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THE LIASSIC FROM RESITA AND SIRINIA BASINS

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Abstract: *In this paper are briefly presented some problems connected to the lithostratigraphical, facial and palaeoenvironmental aspects of the Liassic formations of the Resita and Sirinia basins.*

KEY WORDS: Liassic, Facial, Palaeoenvironmental, Lithostratigraphic, Resita Basin.

The Liassic stratigraphical succession from the Sirinia Basin (Danubian Domain) and the Resita Basin (Getic Domain) begins by a Hettangian - Sinemurian continental lithostratigraphical unit which is mainly detrital: the Cioaca Borii Formation (Raileanu 1953) in the Sirinia Basin and the Steierdorf Formation in the Resita Basin (Fig. 1, 3).

To the lower part of this lithostratigraphical unit there is a coarse gritty conglomerated member (the Omersnic Member in the Sirinia Basin and the Budinic Member in the Resita Basin) which is Lower Hettangian in age in the central depressionary areas of the basin and more and more newer to the marginal ones. This is thin in the central depressionary areas (20 - 50 m near Bigar in the Sirinia Basin and 50 - 80 m near Anina in the Resita Basin) and thicker in the marginal areas (150 - 300 m near Svinita in the Sirinia Basin and 100 - 200 m on the Gervan - Certej line in the eastern marginal area of the Sirinia Basin) that suggest an alluvial palaeoenvironmental system. Inside the gritty conglomerated member in both basins appear after an uncertain limit a lower entity which is mainly conglomerated and a mainly gritty upper entity.

To the upper part of the continental lithostratigraphical unit there is a gritty - clayey member with lens shaped coal beds, Upper

Hettangian - Sinemurian in age in the central areas and newer to the marginal ones, about 50 - 150 m thick in the Sirinia Basin and 200 m thick in the Resita Basin that suggest a fluvial palaeoenvironmental system with extended lacustrine palaeoenvironments under the influence of a warm and wet climate (Fig. 2, 4): the Pregheda Member in the Sirinia Basin and the Valea Tereziei Member in the Resita Basin

The Upper Hettangian - Sinemurian age of the Pregheda and Valea Tereziei Members (Semaka 1962, 1970; Popa M. in press) was determined concerning the macrofloristic associations which are characteristic for the area with *Thaumatopteris schenkii* and for the area with *Nilssonia orientalis*, and concerning a microfloristic association (Antonescu 1973).

All the lithostratigraphical components of the Cioaca Borii and Steierdorf Formations are lens-shaped (Fig. 4.). The conglomerates are quartzitic, the sandstones are quartzitic - feldspar and the clay silts are most often a black - coaly aspect. It is characteristic the frequency of the oblique lamination and the abundance of the kaolinite.

Inside the Cioaca Borii and Steierdorf Formations it is distinguished a centrifugal spatio-temporal migration (Fig. 1, 3) from the central areas to the marginal ones, of the Lithostratigraphic units, of the facies and of the palaeoenvironments resulting in this way heteropic lithostratigraphic units which are partially juxtaposed and newer to the marginal areas. As a consequence of this migration the coal complexes are heterochronous: in the central area of the Resita Basin, near Anina, the coal beds which are numerous and thick, are Upper Sinemurian - Hettangian in age and are placed in the terminal part of the Budinic Member, and

Fig. 1 The diagram of the lithostratigraphical, facial and palaeoenvironmental Liassic context of the Sirinia Basin

- a. Surrounding relief;
- b. Preliasic basement;
- c. Alluvial system
- d. Coarse detrital facies - the Omersnic Member;
- e. fluvatile system with paludal - lacustrine environment;
- f. gritty argilaceous facies with coal - the Pregheda Member;
- g. marine palaeoenvironment;
- h. external shore palaeoenvironment - gritty argilaceous facies - the Dragosela Member;
- i. internal shore palaeoenvironment - carbonated feruginous oolitic facies - the Munteana Member

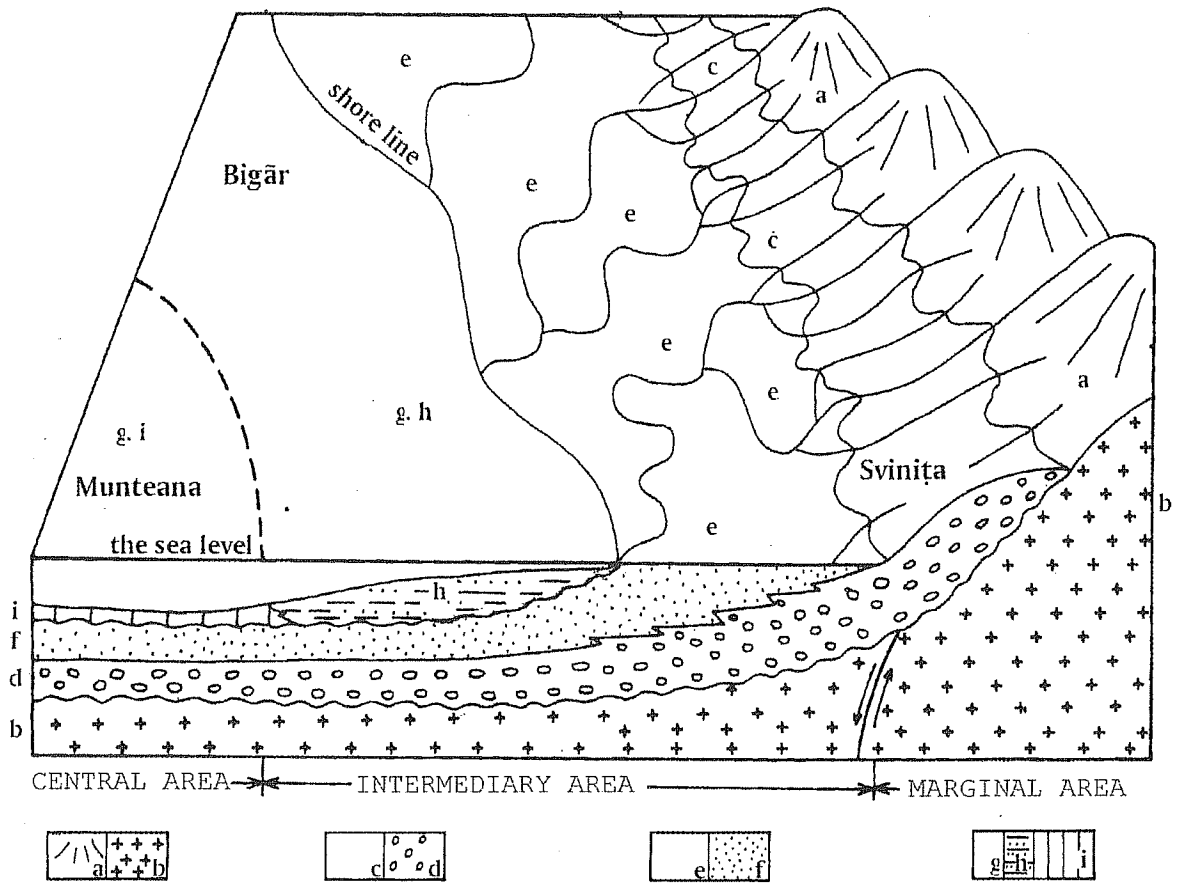


Fig. 2 Geological cross-section North - South oriented trough the Pregheda Member from the Bigar - Pietrele Albe Region.

- O. the Omersnic Member;
- P. the Pregheda Member;
- D. the Dragosela Member.

- a. sandstones with microconglomerates and conglomerates intercalations;
- b. clays and silts;
- c. coal beds.

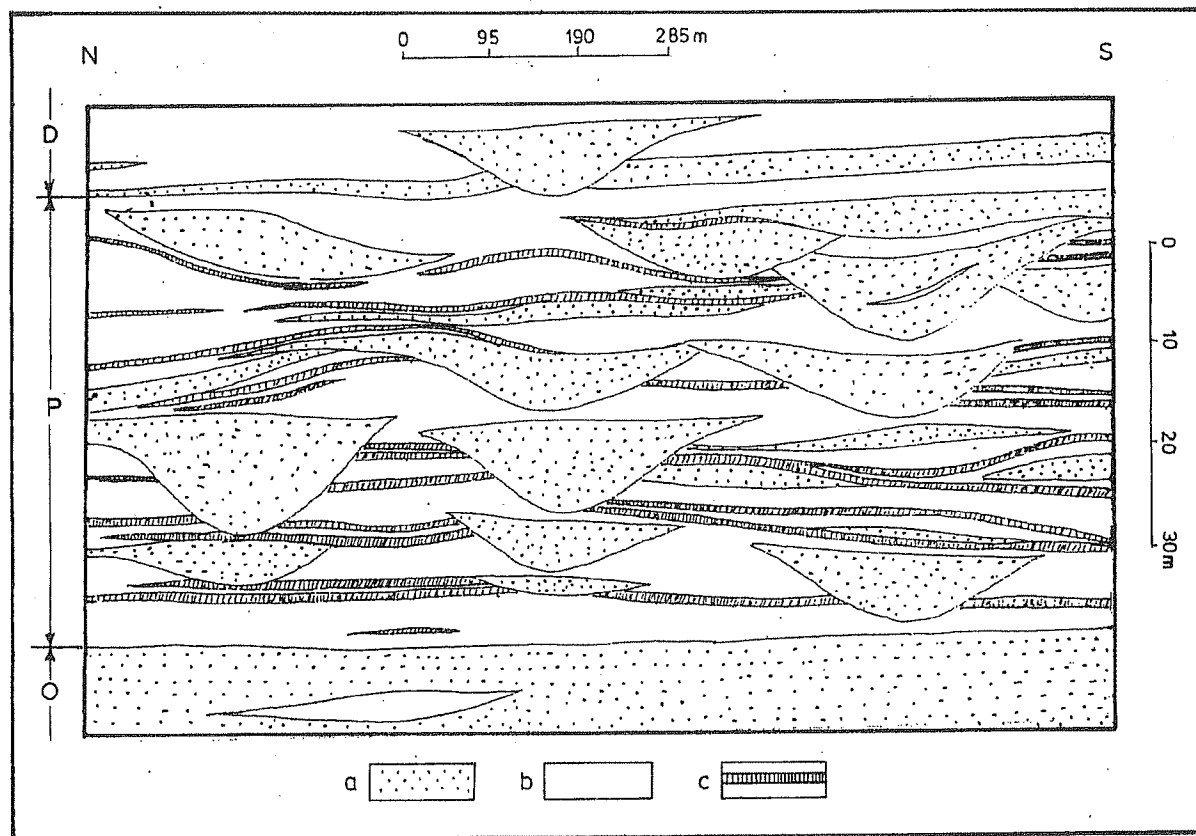


Fig. 3 The diagram of the lithostratigraphic, facial and palaeoenvironmental context of the Resita Basin during the Lower - Middle Liassic.

- a. surrounding relief;
- b. crystalline basement;
- c. alluvial palaeoenvironmental system;
- d. conglomerated - gritty facies (the Budinic Member);
- e. fluvatile palaeoenvironmental system with paludal - lacustrine palaeoenvironments;
- f. gritty - clayey - conglomerated facies with coal beds (the Valea Tereziei Member);
- g. lacustrine palaeoenvironment;
- h. clayey - bituminous facies (the Uteris Formation).

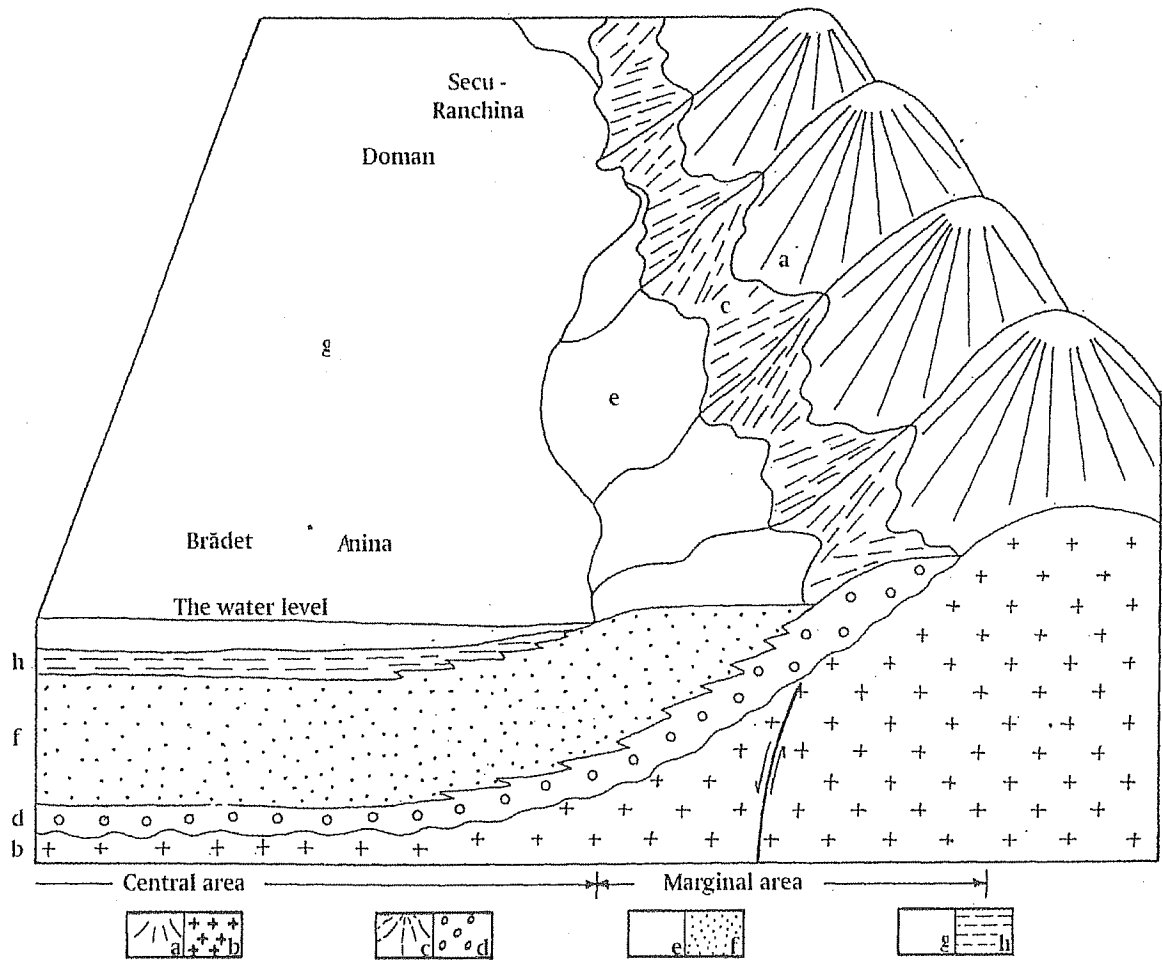
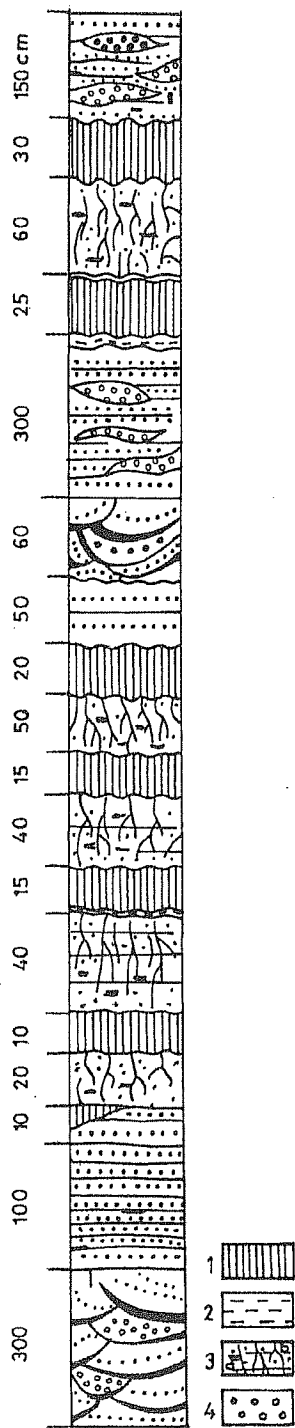


Fig. 4 Lithological column through the stratigraphical succession of the Valea Tereziei Member in the Ponor Quarry (Anina)

- I. coal
- II. clay
- III. sandstones with:
 - A. trunks
 - B. roots
- IV. conglomerates



inside the Valea Tereziei Member but near Secu - Ranchina (near to the marginal area) the main coal beds which are thin, are placed inside the Uteris Formation and are full with silty - arenitic material.

In the Sirinia Basin, over the Cioaca Borii Formation there is the Sirinia Formation which is Pliensbachian - Toarcian in age, marine, divided in two juxtaposed lithostratigraphical units: the Munteana and the Dragosela Members (Fig. 1).

The Munteana Member which is carbonated, feruginous, oolitic is placed in the central area (near Munteana), is about 60 m thick, suggests internal shelf palaeoenvironment and is divided in two overlapping lithostratigraphical units: the Piatra Lunga Layers and the Piatra Alba Layers.

The Piatra Lunga Layers, Upper Hettangian ? - Lower Carixian in age, were studied from a petrological point of view by Rusu (1968). They are 10 m thick and are constituted by oolitic, chamosito-hematitic, skeletal limestones with brachiopods, bivalves and ammonites Lower Carixian in age (Popa E. 1977) to the terminal part. The Piatra Alba Layers are Upper Carixian - Toarcian in age and they are constituted by greenish black, feruginous (chamositic), bioclastic and less oolitic limestones which are rich in fossils mainly Upper Carixian - Toarcian ammonites (Peters and Tietze in Raileanu 1953, Raileanu 1953, Popa E. 1977).

The Dragosela Member, which is gritty - clayey, is placed in the marginal areas, is among 150 - 300 m thick that suggests external shelf type palaeoenvironments and contains marine fossil remains among them a Lower Toarcian ammonite (Popa E. 1977).

After the Sirinia Formation follows the Mosnic Formation (discovered by Raileanu 1953 and named by S. Nastaseanu) which is Upper Toarcian ? - Aalenian in age and among 50 - 100 m thick and is constituted by fine quartzitic sandstones with rear thin spathic limestones intercalations in which Raileanu (1953) found a specimen of *Pachilitoceras jurensis*.

The stratigraphical succession of Liassic and the spatio-temporal placement of the lithostratigraphical entities in the Sirinia Basin were established by Boldor et. al, (1963, 1964). In the Resita Basin, after the Valea Tereziei rocks follows the Uteris Formation which is Pliensbachian - Toarcian in age, about 150 m thick

and is constituted mainly by leafy bituminous black clays with thin lens-shaped coal and spheroidal concretions intercalations. Among this formation's rocks Semaka (1962) discovered *Carpolithus liasinus* taxa and Roth von Telegd (in Boldor, Boldor 1955) found ostracods (*Esteria* genus). In Secu - Ranchina, near the marginal area beside clays there are predominance of silty arenitic-material. The Uteris Formation suggests a restricted lacustrine palaeoenvironmental system.

Over the Uteris Formation is placed the Dealul Zinei Formation which is marley with marine facies and includes Toarcian (on a thickness of about 10 m) and contains ammonites remains: *Hildoceras bifrons*.

The recently studied nappes in the western part of the Sirinia Basin have a sedimentation cover which is identical to the cover of the Sirinia Basin and overlays this. Still this do not justify a total break of the overthrust planes.

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