ACTA PALAEONTOLOGICA ROMANIAE V. 2 (1999), P. 1-2

# PROGRESSES IN ROMANIAN PALEOBOTANY

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In Romania, Paleobotany like Paleontology, became an independent field of research after 1900, while the intensive study of fossil plant ores was undertaken.

Paleobotany, as an independent field of research, has been taught within the Faculties of Natural Sciences, since three Romanian universities (Iaşi in 1860, Bucureşti 1864 and Cluj in 1872) were founded.

Traditional Paleobotany studied plant compressions, the genera and species identification being based at that time only on macroscopic, morphological characters.

During the evolution of this field, two distinct periods can be separated:

The period of discovery of the new fossil plant ores in the Carpathians and in the post tectonic basins, that began in 1850 and ended in 1882.

During this interval, the geological and mining studies included paleobotanical data by the Austrian and German geologists. In 1850, J. Kudernatsch mentioned the Liassic flora from Anina (Banat), a fossile Lagerstätten, citing the genera *Taeniopteris* and *Pterophyllum*, D. Stur (1863), Fr. Unger (1866), O. Heer (1872) and M. Staub (1881) made known the Oligocene flora from the Petroşani Basin and the Permian flora of the Banat's "Dyas", by Stur (1870).

The period of paleobotanical stuidies undertaken by the Romanian professors and geologists from the three universities (Iaşi, Bucureşti and Cluj) and from Geological Bureau of Romania (1882), transformed in 1906 into the Geological Institute of Romania.

This period began in 1860 when the Department of Geology from Iaşi University was founded, lead by Prof. Grigore Cobălcescu, and continued until today by the work of their disciples. During this period, the traditional Paleobotanical studies were refined by elaborating new directions of studies and new methods of research: phytostratigraphy, paleoalgology, palynology, nannoplankton studies, paleophytochemistry, cuticular analysis, microfacies, plant-insects interactions and paleoichnology.

Within Iaşi University, Prof. Ion Simionescu, a disciple of Grigore Cobălcescu, supervised M. David in his work "Note sur les plantes fossiles des couches pliocenes du Plateau Moldave", followed by Sava Athanasiu who critically commented the paper of F. Pax "Flora fosilă din România" published in 1927.

Paleobotanical studies were undertaken by Prof. N. Macarovici, who founded a school in the field of Paleobotany and Palynology with his disciples Natalia Paghida-Trelea, Liviu Turculeţ, D. Solomon, and continued until today by my colleague Prof. Leonard Olaru, an expert in the Precambrian and Palaeozoic Palynology of the Moldavian Platform from Romania and Moldavian Republic.

Within the University of Bucharest, since 1864, Prof. G. Ştefănescu, the head of the Department of Geology and Paleontology, published the work on the flora from Merişu (Mehedinţi) identified by D. Stur. During 1864-1883 through hard work he accomplished rich and varied collection of Paleozoic, Mezozoic and Tertiary fossil plants having various occurences in Romania. He sent this collection to the great French paloebotanist Count de Saporta. Unfortunatly, de Saporta died and Grigore Ştefănescu contacted two well known french paleobotanists from the University of Marseille, A. F. Marion and F. Laurent, who published their results in Anuarul Muzeului de Geologie şi Paleontologie, in 1895.

The prodigious activity of G. Ştefănescu was continued by four proeminent researchers, Ion Simionescu, the father of Paleoalgology, who described a new genus *Dobrogeites* (a Solenoporaceous taxon from Upper Triasic deposits from Dobrogea), by Sabba Ştefănescu, by Mircea Paucă and by Ion. Z. Barbu (Cenozoic floras).

Prof. Ion Z. Barbu was the one who wrote a modern Paleobotanical textbook and I was formed under his supervision, although his passion was Tertiary floras from Romania. Within the same department, palèobotanical studies were undertaken by Prof. I. Preda, A. Sagatovici and M. Culda as well.

Within Cluj Univresity, Acad. Prof. Emil Pop studied the Tertiary floras and the peat bogs of Romania, and he was the first to work Palynology in Romania. Prof. Ion Maxim studied Carboniferous floras from Banat. My colleague Prof. Iustinian Petrescu was supervized by Prof. Ion Maxim. Prof. Petrescu is a well known paleobotanist, with contributions in the field of Tertiary floras , Palynology and fossil woods.

With this occasion, I wish to pay hommeage of the Romanian school of Geology to Prof. Răzvan Givulescu, Honorary Member of the Romanian Academy, formed and educated within Cluj University, a great personality of the Romanian paleobotanical school who published over 500 papers and introduced more the 200 new Cenozoic and Mezozoic taxa from Romania. I wish him "Cum Laude", a long life and new contributions for science!

Within the Geological Institute of Romania, under the supervision of Gh. Munteanu Murgoci, Sabba Ştefănescu and Ion Popescu Voiteşti, activated I. Ionescu Agretoaia for Pliocene flora of Oltenia (1918), R. Sevastos with "The fossiliferous ore plants from Gârceni-Vaslui" (1915) and Ion Mateescu for coal petrography.

A personality who worked in the Geological Institute was Alexandru Semaka. He contributed a lot to the knowledge of many Paleozoic and Mesozoic fossiliferious ores with plants. His geological and paleobotanical work is represented by 50 papers regarding the coal bearing deposits and their flora from the Romanian territory. A. Semaka made the inventory of the Devonian, Upper Paleozoic and especilally Liassic plant taxa from the Romanian Carpathians. His work represents a contribution of universal importance regarding the Jurasic Paleoflora. By these studies, the Liassic flora from Romania became one of the richest from Europe, to wich he added the biostatigraphic zonation for the Lower Jurassic, introducing the zone with *N. orientalis*, zone that was later recognised by Yabe as having a global occurrence. He died prematurely on 2 November 1970.

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Gh. and Maria Mărgărit described fossil plants from Densuş, Haţeg Basin (1967), C. Biţoianu described the coal measure flora from the Şvinița Zone (1972) and N.Ţicleanu, a good expert in Tertiary floras, published many contributions. The recent progress accomplished in Romania in various fields of Paleobotany, in universities and research institutes, is the result of efforts made with passion by professors or researchers and young PhD students who develop new paleobotanical methods of investigation for the New Millenium.

In the end, with the occasion of my 60$^{th}$ birthday, I wish to thank those who have contributed directly or indirectly to my career and to the development of Paleoalgology . First of all, I wish to thank to Prof. M.G. Filipescu who, after a visit to Prof. Jean Cuvillier in Paris proposed a PhD thesis for me " The study of Jurassic-Cretaceous microfacies from Bicaz Gorges, Eastern Carpathians". This area is of graet interest and it was studied by I. Athanasiu, Prof. I. Băncilă, while Margauerite Frollo described in 1938 Cyanophyceae algae such as *Cayeuxia moldavica* and *C. piae*.

The carbonate areas, age invariant, offer large possibilities for the study of calcareous algae. During years. I accomplished a collection of 6000 thin sections from which I described a series of new taxa, from Romania of from abroad (Germany, Greece, Turkey, India and Pakistan). These findings are descriptions of new algae, especially from Mesosoic deposits, were favoured also by good relations maintained with a series of European experts to whom I wish to thank: M. Durand Delga, A. Praturlon, Anna Farinacci, P. de Castro, I. Dieni, G.F. Elliott, E. Perconig, J.P. Masse, E. Flügel, H. Mensink, D.K. Richter, Rajka Radoicic, B. Sokac, D. Bakalova and M.K. Düzbastilar. Two American personalities contibuted essentially to my formation and the progress of Paleoalgology in general: Prof. J. Harlan Johnson, from Colorado School of Mines who owned on of the best fossil algae collection which is now curated within the Smithsonian Institution from Washington D.C. and Prof. Helen L. Tappan from California University who wrote "Plant Protists or everything about algae".

Two other moments had essential influence in my carreer: the first was the Humbolt scholarship, awarded in 1970, with the proposal to work with Prof. E. Flügel, in Erlangen University (Germany). Due to political climate, I could attend this scholarship only ten years later.

The second important moment was the Senior Research Award within the Fulbright scholarship, in 1993, when Prof. Helen L. Tappan made an honoured recommendation for me. During this scholarship, I worked within the Boston University with Prof. S. Golubic, well-known expert in Recent Cyanophyceae algae, publishing together with him and with Prof. D.K. Richter from Ruhr University Bochum a paper on the genus *Rivularia*.

At Harvard University I have met Prof. A. Knoll, paleobotanist, and at Woods Hole and at Smithsonian Institution I could meet Prof. L. Hillis and Prof. Paul Colinvaux, both of them participants to the Second Romanian Symposium of Paleontology, and to whom I wish to thank. I collaborated with them, collecting algae, including the genus *Halimeda* from the Carribean area. Last year, Prof. L. Hillis was entitled Honorary Professor of the Faculty of Geology and Geophysics, Bucharest University.

I would like to emphasize an important step forward in the knowledge of the fossil Bryopsidophyceae's structure and affinities. This step forward was accomplished during my visit at the smithsonian Institution, while working together with two great phycologists, Dr. Diane Littler and Dr. Mark M. Littler, to whom I would like to thank now. I also wish to thank to Prof. Paul C. Silva from Berkeley University (California) for helpful taxonomical advice.

I will never forget the help and the hope that were given by Prof. Ion. Z .Barbu, the interest in the development of this field of Acad. Prof. Ion Băncilă and the discussions on taxonomical problems with Prof. T. Neagu, corresponding Member of the Romanian Academy. To all my colleagues present to the Second Romanian Symposium of Paleontology and to all the forerunners who put the bases of the paleobotanical studies we must be thankful.