In Memoriam Academician Mircea Săndulescu

On October 22, 2015 Academician Mircea Săndulescu has left this world, and has stepped into the eternal Hall of Fame of the fathers of Romanian geology.

Mircea Ioan Valentin Săndulescu was born on October 13, 1933 in Sălişte a Sibiului, a locality from where several members of the Romanian Academy originated. He studied at the Gheorghe Lazăr Lyceum in Sibiu; then, in 1956, he graduated the Oil, Gas and Geology Institute in Bucharest. After a few years (1956-1960) spent by Mircea Săndulescu as geological engineer at the Prospection and Laboratories Enterprise in Bucharest, he applied for, and won the contest for a researcher position at the Geological Institute (later, the Institute for Geology and Geophysics / the Geological Institute of Romania). Most of his research work was performed in the frame of this institute. After 1989, he was appointed Professor at the Department of Geology of the University in Bucharest. In 1991 Prof. Săndulescu was elected Corresponding Member of the Romanian Academy, in 1994 he became a Full Member and since 1995 he acted as the President of the Geonomy Section of the Academy.

The Academician Mircea Săndulescu was the disciple of Ion Dumitrescu, one of the most famous structural geologists of Romania. Dumitrescu involved soon the still very young geologist in the process of producing and editing tectonic maps of Romania and Europe. Later on, Mircea Săndulescu gradually became a reference expert in regional geology and tectonics, in Europe and beyond its borders. Academician Mircea Săndulescu contributed to the understanding of geology of Romania – if not directly, through the implications of the geotectonic concepts that he has developed.

He published more than 130 papers on the geology of the Carpathians and the neighboring areas, with an emphasis on the Eastern Carpathians. Both the flysch (from the Carpathian bend area to the trans-Carpathian flysch zone), and the crystalline-Mesozoic deposits were thoroughly investigated. Some of the most representative publications focusing on the flysch area refer to: The internal nappes of the flysch in the center of the Eastern Carpathians (1965), The upper Moldova Valley Basin (1976), The genetic and structural relationships between the flysch and the molasse of the Eastern Carpathians (1981), The curbicortical flysch nappe (1984), The flysch from Ceahlău and Bicaz (1992), The black flysch (2009). Papers focusing on the crystalline-Mesozoic zone emphasized: The deposits from Postăvaru-Runc Massif (1964), The inner zone of the Carpathian bend (1965), The Mesozoic terrains eastwards from the Făgăraş crystalline Massif (1967), etc.

In 1967, Mircea Săndulescu has evidenced a new nappe in the Eastern Carpathians, *i.e.*, the Hăghimaş Nappe. The problematic structure of the Hăghimaş syncline was studied by him in 1968 and 1969, the results being summarized in 1972 in his PhD Thesis. The similar deposits in Rărău area were further investigated in 1973, 1976 and 1978, resulting in new stratigraphic and tectonic interpretations. In 1974, he published a geological comparison among the two areas. These studies have provided new logical arguments for the reinterpretation of the overall structure and tectonics of the Easter Carpathians, as preamble for later important synthetic works.

In some of his studies, Săndulescu has approached the structure and tectonics of the Transylvanian Depression Basement (1975, 1978, and 1979), the Pieniny Klippen Belt (1982), the Western Carpathians (1990), as well as of some fore-Carpathian platform areas (*e.g.*, the Moesic Platform, in 1988).

In long-term perspective, his partnership with Ion Dumitrescu to the elaboration of the tectonic map of Romania (1962) led to some remarkable new results concerning the tectonics of the Carpathians and the adjacent areas published as follows: Remarks on the tectonics of Romania (1968); Fundamental structural issues in the Carpathians (1968); Considerations on the division of the orogenic systems (1969); The flysch area of the Eastern Carpathians (1974); The Carpathians Foredeep area (1974); The heterochrony of the alpine tectonic phases in the Romanian Carpathians (1971Contributions to the Carpathian-Balkan area:

Reconstruction of the alpine paroxysmal elements of the Eastern Dacides (1973).

One major work of Săndulescu, The structural synthesis of the Carpathians (1975) was published in the Bulletin de la Société Géologique de France. Several other synthetic publications followed, in connection with major international scientific meetings: Carpathians, Balkans, Moesic Platform, and North Dobrogea – in the Geological Atlas of the alpine Europe and adjacent areas (1978); Correlations between the Eastern and the Southern Carpathians (1980), Geotectonic analysis of the alpine mountain chains around the western part of Black Sea (1980); contributions to the synthesis: Geology of the alpine mountain chains with origins in the Tethys area, presented at the International Geological Congress in Paris (1980); the large structural assemblies of the Carpathians, at the Carpathian-Balkan Geological Association Congress in Kiev (1980); contributions (Moesian Platform, Dobrogea, Carpathians) to the synthesis: Tectonics of Europe and adjacent areas (1982); Compared alpine geotectonic models (1984); Geodynamic evolution of the Tethys-suture area in the Carpathian-Balkan area (1985); The Cenozoic geotectonic history of the Carpathians (1988); essential contributions to the IGCP Project "Evolution of the northern Tethys margin" (1989) and to the atlas "Tethys paleoenvironment maps" (1992).

Additionally, together with Academician Dan Rădulescu, he elaborated two major works published in renowned international journals: a first paper applying the plate tectonics concept to the Romanian territory, in Tectonophysics (1973), and "Interarc spreading in the Carpathian area" (1975), in Nature –the most prestigious scientific journal worldwide.

Academician Mircea Săndulescu has played a major role in the elaboration of more than 40 geological maps: from the geological/tectonic maps of Europe (scales 1:2.500.000 and 1:1.500.000) to the map of the Carpathian-Balkan area (scale 1:1.000.000), and geological maps of Romania (6 maps at scales 1:1.000.000, 1: 500.000, and 1: 200.000, and 21 maps at scale 1: 50.000). In fact, for many years Academician Mircea Săndulescu was the supervisor for the elaboration of the geological maps at the Geological Institute. Practically, he has coordinated all the research related to the representation of the geological structure of Romania, and thus the knowledge, conceptual thinking and interpretation of the geotectonic data. The work of M. Săndulescu was based on both previous results of previous generations, and – mainly, on his decades of minute and passionate field work, his deep understanding of the complex architecture of the Carpathian structures, and their integration in the European and global context – the latter also investigated first-hand. This huge amount of work and personal experience were summarized in an exceptional book, Geotectonica României [Geotectonics of Romania] (1984), probably the most cited geological work in Romania.

Overall, the most striking element in Academician Mircea Săndulescu's work is the unity in diversity. A wide range of topics, approaches, issues – and the harmony of his thinking resulting from an extraordinary synthetic sense. His work and publications represent a model for the present and future generations.

Ioan I. Bucur