

ȘTEFAN I. MATEESCU AND THE VRANCEA HALF-WINDOW: A SIGNIFICANT AND IGNORED TECTONICS CONTRIBUTION

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Abstract. An exceptional, unknown cartographic contribution is introduced: the map of Vrancea-Putna region by Ștefan I. Mateescu. The map manuscript was submitted to the Romanian Science Academy and published at the end of 1937 and printed probably between 1938-1939. The authorship of Vrancea tectonic half-window was disputed intensively in the Romanian geological literature, without an attentive study regarding the various stages in the knowledge of East Carpathians bending zone. Although ignored, the map of Ștefan I. Mateescu is very close to the modern cartographic image of the Vrancea tectonic half-window, and it represents an unquestionable priority of Ștefan I. Mateescu, a forgotten geologist who deserves a better homage.

Key words: Vrancea tectonic half-window, the Mateescu map of 1937, East Carpathians bending zone, history of Geology in Romania

ȘTEFAN I. MATEESCU – BIBLIOGRAPHICAL HIGHLIGHTS*

Ștefan I. Mateescu was born in Bucharest on 17 October 1888. He graduated "Mihai Viteazu" Highschool in Bucharest, Science Section, in 1907. He graduated University of Bucharest, Faculty of Sciences, with a license in Natural Sciences in June 1912. Between October 1912 and October 1919 he held the Assistant Professor position at the Laboratory of Geology, University of Bucharest. He passed exams for the Secondary Professor degree. With a major in Natural Sciences and a minor Law and Political Economy in 1919. In November 1918 he obtained the degrees of Assistant Geologist, Second and Third Class with the Geological Institute of Romania. During the First World War, he served as a combat officer.

In autumn 1919, he moved from University of Bucharest, where he was assistant of Professor Sava Athanasie, to "Gheorghe Barițiu" Highschool in Cluj and to the Geological Insti-

tute of the University of Cluj. He became assistant of Professor Ion Popescu-Voitești (1919-1921), and lecturer between 1922 and 1929. He defended his PhD thesis in 1925, under the supervision of Professor Sava Athanasie from University of Bucharest. He also taught at the Department of Agro-Geology of the Agricultural Academy in Cluj (1923-1926). Between 1927 and 1929 he taught the course of Geology of Romania to students in Natural Sciences and Geography of University of Cluj. In 1923 he followed Professor Popescu-Voitești in the field for oil researches in Prahova, Putna, and Bacău counties, as well as in the Bucovina Flysch. In 1927, he was sent by the Geological Institute to Wien for studying Sarmatian insects belonging to the Mollass Collection. He studied with Professor Hans Rebel, from the Naturhistorische Stadtmuseum, Entomology section. The Mollass Collection was bought by the Geological-Palaeontological Museum of University of Cluj. Also in Wien he identified a series of dinosaur teeth from Pui, Hațeg area, with Professor Othenio Abel, from the Palaeontological Institute.

At 1 January 1930, he moved to the Polytechnics School of Timișoara, as a full Professor of Geology. He became a Corresponding member of the Science Academy in 27 December 1935. He was a Member of the Geological Society of Roma-

* Mateescu I. Șt., (1938a). *Memoriu de titluri și lucrări*. 16 p., Institutul de Arte Grafice, Tipografia Românească, Timișoara; Anuarul Universității din Cluj (AUC), 1919-1920, p. 34; AUC, 1921-1922, p. 204; AUC, 1922-1923, p. 132; AUC, 1923-1924, p. 161; AUC, 1924-1925, p. 138; AUC, 1925/1926-1926/1927, p. 190; AUC, 1927-1928, p. 185; AUC, 1928-1929, p. 189.

nia, applying in 1931 and becoming a member at 13 March 1932. He was a founding member of the Society of Science of Cluj (1920), a member of the Association of Carpathian Geologists (1927), of Society of Science of Timișoara (1930) and of the "Astra" Transylvanian Association. He taught Mineralogy, Geology and Agro-Geology at the Agricultural Academy of Cluj (1921-1932), Palaeontology (1927-1929), Agrogeology for secondary teachers in Natural Sciences (1927), Geology and Palaeontology for students in mining of the Polytechnics School of Timișoara, Mining Section (1930-1938).

Mircea Paucă (1998)** remembered the last years in the life of Mateescu: "*Ștefan Mateescu belongs to a long list of geologists who, although having significant research and teaching careers (...), were forgotten due to the tradition of not praising the late geologists. Those who knew him are so few today. He was more than 70 years old, in the decades of forties and fifties, when I was spotting him in trolleybuses along the Kiseleff Boulevard, with his stick, as he was living in the Triumph Arch north-eastern neighborhood. As he was deeply hearing impaired during his last 10-15 years of life, he was barely in contact with his former colleagues. He died unknown by any geologists, probably around the year 1970, and I could not find out where he was buried. The book "The history of Sciences in Romania" (1977) barely reminds him*".

He authored 24 research papers published in 23 years (1917-1940), four of them dealing with the Vrancea flysch.

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INTRODUCTION

The knowledge regarding the flysch structure in the East Carpathians has a long and complicated history, especially after 1931 when the final confrontation between classical and nappe geologists took place (Băncilă, 1944). This confrontation was undertaken by two generations of geologists: between older geologists, adepts of classical geology

** Paucă M., (1998). "Mi-am rețrăit viața". Amintirile unui geolog. 288 p., Tiraj în 100 exemplare, București.

(Athanasiiu, Macovei, Atanasiiu) versus adepts of the nappe structure (Mrázec, Popescu-Voitești), including younger geologists, such as Murgeanu and Filipescu (1933), Murgeanu (1944), who supported the Median and Marginal nappes in the flysch of the East Carpathians bending zone. This support was continued by Dumitrescu (1952a, b) and Grigoraș (1955, 1959) until the beginning of the seventh decade of the XX-th century. Modern knowledge upon the stratigraphy and tectonics of Vrancea region is due especially to Dumitrescu and Grigoraș, but the cartographic image of the Vrancea tectonic half-window had a more intricate history in which the contribution of Ștefan Mateescu should not be under-rated.

MATEESCU MAP, 1937

80 years ago, on 3 June 1937, Ștefan I. Mateescu, corresponding member of the Academy of Sciences, gave a talk in front of his colleagues (Ion Popescu-Voitești, Otto Protescu, Miltiade G. Filipescu, Ion Băncilă, Ștefan Cantuniari, Alexandru Codarcea, Mircea Pauă***) entitled *"Introduction to the geological map of the Vrancea region, Putna County (in manuscript) 1: 50.000"*. This map was published in December the same year (Mateescu, 1937). A year later (Mateescu, 1938a, p. 13) he showed that he presented *"in manuscript the colored geological map of Vrancea region at 1:50.000 scale, following his researches in this region between 1923-1936. With this occasion, an abstract of map caption is given, defining the extent of the Vrancea region, of its morphological and geological units and of their links, supported by a geological profile at the same scale"*. Shortly after publishing this communication, the geological map of the Putna-Vrancea region at 1: 100.000**** is published, drawn by A. Hagiu (cartographer at the Geological Institute of Romania) in 48,5X42,5 cm format, covering approximately 2000 square kilometers, including the complete cartographic outline of Vrancea tectonic half-window, the Tarcău Sandstone thrust, the marginal zone thrust, the pericarpethian zone thrust and lithostratigraphic details, without any indication to the year of publication (Fig. 1, 2a).

The map published in line codes for Senonian-Pliocene and monochrome for the black shales Barremian (the Tisaru Beds in the author's view) remained practically unknown and never reproduced or cited, excepting the comments on his 1937 paper belonging to Grigoraș (1955, p. 117). Regarding the tectonic relationships in the area of Tarcău Sandstone and of the marginal zone, Mateescu (1937, p. 78) shows that *"the tectonic relationships between the marginal flysch zone and the neighboring zones are abnormal: the Tarcău Sandstone zone is thrust over the marginal zone, and the marginal zone is at its turn thrust over the Miocene pericarpethian zone. In my opinion, we deal with a gulf (sinus) deepened by the overthrust of the Tarcău Sandstone, especially in Macrădeu and Giurgiu mountains"*. Emphasizing the geological complexity of the marginal zone, Mateescu (1938b) showed: *"the Barremian*

Tisaru black shales (sensu Sava Athanasiiu) generates a geantictinal zone in Coza and Tisaru mountains. This tectonic accident generates a deformation of the outer margin of the Tarcău Sandstone zone, at the contact with the marginal zone, as the marginal flysch beds are deviated from N-S (as they occur north of Zăbala Valley) to NE-SW (as they occur south of this valley). In this way, a new and deep understanding of the East Carpathians bending zone is gained".

Although the new image regarding Vrancea geantictinal and the cartographic outline of the Tarcău Nappe represented a remarkable contribution, no reaction occurred from fellow geologists. Moreover, only two years after the talk of 3 June 1937, Ion Băncilă remarked on 3 February 1939 the contributions of Murgeanu and Filipescu (1933), without citing Mateescu (Băncilă, 1944). Also, in his synthesis of the East Carpathians (Băncilă, 1958), Mateescu was not cited, as Băncilă wrote: *"following the works of Dumitrescu and Grigoraș, the nappe outline was strengthened for the whole northern and southern Vrancea, which was therefore defined as a half-window (p. 303-304), corresponding to the Putna-Vrancea tectonic half-window"* (p. 307).

Popescu-Voitești (1942, p. 9) stressed the valuable contributions in flysch research of Preda, Athanasiiu, Mateescu, Băncilă, Murgeanu, Filipescu, Oncescu, but in his map (p. 23, scale 1: 2.500.000) the Vrancea half-window is not emphasized, the only detail occurring was the Tarcău Nappe klippe in Neculele zone (Fig. 2b), taken from Mateescu map of 1925 which was attached to his PhD thesis in 1927. This was a surprising omission considering Mateescu notoriety and his presidency of the Geology-Mineralogy-Geography Section of the Science Academy. He surely attended Popescu-Voitești presentation as an update for the East Carpathians bending area geological structure.

In 1942 was edited the fifth sheet of the geological map of Romania, scale 1: 500.000****, in which the Vrancea tectonic half-window was illustrated (Fig. 2c), with its cartographic outline and stratigraphic content similar to Mateescu map. On 21 April 1941, Dumitrescu (1948) contributed with his observations from the Cașin and Putna region, showing that *"between Soveja and Zăbala Creek, the marginal flysch zone is included in the large Vrancea tectonic half-window (tectonic gulf)"* (p. 104). Dumitrescu (1941) cited some of Mateescu works, including that referring to the map manuscript (Mateescu, 1937), without any comments. In December 1948, Dumitrescu (1952a) referring to the Tarcău Nappe relationships with various autochthonous units, showed that *"we have to admit an autochthonous relief before the genesis of the Tarcău Nappe"* (p. 59). In his PhD thesis, Dumitrescu (1952b), although citing the contribution of Mateescu (1937), made no comments related to tectonics, but stressing two signifi-

*** Scurtu I., Lungu C.M., (2013). *Istoria Academiei de Științe din România (1935-1948)*, vol. I, 304 p., Ed. AOSR, București.

**** Exemplar nedat, aflat în biblioteca personală (T.B.)

***** Anul editării foi 5a a hărții geologice, scara 1: 500 000, diferă de la un autor la altul: 1936 (Băncilă, 1958, p. 16); 1937 (Grigoraș, 1955, p.103); 1942 (Dumitrescu, 1962a, p. 15, este singurul autor care prezintă cronologia editării foilor de hartă în intervalul 1936-1959).

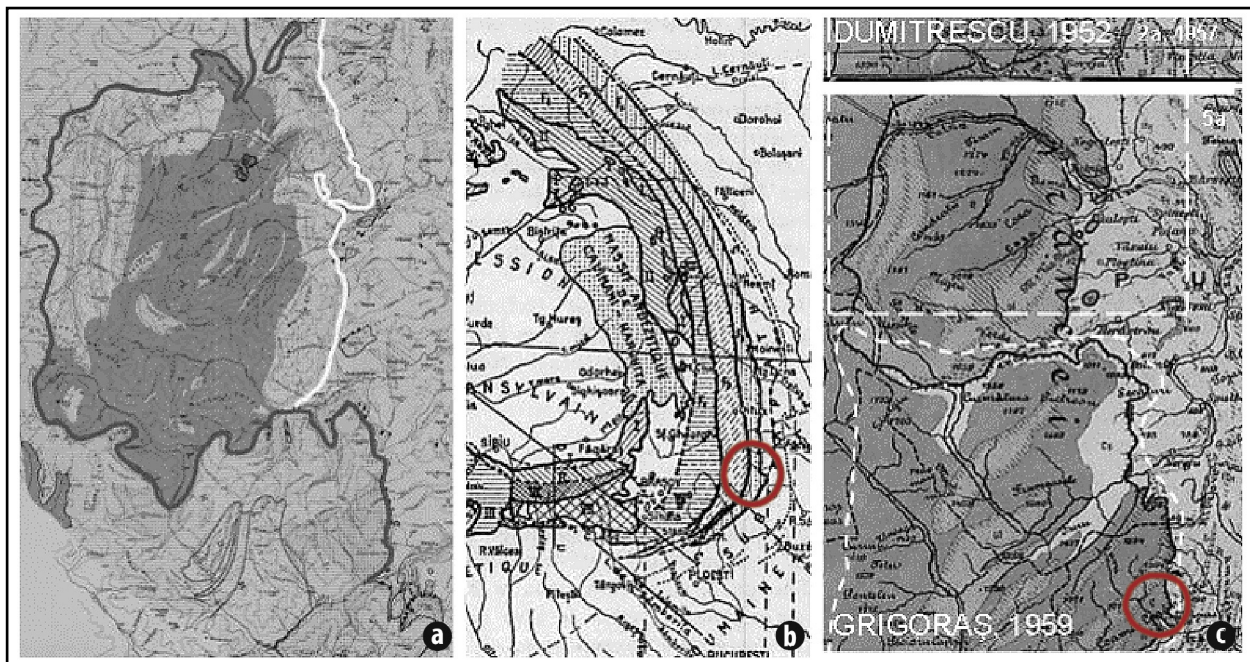


Fig. 2. Vrancea half-fenster according to Mateescu map: **a.** the klippe of the marginal zone (red circle) on the tectonic sketch of Popescu-Voitesti; **b.** Vrancea tectonic half-window on the fifth sheet of the geological map of Romania, scale 1: 500.000; **c.** the sectors mapped in the field by Dumitrescu (1952) and Grigoraș (1959) in their PhD theses, marked with interrupted lines

cant ideas: a. "the marginal zone shows an axial uplift, marked by the outcropping of the oldest horizon, the Streiu Beds, within the axis of the Coza Anticline, and also marked by the retreat of the Tarcău Nappe beyond the old border with Transylvania, generating a large tectonic gulf" (p. 257), and b. "southwards, in Zăbala Valley, the marginal zone records a supplementary axial dive, where it disappears completely". This structure (b.) was probably intuited by Murgeanu and Filipescu (1933).

Their contributions, lacking cartographic support and captions lead to the supposition that survived for many years later from an author to another author (ex. Oncescu, 1965; Mutihac and Ionesi, 1974; Mutihac, 1990, ending with Săndulescu, 1977, 1984). Săndulescu (1977, p. 86), without reading Mateescu, wrote: "a little bit later (1931, sic!), Murgeanu and Filipescu demonstrated that the Tarcău Sandstone unit is thrust, along the East Carpathians bending zone, over the Tortonian and over the flysch of the marginal unit which occurs in a large half-window and dives, south of Năruja Valley, under the Tarcău Nappe". Also, Săndulescu (1977, p. 17) wrote that "Murgeanu and Filipescu (1937) cartographically outlined the southern part of the Vrancea half-fenster, contributing again to the foundations of the nappe structure concept in the flysch zone of the East Carpathians".

After Mateescu (1937, see map), Dumitrescu (1962b) illustrated the outline of the northern half of the half-window up to a line connecting Buniu Mountain and western Păulești (Fig. 2c), emphasizing the Via Draci-Mocearu and the Omu-Munțiișoarele autochthonous duplexes. Grigoraș (1955, map edition of 1959) illustrated the overthrusting line south of Năruja Valley, between Arșoaia Mountain

– Goru Peak (west) and Secăturile (east). Related to these ideas, Grigoraș (1955, p. 113) referred to Murgeanu and Filipescu (1932, sic!): "we have no data regarding the stratigraphy of formations included in both nappes, as the former communication was not published. The tectonic relationships considered here come from Băncilă". In fact, Grigoraș (1955) stressed that Murgeanu and Filipescu (1933) and Murgeanu (1944) contributed *only* to the median and marginal nappes at the Carpathians bending zone, a fact showed also by Oncescu (1957, p. 198-199).

It is significant the fact that Stille (1953), based on the fifth sheet of the geological map, scale 1: 500.000, illustrated the Vrancea half-window in his *Tektonik des Karpatenraumes*, noting that (p. 55): "the extent of the overthrust, which was recorded only to the outer area of the Tarcău Nappe, outcropped the younger flysch and the Miocene in a very limited, window area".

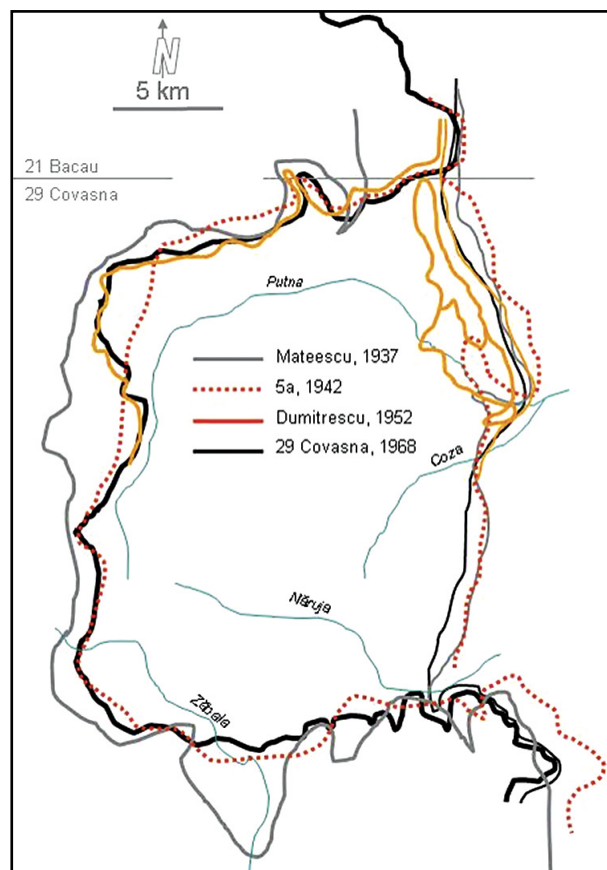
FINAL REMARKS

The cartographic image of the Vrancea half-window was refined in four stages during four decades (1937-1968). Between 1937-1939, Mateescu (1937) published the introduction to the 1: 50.000 map, printing soon the map of the Vrancea-Putna region, scale 1: 100.000 (Fig. 1). The outline of the half-window and the distribution of the included Eocene-Oligocene formations, quite similar to those of the Mateescu map, were illustrated on the fifth sheet of the geological map, scale 1: 500.000 (1942, Fig. 2c). Later details were added by Dumitrescu (1952, 1958) and by Grigoraș (1955, 1959). The modern outline is illustrated on the 21

Bacău sheet and on the 29 Covasna sheet of the Geological map of Romania, scale 1: 200.000 (Murgeanu *et al.*, 1968, Fig. 3). To this last cartographical image contributed the geological teams supervised by Filipescu and Mutihac (1959) and Dumitrescu (1959) who produced the 1:100.000 scaled geological maps of the Geological Committee, and the works of Dumitrescu (1963) and Dumitrescu *et al.* (1962b, 1970) detailing the lithostratigraphy and structures.

The unchallenging priority of the contributions of Ștefan I. Mateescu was systematically ignored due to an unjustified presumption regarding the priority of defining and outlining the Vrancea half-window. This presumption was perpetuated for a long time in the Romanian geological literature. Ștefan I. Mateescu is a wrongly forgotten geologist for whom a well-deserved homage should be paid.

Fig. 3. Delimitarea semiferestrei Vrancea în diferite etape ale cunoașterii geologice (explicație în text)



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