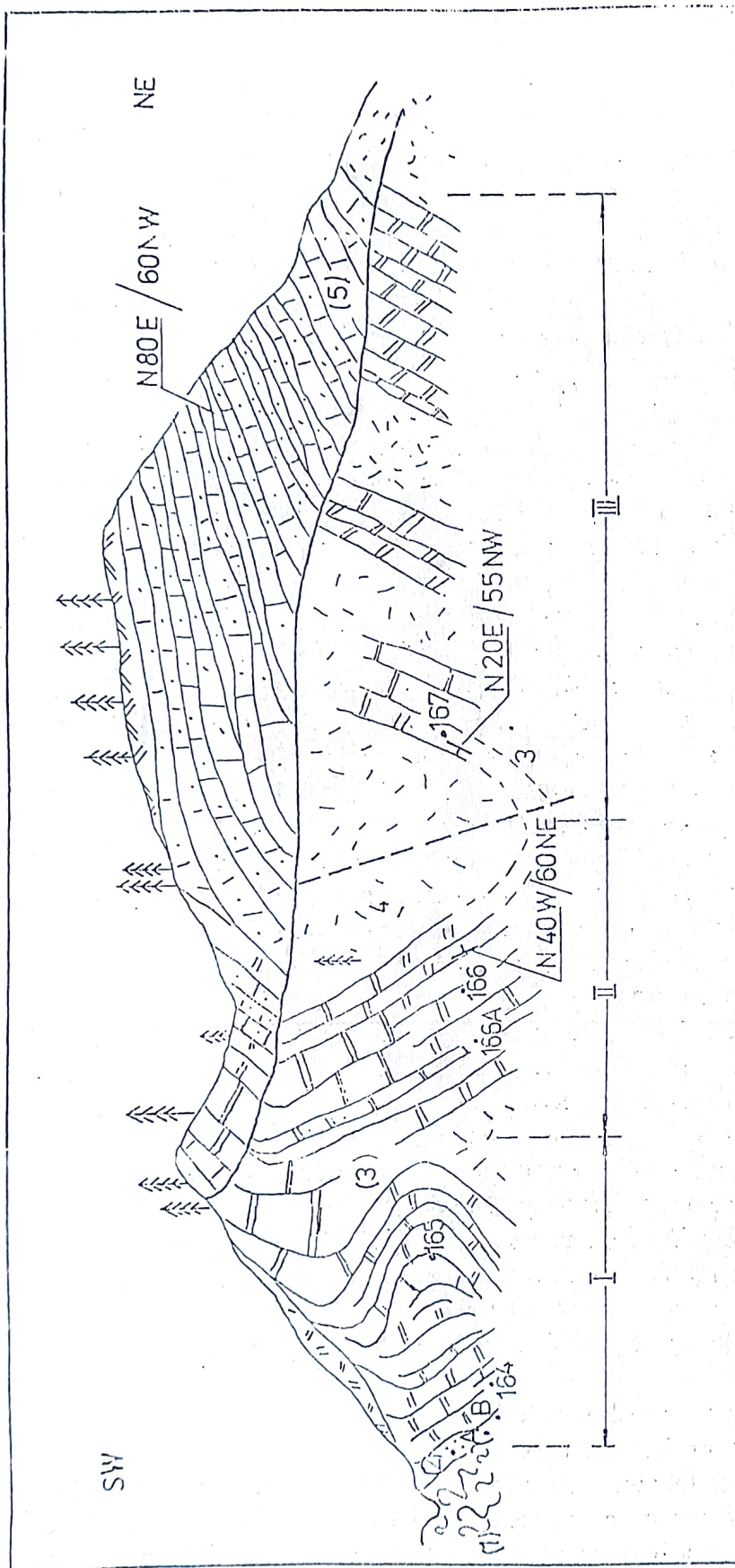


Fig. 1 - Geological section through the mesozoic infrabuvinian deposits from Puciosu quarry (the tectonic window Iacobeni-Vatra Dornei) Rarău. 1 - Bretila Group; 2 - conglomerates and sandstones (Lower Triassic); 3 - black dolomites (Middle Triassic); 4 - covered field; 5 - sandstone limestones (Middle Jurassic); A, B, 164, 167 - samples.

One of the outcropping points of Bucovinian Nappe from the Rarău Syncline is Pecișteea quarry, around Pojorâta village (Suceava country), located on the left bank of Moldova river. Here the triassic sedimentation begins with the Seissian developed in facies detrital, going on with a carbonated one, which supports transgressively and jarringly the deposits of Callovian-Oxfordian jaspers.

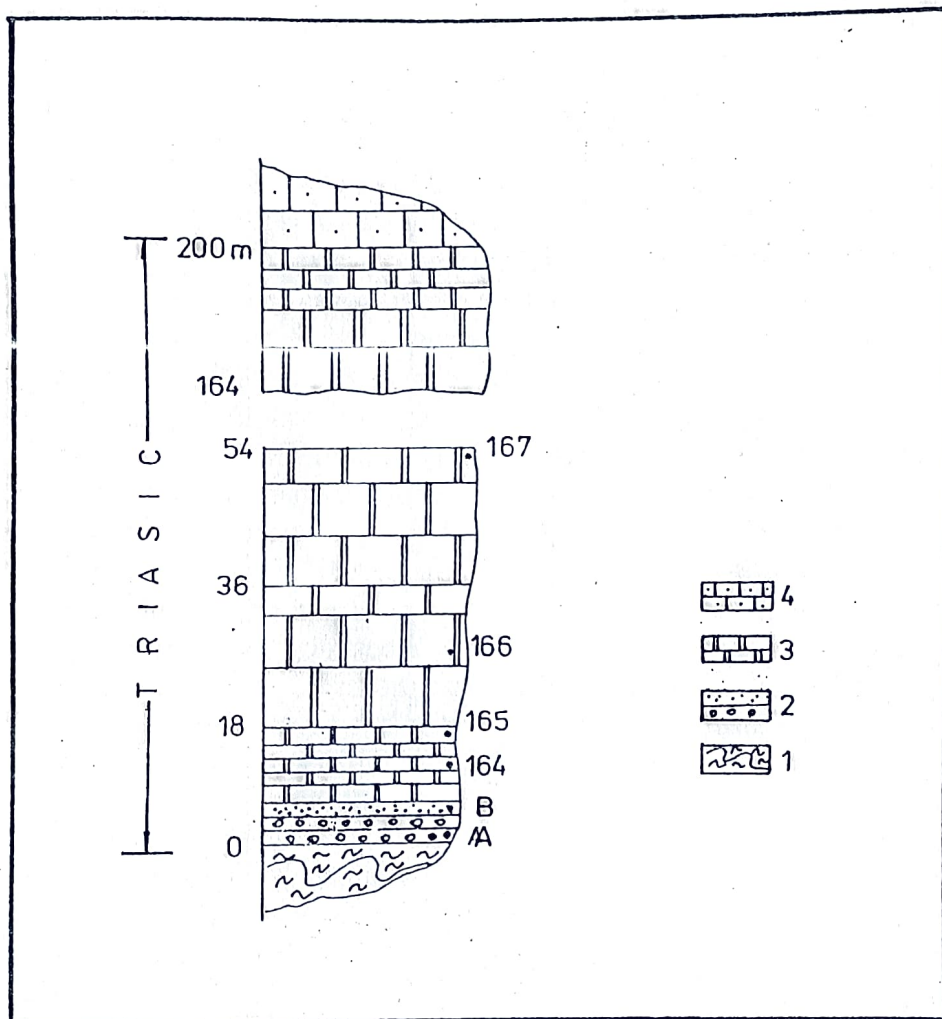


Fig. 2 - Lithostratigraphic column of infrabucovinian Triassic from Puciosu quarry.
1 - Bretila group; 2 - conglomerates, sandstones (Seisian); 3 - bituminous dolomites (Middle Triassic); 4 - sandstone limestones (Middle Jurassic).

Before going into the quarry, on the left bank of Moldova (fig. 4 B) there appear orthoconglomerates with pebbles of quartz, from millimetric dimensions to 3 - 4 cm. This deposit has a visible thickness of 1,5 - 2 m. On top of these conglomerates there lay white sandstones, mostly of lüne spar which support a deposit of grey dolomites on approximately 25 m. Within these deposits there appears an enclave of 3 - 4 m made up of reddish dolomitic limestones.

There appears in the quarry (fig. 4 A) the same rudaceous level a quartz microconglomerates on top of which lay a bank of sericitic sandstones with a thickness of 1 m. The contact between the arenitic level and the carbonated level is not visible because of the

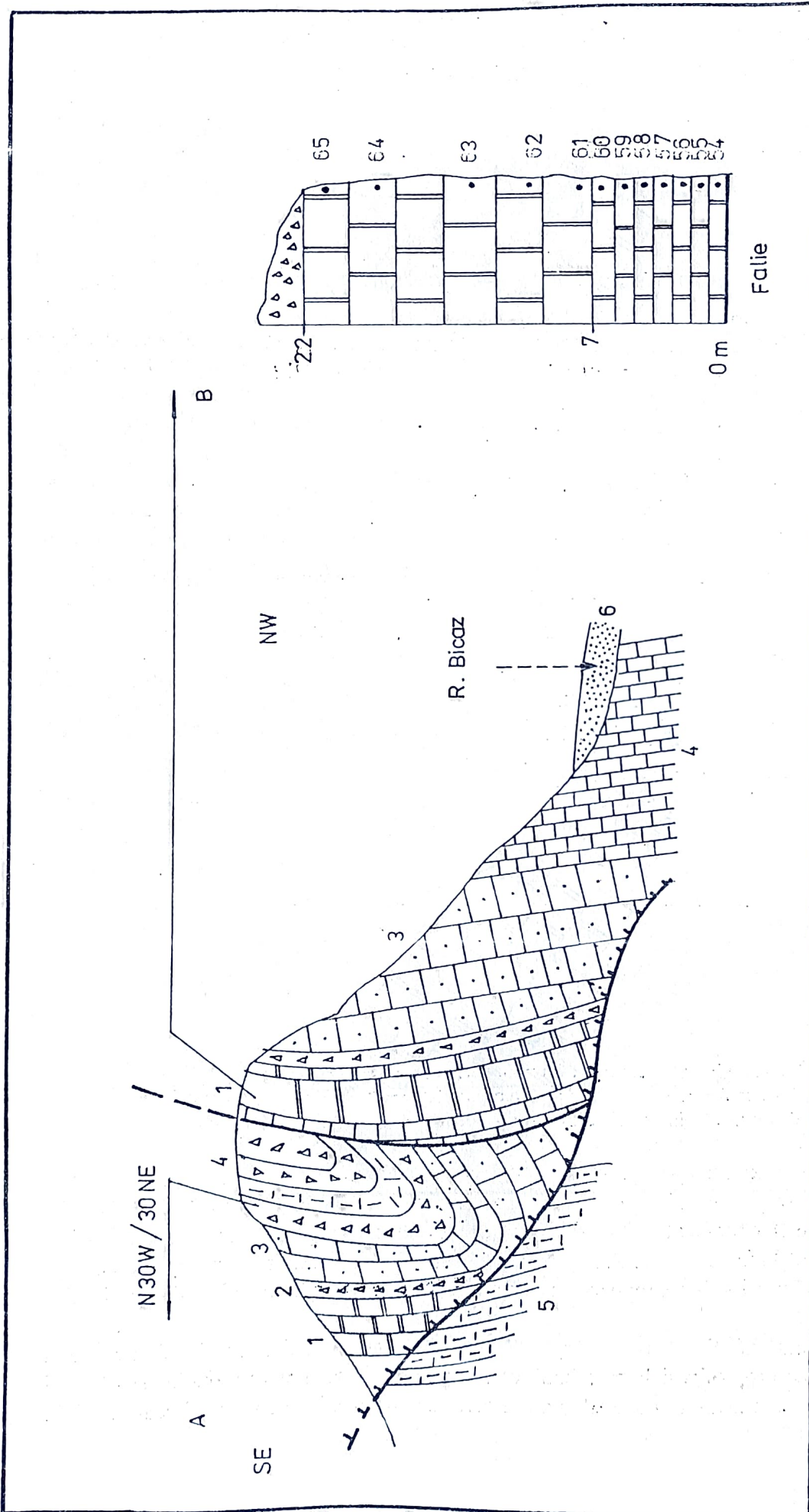


Fig. 3 - A - Geological detailed section through the sub-bucovinian triassic deposits from the Gura Dâmucului dislodged slice (Grasu et al., 1995) - Hăghimaş. 1 - dolomites (Triassic); 2 - breccia (Lower Jurassic); 3 - limestones (Middle Jurassic); 4 - lithified limestones and breccia (Tithonic - Neocomian); 5 - Sinai Formation (Ceahlău Nappe); 6 - Quaternary.
 B - Lithologic column of sub-bucovinian Triassic from Gura Dâmucului.

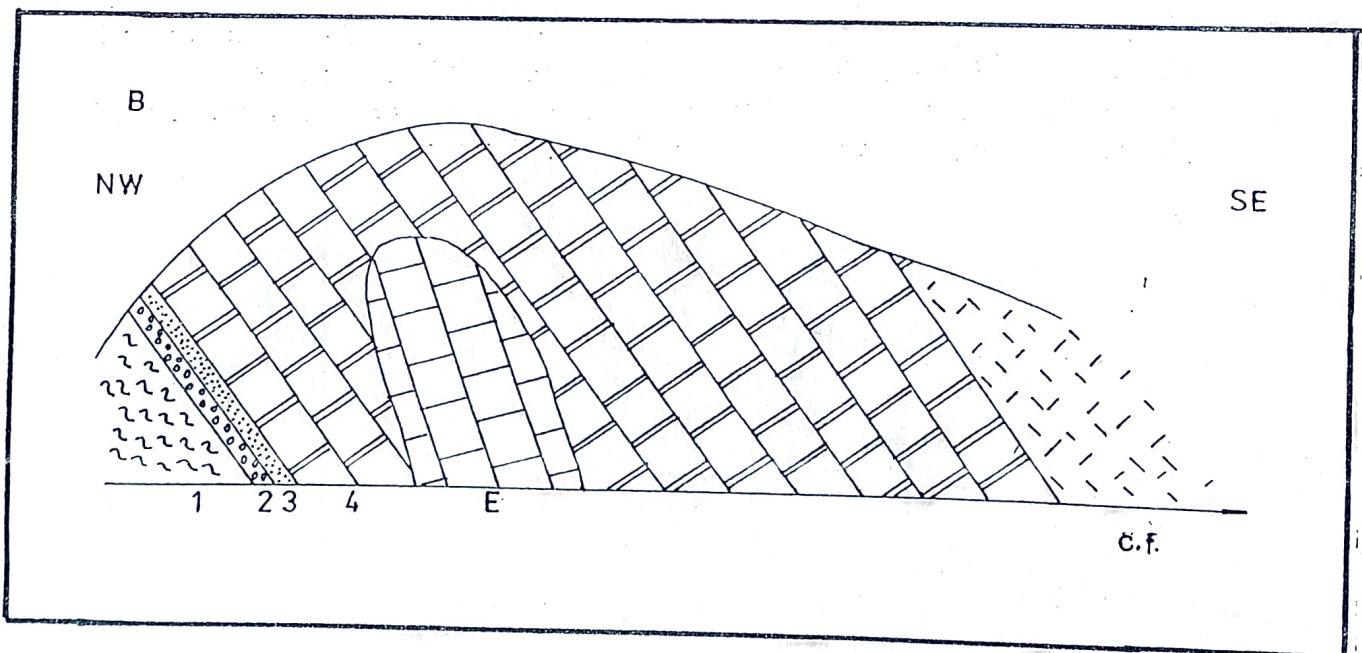
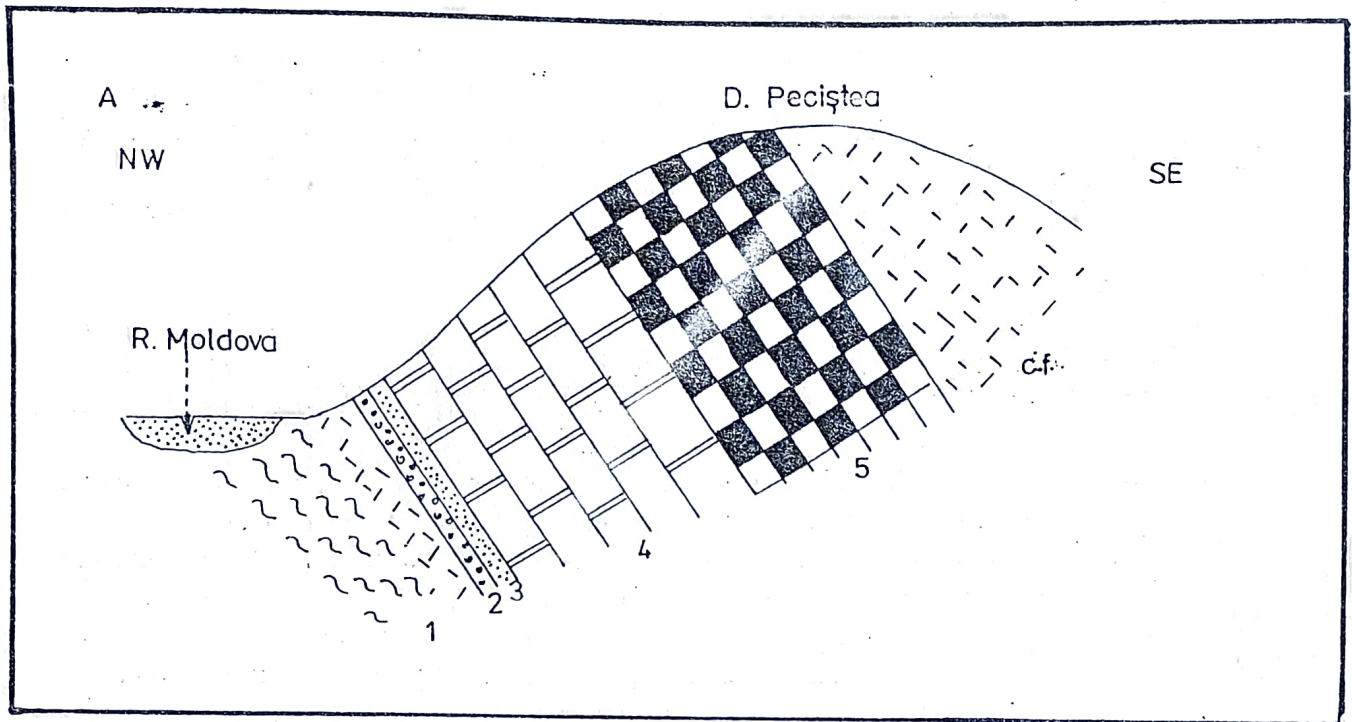


Fig. 4 A - Geological section through the Triassic formation from Pecisteia quarry - Rarău. 1 - crystalline; 2, 3 - conglomerates and sandstones (Lower Triassic); 4 - dolomites (Middle Triassic); 5 - jaspers (Callovian - Oxfordian); c.f. - covered field.
 B - Geological section through the Bucovinian Triassic which outcrops lower from Pecisteia quarry, in the left bank of Moldova river. E - enclave of reddish dolomitic limestones.

detritus resulted from the alteration of the dolomites and reddish jaspers from above them. Here the dolomites are diaclased, with various hues of grey, being disposed sometimes in layers thick of 1 – 2 m. In fact the thickness of these dolomites is hard to estimate because of the detritus that covers two thirds of the area. Microfacial are some dolopelmicrites and dolodismicrites with an association of foraminifera – *Glomospirella sinensis* Pantic, *Involutina cf. planidiscoides* Pantic, *Involutina eomesozoica* Oberhauser, to which a single species of chlorophyceous alga adds: *Baccanella floriformis* Pantic. The association certifies the Anissian – Ladinian.

Conclusions

The dolomitic deposits from the moldavian sector of the crystalline-mesozoic zone presents various thicknesses, from several tens of metres to several hundreds to metres, having various aspects, from finely lithified to massive. Microfacial dominates the dolomicrites but there appears also a series of other biopelmicritic varieties.

The microfacies of the dolomites belonging to Infrabucovinian and Bucovinian Nappe have a dolomicritic and biodolomicritic character while those from Subbucovinian are mostly dolosparitic containing the richest association of foraminifera. In fact all three faunistic associations described from each profile taken into discussion certify the age middle triassic of the dolomites from the autochthonous of the crystalline-mesozoic zone. The presence of microforaminifera in these deposits leads in the same time to the hypothesis of their secondary origin, that is their formation by processes of dolomitization of the pre-existing limestones.

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