

## PROFESSOR RADU BOTEZATU – 90 YEARS FROM HIS BIRTH

(1921–1988)

In a beautiful autumn day of the year 2010, I have passed by chance through the academic sector of the *Bellu Cemetery* in Bucharest. The same chance brought me in front of Professor Radu Botezatu's grave. It was invaded by weeds and one could see that nobody came to take care or to light a candle; his wife, Maria Botezatu, died in 2004.

I indulged myself some moments of thinking, recalling some memories about this famous teacher. I remembered that in 2011 there would be 90 years from his birth. I admired and cherished him from the first steps of my professional beginnings as geophysicist and until 1988 when the unjust loss happened.

I met him in 1960 when he was the scientific supervisor of my graduation paper at the Faculty of Technical Geology, Department of Geophysics. Later, since 1967, I had the opportunity to work within the Institute of Applied Geophysics (now, The Geological Institute of Romania), whose director was Radu Botezatu. I keep in my memory the moments of that period in which the director of this institute coordinated the seismic studies with deep objectives, fulfilled in collaboration with Bulgarian and Ukrainian specialists.

I keep in my mind, also, an episode that happened in Viziru village (south of Brăila town), where were the headquarters of the crustal seismic studies team (I was the chief of this team), when the oil for the cars engines was lacking and I sent to Bucharest a telegram in which it was mentioned: "Beautiful weather, the team cannot work because of the absence of the essence." The next day we received the essence, brought by the director of the institute himself, who was pleasantly surprised by the fact that, despite the warning in the telegram, the entire team (of crustal studies by deep seismic sounding) was working in the field.



Our ways crossed also later, in 1979, when I defended my PhD thesis at the University of Bucharest and professor Botezatu was on the commission which granted this title. I am still preserving the draft of this report written by his hand, with his unreadable tidy handwriting, seemingly drawn, of a never met regularity.

As mentioned by a chair colleague – prof. Constantin Calotă – Radu Botezatu “embodied in an exemplary way the passionate and gifted scientist, the professor with vocation and abnegation, the man with select intellectual and moral qualities, who left after him a rich scientific heritage and a strong mark on the geophysical activity ...”. It is a characterization that synthesizes the essential aspects of the personality of the professor Radu Botezatu.

Another guild colleague, Dr. Marius Visarion, in 1990 evocation, mentioned his main activities and scientific contributions in the field of geophysics. Many professional – gravimetric – details have been specified by him also in the volume “History of the Romanian geophysics” (in Romanian, vol. I, 2004). We are going to present the outstanding theoretical and applicative contributions for which the engineer Radu Botezatu was highly appreciated. He considered himself a prospecting geophysicist formed at the school of some renowned specialists of the Romanian-American Society, whose knowledge he applied and developed

within the young Romanian School of gravimetry and gravimetrical prospecting. He had begun the first gravimetrical measurements in the 1947–1950 period in the region between Olt and Dâmbovița (in the Slatina-Pitești-Târgoviște-Câmpulung area). The gravimetrical observation data in the national network of the I<sup>st</sup> order (from 1951–1954 period) allowed the elaboration, in 1955, of the first gravimetric map of Romania, scale 1:500.000 (authors: I. Vencov and R. Botezatu), which remained an important landmark for the 1963 edition (printed at the Geological Institute of Romania). The acquired experience and his competence recommended him afterwards, in 1956–1957 accomplishing measurements and data processing for the triangulation of gravimetric stations of I<sup>st</sup> order in Romania.

An important dimension of the activity of professor Radu Botezatu were the gravimetric and magnetic researches achieved in different tectonic areas, which contributed to a better knowledge of the buried (deep) geological structures and to the determination of some structural elements (local or regional) meant to allow the evaluation of the economic potential of these structures. So, we could notice the studies made in the Moldavian Platform, eastward of the Moesian Platform (central Dobrogea), the Carpathian Foredeep, southern Banat, southern Apuseni Mountains, the area of Neogene Oaș-Gutâi and Călimani-Harghita massifs. The applicability of the gravimetric research was tested in the case of some well known oil structures, as Berca-Arbănaș, Boldești, Colibași and Dragomirești structures.

He made gravimetric measurements in the area of Văleni and Slătioarele structures, in eastern Walachia, where numerous salt massifs were put into evidence. In fact, the synthesis work elaborated in co-operation with Marius Visarion and Vasile Lăzărescu, regarding the geophysical study of some salt massifs of Romania, received the Prize of the Romanian Academy on the year 1970.

The recognition of scientific merits of professor Radu Botezatu is marked by his election in 1974 as *corresponding member of the Romanian Academy*.

Prof. Radu Botezatu introduced in geophysics the new concept of *geological model of simulation* which represents, in fact, the final goal of a geophysical research. Together with prof. Liviu Constantinescu he had important contributions (1961) to the physical interpretation of anomalies of the geopotential fields, through an original method of analytical down continuation of the gravimetric data. The method was proved to be useful and was applied on a large scale in current activity of prospecting.

He introduced and applied in gravimetric data processing the development in Fourier series (1970–1971) through the elaboration of some original methods for separation of the sources of these anomalies (by a numerical filtration). He applied this procedure for the interpretation of the primary data along a profile.

In his PhD thesis entitled *Interpretation of gravimetric and magnetic anomalies with the help of the periodic functions* (in Romanian, published in 1971 in the review *Studii tehnice și economice*, serie D, of the Institute of Geology and Geophysics), he presented numerous examples of numeric filtration of the gravimetric anomalies, which pointed out the good functioning of this separation method (Visarion, 2004).

Prof. Radu Botezatu had important contributions to the elaboration of some mathematical models (analytical and of simulations) anomalies of potential fields (1980) of several tectonic areas as the eruptive chain Călimani-Harghita, Northern Dobrogea, The Pannonian Depression, etc.

Among the synthesis works, we should mention that one (1963) elaborated by a staff lead by prof. Iulian Gavăt and formed of outstanding geophysicists (besides Radu Botezatu, Ștefan Airinei, Mircea Socolescu, Scarlet Stoenescu and Ion Vencov) concerning the deep geological structure of Romania, established on the basis of regional gravimetric and magnetic data.

A remarkable dimension of Prof. Radu Botezatu interest was the teaching activity

since 1973 at the University of Bucharest, the Faculty of Geology (professor of geophysics), being also the head of the Chair of geophysics, until 1985. In this frame, he elaborated the lecture of geophysical methods of subsoil research (1964) and an important treaty about the geological interpretation of the geophysical prospecting (1973), the first work of this kind in Romania. Concerning this book of 1973, the authors (I. Gavăt, R. Botezatu, M. Visarion) benefited from a rich geological and geophysical documentation accumulated during decades of activity, both in our country and abroad. They referred also to the contribution of the geophysical methods in hydrogeology, engineering geology and marine prospecting. This work, offered to a large range of geologists and geophysicists the necessary orientation and instruction in the field of the geophysical prospecting for mineral ores.

In 1976 he published in co-operation, the work *Geophysical prospecting of the deposits of ore* (in Romanian, with colleagues Gh. Gherea, D. Romanescu, V. Vâjdea, M. Visarion) and in 1987, the book *The bases of the geological interpretations of the geological information* (in Romanian, Technical Publishing House).

The present modest evocation, obviously incomplete, tried to emphasize the most important contributions of Prof. Radu Botezatu in the field of geosciences. Through what he left to the future generations of geophysicists and geologists, he contributed to the progress of the Romanian science, permanently connected, in theoretical and experimental field of geophysics, to the general world tendencies.

Through the accomplished scientific work, Prof. Radu Botezatu is part of the gallery of his famous precursors, such as: Sabba S. Ștefănescu, Iulian Gavăt, Mircea Socolescu, T.P. Ghițulescu, G. Atanasiu (to mention only those with a mainly geophysical activity). He fully understood and permanently promoted the strong link between geology and geophysics, a decisive factor of the progress of the Earth structure knowledge.

We, who knew him more or less, will cherish his memory forever, as a man, professor or collaborator, warm, intimate, full of delicacy toward the older and younger people. He was from all points of view (professional and moral) an example to be followed by our younger generations.

*Florin Rădulescu*

