



The beginning of the loess research in Bulgaria (studies till the 20-th century)

Първи стъпки в изучаването на лъоса в България (изследвания до началото на 20-ти век)

Tivadar Gaudenyi^{1,2}, *Mladjen Jovanovic*³
Тивадар Гаудени^{1,2}, *Младен Йованович*³

¹ Geographical Institute “Jovan Cvijic”, Serbian Academy of Sciences and Arts, Djure Jaksica 9, 11000 Belgrade, Serbia; E-mail: tiv@neobee.net

² Department of Geology and Paleontology, Faculty of Geology and Geography, Sofia University “St. Kliment Ohridski”, 15 Tsar Osvoboditel Blvd., 1504 Sofia (Basileus Post-Doc researcher till June 2011)

³ Chair of Physical Geography, Faculty of Sciences, University of Novi Sad, Trg Dositeja Obradovica 3, 21000 Novi Sad, Serbia

Key words: loess, Quaternary, Bulgaria, Austro-Hungarian Empire, history of science.

The pioneering loess research of the middle and lower part of the Danube Basin dated back to the end of the 17-th century. Luigi Ferdinando Marsigli (known also as Masili or Marsilius) count, general of the Austro-Hungarian Empire and naturalist, worked on the observations on the Danube valley in purpose to prepare the maps for the defining the border between the Habsburg and the Ottoman Empire for Carlowitz (today's Sremski Karlovci, Serbia) Treaty. His seminal work “Danubius Panonico Mysicus” (The Pannonian and the Moesian Danube) was published more than 20 years later of his investigations (Marsigli, 1726). In the third chapter of the monograph, the topic is the hydrology of the Lower and Middle Danube Basin. In the mentioned chapter he made description of the structure of the Danube valley and showed the steep of the banks. Now we do not know the exact position of his observations, but we know only that the points of studies were on the right bank of the section of Danube between Vienna and Gyurgyevo (today's Giurgiu in Romania). Based on modern analogue they could be nowadays in Austria, Hungary, Serbia, Croatia, Romania or Bulgaria. As a recognized Marsigli showed described paleosol layer imbedded in light sediments (loess).

The next important investigations were made by Ami (Améede) Boué. After studies in Geneva, Paris, Edinburgh and Berlin, Boué changed his residence to Vienna. Not a long time after he had settled in the Austrian capital he prepared for his studies of the Balkans. He started to learn languages (Hungarian, Turkish and Serbian) and search for the previous studies and information about the European part of the Ottoman Empire. The results, obtained during the three years of field studies (1836–1838) at the Balkan Peninsula (European part of the Ottoman Empire) related to geology, were in short time published in the

numerous papers in French, German and English. Boué was the first scientist reported that loess (used the word loess) exist on the Balkan Peninsula (Danube valley, Morava valley and as marginal as loess formations also e.g. Marica valley) (e.g. Boué, 1837a, 1837b, 1840). In his first papers Boué didn't make further descriptions about loess, but summarized the results of studies (definition and its formation) in several years later (Boué, 1875).

After his geological observations on Middle and Lower Danube Basin in the middle of 19-th century, Hungarian geologist József (Joseph) Szabó, university Professor from Budapest and correspondent of the Geological Survey in Vienna, wrote about the results of the paleogeographical and tectonical studies of the Middle and Lower Danube Basin. As the publication title was “On Pleistocene and Recent Phenomena in the South-East of Europe” the author wrote on the loess series and made also the lithological drawings of the Bulgarian part of the Danube valley (Szabó, 1857).

With the establishment of scientific institutions in Vienna (especially the Geological Survey, the Academy of Sciences and the Geographical Society) at the middle of 19-th century the investigations and research in geosciences took more organized way. Of special importance was the Geographical Society in Vienna (the former K. k. Geographischen Gesellschaft in Wien) because it unified the large number of scientists of different disciplines from geologists to ethnologists. One of the four main aims of the Geographical Society, nearly 50 years of its establishment (established on Nov. 4-th 1857), was the studies of Southeastern Europe. Since the 1860s some members of Geographical Society concentrated their travels and work on the Balkan Peninsula, in particular on geological, social and ethnological studies. The main frame of their activities was under the Oriental Committee, which was established

in 1869. The Oriental Committee of the Geographical Society was initiated the construction of the rail network of the Ottoman Empire. The investigations were supported by the Ministry of Foreign Affairs of the Austro-Hungarian Empire, as well as the Academy of Sciences in Vienna (Kertschmer, 2006). The main outcomes were numerous studies in earth sciences from the Balkan Peninsula of e.g. Hochstetter, Kanitz, Toula, Foettele, Peters and others.

Franz Toula, the former student of Hochstetter, followed the geological studies of the Balkan Peninsula. Initially he mainly summarized previous studies of the Balkans. New synthesis was done and the research ac-

tivities were performed by field work from 1875 to 1890. The results were published as the geology of western, central and eastern parts of the Balkans.

Loess in the scientific literature was adopted in 1883 by the investigations of the Danube Plain by the father of the Bulgarian national geology Georgi Zlatarski (Zlatarski, 1883). Previously in Bulgarian literature loess has been named *ilovina* or *belyuga* (Zlatarski, 1927). Zlatarski clearly took the definition from Lyell and also used the data of other scientists. The influence of Zlatarski to the Bulgarian scientific community was an important moment in initiation of studies of the Quaternary formations.

References

- Boué, A. 1837a. Some observations on the geography and geology of the Northern and Central Turkey. Communicated by the Author in the Letter to the Editor. – *The Edinburgh New Philosophical J.*, XXII, 47–67, 253–370; XXIII, 54–69.
- Boué, A. 1837b. Resultats de la première tournée dans la Nord et la centre da la Tuquie d'Europe, faite, en partie, en compagnie de MM. Montalbert et Viquesnel. – *Bull. Soc. Géol. France*, 1-re sér., VIII, 14–63.
- Boué, A. 1840. *Esquisse géologie de la Turquie d'Europe*. Paris.
- Boué, A. 1875. Einige Bemerkungen über das Alluvialgebiet. – *Sitz. derk. Akad. Wiss., Wien*, LXXII, 1, 1–22.
- Kertschmer, I. 2006. Early ethnographic maps of Southeastern Europe from Vienna. – In: Zentai, L., J. Gyórfy, Z., Török (Eds.). *Map – Science. Studia Cartologica*, 13 (Térképtudományi Tanulmányok 13), 251–258 (in German, with Hungarian and English abstract).
- Marsigli, L. F. 1726. *Danubius Pannonico Mysicus*. Amsterdam.
- Szabó, J. 1857. Egy Continentális emelkedés és süllyedésről Európa délkeleti részén. – *A Magyar Tudományos Akadémia Évkönyvei, Budapest*, XIX, 6, 1–93.
- Zlatarski, G. N. 1883. Geologicheski profila ota Vidina preza Boynica, Vrashka Chuka, Morkesha, Belogradchika do Gorni Loma i pr. – *Otpechataka ota VI kn. na Periodichesko Spisanie, Sredca (Sofia)* (in Bulgarian).
- Zlatarski, G. N. 1927. *La géologie de la Bulgarie*. Sofia University, University Library Editions, 65 (in Bulgarian with French Summary).