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Academician Vladimir Laskarev (1868-1954) and Paratethys

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Vladimir Laskarev, geology, paleogeography, paleontology, Russia, Serbia, Neogene, Quaternary.

Кључне речи:

Владимир Ласкарев, геологија, палеогеографија, палеонтологија, Русија, Србија, неоген, квартар.

Abstract. Vladimir Laskarev (1868-1954) Russian and Serbian geologist strongly influenced geological literature by introducing a scientific term *Paratethys* for the series of intercontinental water basins separated from the Mediterranean Sea and the World Ocean by the Alpine orogeny. Laskarev's scientific activity in the Russian Empire (1890-s - 1919) was based in the University of Odessa. As an active university professor Vladimir Laskarev contributed to the geological mapping of the western provinces of Imperial Russia and to regional Neogene geology and paleontology of the Odessa and Bessarabian regions. Several of Laskarev's students became well-known geologists and paleontologists during the Soviet era. Vladimir Laskarev's contribution to geological studies in Serbia between 1920–1953 is extremely important. During his life in Belgrade, he published twice as many papers on various aspects of Neogene and Quaternary geology and paleontology. His most important contribution is certainly the official introduction of the term *Paratethys* into geological science. The steady spread of this term in scientific literature began in the early 1940-s and reached its peak in 1970-1980-s during international Neogene correlation and mapping projects.

Апстракт. Владимир Ласкарев (1868–1954) руски и српски геолог, јако пуно је утицао на геолошку литературу уводећи научни термин Паратетис за низ интерконтиненталних водених басена одвојених од Средоземног мора и Светског океана алпским орогеном. Научна делатност Ласкарева у Руском царству (1890-1919) одвијала се на Универзитету у Одеси. Као активни универзитетски професор В. Ласкарев је допринео геолошком картирању западних провинција Царске Русије и регионалној геологији и палеонтологији неогена Одеске и Бесарабске области. Неколико његових ученика постали су познати геолози и палеонтолози у совјетско време. Изузетно је значајан допринос Владимира Ласкарева геолошким проучавањима у Србији између 1920-1953. Током живота у Београду објавио је дупло више радова о различитим аспектима геологије и палеонтологије неогена и квартара. Свакако да је званично увођење појма Паратетис у геолошку науку његов најважнији допринос. Све већа употреба овог појма у научној литератури започела је раних 1940-их а кулминирала 1970-1980-их за време Међународних пројеката корелације и картирања неогена (IGCP).

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Introduction

Vladimir Dmitrievich Laskarev was born in the Russian Empire, in the town of Biryuch, Voronezh province (currently Belgorod Region) on June 26 (July 8 of the Gregorian calendar), 1868. After graduating from the classical gymnasium in Chernigov in 1887, he attended the Imperial Novorossian University in Odessa. His teachers were Ivan Fedorovich Sintsov (1845–1914) and Nikolay Ivanovich Andrusov (1861–1924).

Sintsov studied Mesozoic and Tertiary deposits in the provinces of Central Russia, Ukraine, and Bessarabia, and lectured at the University of geology and paleontology (Andrusov, 1914). During his work in Odessa, associate professor Andrusov actively conducted geological research on the Kerch Peninsula. In 1890–1891 he gave lectures on the geological role of organisms and geotectonics. The lectures by Sintsov and Andrusov differed greatly from each other. The lectures of the latter were more distinctive in terms of amount of material given and the form of presentation. Nevertheless, both teachers undoubtedly influenced the direction of Laskarev's geological research.

Laskarev completed his studies in 1892 and began to prepare for a professorship. In the same year he interned at the Mining Institute in St. Petersburg. Then he was granted an educational trip abroad that included work in institutes, museums, and libraries in Austria, Germany, Serbia, and Italy. After his return to Odessa, Laskarev first became assistant professor (1902), then extraordinary (= associate) professor (1904) and finally ordinary (= full) professor (1914) at the Department of Mineralogy and Geology of the Novorossian University.

Scientific activity of Vladimir Laskarev

Since 1896, Laskarev collaborated with the Geological Committee (Geological Survey) of Russia. In 1907 he was appointed to the position of geologist of the Geological Committee. Laskarev was entrusted with the task of compiling the 17th sheet of the General Geological Map of European Russia. The territory, which included parts of then Volyn, Podolian, and Kiev

provinces, was 47,175 square miles (about 50,000 square kilometers). The works were carried out in 1897, 1898, 1901–1904, and 1906–1907. The results were published in the Izvestia (Proceedings) of the Geological Committee and summarized in an overview monograph (LASKAREV, 1914).

One of Laskarev's students, a famous Russian paleobotanist A.N. Kryshtofovich (1885–1953), recalled his teacher and his work: "Every summer he went on geological surveys on behalf of the Geological Committee to Podolian and Volyn provinces. The culmination of his tireless labours, despite his poor health, was a monumental study, a description of the 17th sheet of the geological map, which is still an up-to-date geological contribution. V.D. Laskarev combined the virtues of both a systematic teacher and a scientist, as well as a person of high moral dignity.... "As a professor, head of the department, he is impeccable" (KRYSHTOFOVICH, 1971, pp. 42-43). At the beginning of the XX century Vladimir Laskarev was one of the centres of geological scientific activities in Odessa. His students, followers, and collaborators in Odessa Afrikan Kryshtofovich, Vladimir Krokos, Aleksey Alekseev, Efim Gaponov, Ivan Khomenko, Nikolay Grigorovich-Berezovsky, and many others contributed greatly to the Neogene and Quaternary geology and paleontology of the region and beyond. The scientific archive of A.N. Kryshtofovich has preserved for us photos of Laskarev from the Odessa period of his work (Figs. 1, 2). The photo of geologists of the Novorossian University of Odessa (Fig. 2) is supplemented by another published photo with Vladimir Laskarev and additionally showing Efim Antonovich Gaponov (Mukha, 2006).

In 1903, Laskarev defended his master's thesis at the Yuriev (Derpt) University titled "Fauna of the Buglovka Beds in Volyn". His official opponents were professors N.I. Andrusov and N.I. Kuznetsov. The defense of the dissertation "Geological research in Southwestern Russia" took place at St. Vladimir University in Kiev in 1916 (HISTORY OF GEOLOGY AND MINING, 2024). In 1917 he was elected an honorary member of the Imperial Russian Mineralogical Society.

The October Revolution of 1917 and the Civil War (1918–1922) marked a turning point in the history of Russia. In the years 1918–1920, many



Fig. 1. A group of employees of the Museum of Visual Aids at the Technical Society in Odessa. 1906-1908. Vladimir Dmitrievich Laskarev (sitting, center), Afrikan Nikolaevich Kryshtofovich (bottom center).

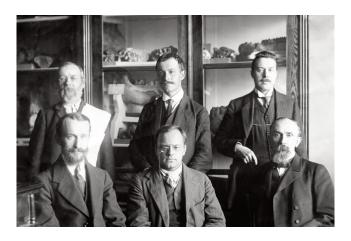


Fig. 2. Tutors and professors of Odessa Novorossian University in the Geological Office. 1910-s.Vladimir Dmitrievich Laskarev (bottom right), Vladimir Ivanovich Krokos (top center), Aleksey Karpovich Alekseev (top right), Afrikan Nikolaevich Kryshtofovich (bottom center).

scientists and cultural workers from Kiev, Petrograd, Moscow, and other cities moved to the south of the country. They actively discussed plans to emigrate. Vladimir Vernadsky and Nikolay Andrusov, in particular, participated in the discussion. They tended to choose Serbia, where "all educational qualifications and academic degrees obtained in Russia were considered valid" (Vernadsky, 1994: footnote 56, p. 209). As a result, "up to 70 thousand Russian emigrants arrived in Yugoslavia" (ibid.).

The Novorossian University in Odessa was closed in 1920 and transformed into the Institute of

People's Education. From December 1919 to January 1920, more than 30 teachers left the University under the pretext of a business trip abroad or were expelled for political reasons (EREMEEVA, 2016). Vladimir Laskarev, however, hesitated to emigrate at this time and continued his scientific work. His last article in Russia was devoted to the Quaternary deposits of Novorossiya (LASKAREV, 1919). In 1920, Laskarev boarded a ship bound in Odessa for Constantinople. He initially stayed in the Greek capital. For a while, he taught geology at the University of Athens, then moved to the Kingdom of Serbs, Croats, and Slovenes (since 1929 - the Kingdom of Yugoslavia). The final destination of Laskarev's journey in 1920 was Belgrade, the capital of Serbia. The rector of the University of Belgrade, a good friend of Vladimir Dmitrievich, was a Serbian geographer and geologist Jovan Cvijić (1865–1927). In addition, geologist Petar Pavlović, curator of the Museum of the Serbian Land in Belgrade (later the Academician also) was very responsible for Laskarev's coming to Belgrade and staying there. The two friends, for many years, made a tandem that started pioneering research on Neogene mammals in Serbia and today's Northern Macedonia. In addition to his university duties, Laskarev spent a lot of time in the Museum, where he processed large amounts of collected material and was the so-called "voluntary curator" in the Museum. As a result of his exhaustive, long-term, and expert work and efforts (1921–1929), the Museum formed an extraordinary Collection of large mammals (the "Pikermian Collection"), which is still one of the most beautiful in the Museum. In addition, Laskarev also collected numerous specimens of fossil flora and Cenozoic mollusks that are kept in the Museum today.

Laskarev's activities in Serbia were very diverse. Immediately after his arrival, Laskarev became a member of the Serbian Geological Society (founded in 1891), where he frequently gave lectures that were later published in the journal "Zapisnici SGD" (Reports of the Serbian Geological Society) (GRUBIĆ, 2019). He gave his first announcement (practically an introductory lecture) on January 10, 1921, where he spoke about his first loess research in the vicinity of Belgrade. Much later, he was also a member of the Court of Honor of SGS (1947–1949) and the Super-

visory Board of SGS (1950). He was a professor at three faculties (the Technical, of Science & Mathematics, and Philosophy) at the University of Belgrade (1921-1954) and held a seminar on the geology of Russia (1929-1930). Laskarev participated in the activities of the Russian Scientific Institute, which was founded in Belgrade in 1928 and served as the center of the Russian Diaspora until 1941. In 1932, Vladimir Laskarev was elected a corresponding member of the Serbian Royal Academy (since 1947, the Serbian Academy of Sciences). After almost 30 years long of hoping to return to Russia and his beautiful southern city, he finally took Yugoslav citizenship. In 1947 he was elected the full member of the Serbian Academy of Sciences and the first director of the Geological Institute of the Serbian Academy of Sciences, a position he held until 1951 (GRUBIĆ & PANTIĆ, 2000; JOVIĆ, 2019).

Vladimir Dmitrievich Laskarev lived in Belgrade until the end of his life. During the years spent in Serbia, he published additionally fifty articles on the geology of Yugoslavia i.e. Serbia (e.g., LASKAREV, 1922, 1924, 1925, 1931, 1934, 1938, 1950, 1951). What were his most important contributions to the geology of Serbia? Firstly, he continued his earlier work on the study and synthesis of data on the Neogene of SE and Southern Europe (GRUBIĆ & PANTIĆ, 2000). In this sense, he dealt with the tectonics of Neogene and older terrains in Serbia, but he also started pioneering work on the study of fossil mammals in Serbia and Yugoslavia. Today we consider him the father of this research in Serbia (GRUBIĆ, 2019). The first field excursion after arriving in Serbia in 1920 was on the loess profiles on the Danube River in Zemun, Belgrade (RUNDIĆ, 2021). He worked on loess and other Quaternary formations until the end of his life and left a significant mark on that field of geology. It is interesting that his last professional field trip also took place in the same area.

It should be noted that the geological mapping conducted by V. D. Laskarev (together with P. Pavlović) represents the very beginning of post-WW1 research into the Neogene of Serbia (Fig. 3). A detailed geological mapping of the Belgrade area (Laskarev et al., 1931) and the whole of Serbia (at scale 1:25,000), reconstructions of geodynamic



Fig. 3. During the field break near Resnik village (Belgrade, 1930). V. Laskarev (left), P. Pavlović (middle) and V. Petković (right). Photo taken from Rundić et al. (2016).

events during the younger phases of Alpine tectonics, specialist research of mollusks fauna and the study of Neogene mammals, which represent a significant contribution to the geology of Serbia, date from this pioneering period (Fig. 4).

During many years of university work in Belgrade, Prof. Laskarev taught Historical geology and Paleontology to generations of students (Fig. 5). He was one of the favorite professors, modest and a quiet gentleman who was highly respected by his students and colleagues, especially at the Museum of the Serbian Land, the University of Belgrade, and the Serbian Academy of Sciences. Academician Petar Stevanović (1914–1999), his student and colleague, greatly appreciated V. Laskarev and his work. He was of the opinion that the term Paratethys can be placed on the same level of importance in the history of geological science as, for example, the Moho discontinuity by A. Mohorovčić or the solar curve by M. Milanković (STEVANOVIĆ, 1974, p. 69).

With his great work, but also with his modesty and gentleness as a person and professor, Laskarev greatly contributed to Serbian geology and became one of the prominent Serbian geologists of the last century (Rundić et al., 2016). He received the awards for his work from the Government of the Republic of Serbia. In recognition of his scientific work, fellow palaeontologists dedicated fossil taxa to him: *Pyrgula laskarevi* Pavlov., *Laskarevia* Mil., *Pseudopoliconites laskarevi* Mil. & Malt., *Didacna laskarevi* Andrusov, 1909; *Alilepus laskarewi* Khomenko, 1914; *Machairodus laskarevi* Lungu, 1978; etc.

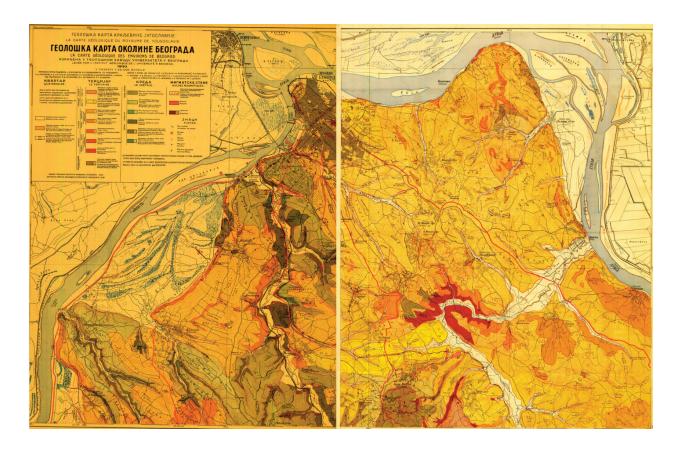


Fig. 4. The two-partite geological map of Belgrade surrounding area at scale 1: 25, 000. V. Laskarev was a leading author and the first co-editor. Photo taken from Rundić (2019).



Fig. 5. Professors K. Petković (left), V. Laskarev (middle), and P. Stevanović (right) and students of geology in front of the Seat of University of Belgrade (June 1950). Photo taken from Rundić et al. (2016).

Vladimir Dmitrievich Laskarev died in Belgrade on April 10, 1954, on the same date when his term

Paratethys was born thirty years earlier. He was buried in the Russian part of Belgrade's New Cemetery. After his death, as a sign of gratitude and respect, the special issues of the journals Zapisnici SGD (1954), Geological Annales of the Balkan Peninsula (vol. XXIII, 1955) and Proceedings of the Geological Institute "Jovan Žujović" (vol. VIII, 1955) were published. The Editorial board of GABP wrote a special dedication: "The Geological Institute of the University and the Editorial Board of the Geological Annals of the Balkan Peninsula dedicate this book to the shining memory of its member Dr. Vladimir Dimitrijević Laskarev, professor at the University, who is meritorious for the geology of our country" (GRUBIĆ & PANTIĆ, 2000).

Paratethys

The term "Paratethys" was officially introduced into geological terminology by Vladimir Laskarev on

April 10, 1924, when he gave a lecture at the 209th Session of the Serbian Geological Society on the topic: "On the Congerian layers and their significance for the tectonics of the Belgrade region." In his most widely cited article (LASKAREV, 1924), he wrote:

"Une des conséquences les plus importantes, qui suivirent en Europe l'élévation du système alpin, fut la formation au commencement du miocène d'une vaste mer, qui fut séparée de la Téthys, par des procédés tectoniques alpins. Cette mer, en se tortillant parmi les diverses parties du système alpin, s'étendait parallèlement à Téthys, du bassin du Rhône jusqu'aux régions transcaspiennes, en passant par la Suisse, la Bavière, par les bassins de Vienne et Pannonien, par la Serbie, la Roumanie et la Russie méridionale. On peut proposer le nom de Paratéthys pour cette mer."

"One of the most important consequences, which followed in Europe the elevation of the Alpine system, was the formation at the beginning of the Miocene of a vast sea, which was separated from the Tethys, by Alpine tectonic processes. This sea, wriggling among the various parts of the Alpine system, extended parallel to Tethys, from the Rhone basin to the Transcaspian regions, passing through Switzerland, Bavaria, through the Vienna and Pannonian basins, through Serbia, Romania, and southern Russia. We can propose the name of Paratethys for this sea."

This influential paper by Laskarev entitled in French "Sur les equivalents du Sarmatien Supérieur en Serbie" was published in a collection of papers dedicated to the 35th anniversary of the scientific activity of his colleague and friend Jovan Cvijić (Laskarev, 1924). The paleogeographic map in Laskarev's article (Fig. 6) schematically shows the distribution of the Tethys and the Miocene basin of the Paratethys (Laskarev, 1924, p. 60). Cvijić included this map in his monograph *Geomorphology* (Cvijić, 1924).

The idea of the Paratethys was not a sudden insight of Laskarev. Along with geological, palaeontological, and palaeogeographical studies, he investigated the tectonics of Southern Russia, using geophysical methods. After the introduction of the term "Tethys" into the geological lexicon (Suess, 1893), the topic of the ancient ocean was actively

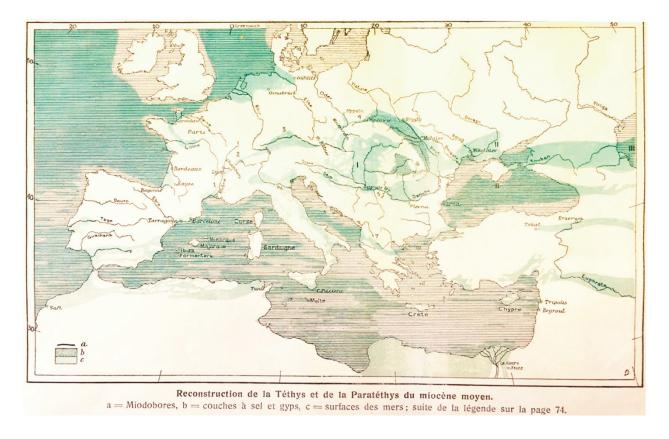


Fig. 6. An original paleogeographic map of the Tethys-Paratethys area during the Middle Miocene (LASKAREV, 1924). Slightly modified by Lj. Rundić.

discussed by geologists from various countries for more than a century (Naidin, 1986; Şengör, 2014). This discussion also influenced Laskarev and probably sparked his interest in geotectonics in many ways. In his paper of 1905, he analysed the views of Suess, Karpinsky, and many Russian and foreign geologists on the tectonic structure of the Alpine folded regions. Laskarev concluded: "The strong advance of the Carpathians in the Miocene epoch forces the entire foreland, which by that time represented a complex tectonic picture ..., to oscillate entirely and serve as the arena of life of the Miocene seas" (Laskarev, 1905, p. 283).

In his main work of the Russian period, Laskarev came to the following conclusion: "In distant ... times, the northeastern part of our sheet [the area of crystalline rocks] probably represented high folded mountains, at the foot of which Cretaceous and Tertiary seas stretched from the west ... The coastline of these seas shows in the Miocene epoch (especially in the Sarmatian period) an increased eastward movement, caused by the rise of the Carpathians and the retreat of the western sea coast from Galicia in the same direction "(LASKAREV, 1914, p. 496).

Although the term Paratethys is now very widely used in the scientific literature, it was almost unknown in Russia for almost 50 years after the publication of Laskarev's paper in 1924. Thus, in the remarkable volume "Neogene of the USSR" (Kolesnikov, 1940), which summarizes all the basic data on the Neogene of the south of the USSR and provides the first reasonably detailed maps of the basins of the Neogene, the term Paratethys is missing. It is also not used in the Soviet geological literature of that time.

The first articles in which the term "Paratethys" or "Paratetida" was used appeared in the works of Hungarian, Austrian, German, Czechoslovakian, and Italian paleontologists, and geologists in the early 1940s through the 1960s (Kretzoi, 1941; Thenius, 1948; Papp, 1952; Cícha, 1960; Cícha et al., 1960; Seneš, 1960; Decima, 1964; Cícha & Seneš, 1968, etc.).

The beginning of its widespread use was initiated after the foundation of RCMNS, Regional Committee on Mediterranean Neogene Stratigraphy in Aix-en-Provence (1958) and at the first Congress of RCMNS in Vienna (1959). Finally, after proposal

by Menner, Papp and Stevanović and the establishment of the Paratethys Working Group during the 4th Congress of RCMNS (Bologna, 1967) and its systematic meetings the term is widely accepted (Stevanović, 1974; Rundić, 2006). But it became universally accepted after the famous International Geological Correlation Project – IGCP 25 "Stratigraphic correlation of the Tethys – Paratethys Neogene", which was led by Jan Seneš. As part of this project, the regional stratigraphic scale of the Central Paratethys was established (Seneš, 1975) and Andrusov's horizons of the Eastern Paratethys stratigraphic scale were elevated to the rank of regional stages (Nevesskaya et al., 1975).

How the term "Paratethys" has evolved in printed publications is shown in the diagram of the Google Ngram service (GOOGLE BOOKS NGRAM VIEWER, 2024). This diagram reflects the dynamics of the use of the term with a pronounced peak in the 1970s and 1980s, the time of the IGCP 25 project, and the strong anchoring of the term in the scientific literature (Fig. 7).

In the late 20th and early 21st centuries, comprehensive data on the facies composition, distribution, and correlation of Neogene deposits over the entire area of their distribution in Paratethys region were collected (STEININGER et al., 1985). A series of volumes on the regional levels of Central Paratethys, the palaeogeographic atlas of the Neogene in Central and Eastern Europe (HAMOR, 1988) and lithological-palaeogeographic maps of Paratethys (Popov et al., 2004) have been published. In recent years, the stratigraphic and paleogeographic evolution of individual basins as well as the entire Paratethys (e.g., PALCU et al., 2021, 2023) has been examinated and interpreted in more detail in numerous interdisciplinary articles, and this trend continues. The most recent of the fundamental monographs on Paratethys geology is entitled "Neogene of Eastern Paratethys" (Popov et al., 2023).

The echo of the brilliant terminological insight of Vladimir Laskarev is strongly reflected in the scientific literature of the last and current centuries. Modern scientific research on the Late Cenozoic of Europe cannot be imagined without the concept of Paratethys.

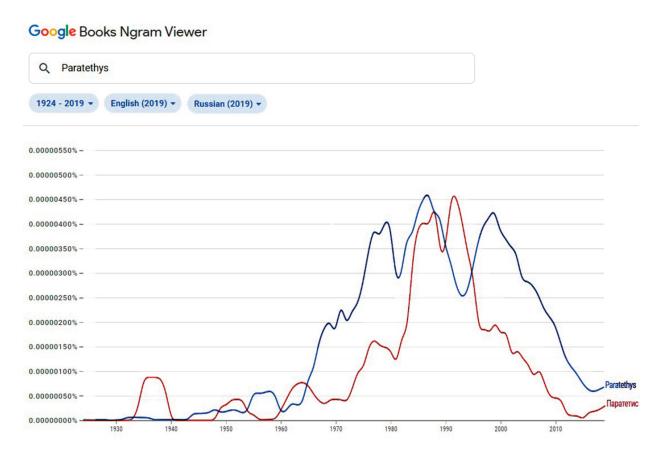


Fig. 7. Frequency of the usage of the term Paratethys in the Google Book data base (GOOGLE BOOK NGRAM VIEWER, 2024).

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References

Andrusov, N.I. 1914. Ivan Fedorovich Sintsov. Obituary. Bulletin de l'Académie Impériale des Sciences, 8 (14): 977–978.

Cícha, J. 1960. Neue stratigraphische Auswertung der Mikrofauna aus den sog. Kattischen Schichten der Südslowakei in Beziehung zu den Ablagerungen der Paratethys. *Geol. Práce*, 57: 157–216.

Cícha, I., Tejkal, J. & Seneš, J. 1960. Zur Frage des Helvets s. s. und zum sogen. Oberhelvet im paratethyschen Gebiet. *Mitt. geol. Ges. Wien*, 52: 75–84.

Cícha, J. & Seneš, J. 1968. Sur la position du Miocene de la Paratéthys Centrále dans le cadre du Tertiaire de l'Europe. *Geol. Shorn. Slov. akad. vied (Bratislava),* 14 (1): 95–116.

Cvijić, J. 1924. *Geomorfologija* [*Geomorphology* – in Serbian]. Državna štamparija Kraljevine Srba, Hrvata i Slovenaca, Beograd, 420 pp.

DECIMA, A. 1964. Confronto tra i bacini della Paratetide e del Mediterraneo al limite Miocene-Pliocene. *Rivista Mineraria Siciliana*, 88–90: 3–7.

EREMEEVA, A.N. 2016. Intellectual migration 1914–1920 and its socio-cultural implications. Southern branch of the Russian Research Institute for Cultural and Natural Heritage. Preprint № 002-2016-THC, 1–24.

GOOGLE BOOKS NGRAM VIEWER. Accessed February 2024. http://books.google.com/ngrams.

GRUBIĆ, A. 2019. Vladimir D. Laskarev (1868-1954) – Life and work. On the occasion of the 150th anniversary of his birth. *Serb. Acad. Sci. and Arts. Meeting* 175,

- *Mat. phys. geosci.* 8: 11–18 (in Serbian, English summary).
- Grubić, A. & Pantić, M. 2000. Vladimir Dimitrijevič Laskarev (1868–1954). *In*: Sarić, M. (Ed.). *Life and work of the Serbian scientist*. Serb. Acad. Sci. and Arts., Biographies and bibliographies, 6: 1–41 (in Serbian, English summary).
- Hamor, G. 1988. *Neogene palaeogeographic atlas of Central and Eastern Europe*. Hung. Geol. Inst., Budapest, 7 maps.
- HISTORY OF GEOLOGY AND MINING. Information system. Accessed February 2024. http://higeo.ginras.ru/view-record.php?tbl=person&id=1732.
- Jović, V. 2019. Memory of Vladimir D. Laskarev (1868-1954). Vladimir D. Laskarev Life and work. On the 150th anniversary of his birth. *Serb. Acad. Sci. and Arts.* Meeting 175, *Mat. phys. geosci.* 8: 9–10 (in Serbian, English summary).
- Kolesnikov, V.P. 1940. *Neogene of the USSR 1940*. Stratigraphy of the USSR, 12. Academy of Sciences of the USSR, Moscow-Leningrad, 687 pp.
- Kretzoi, M. 1941. Seehundreste au dem Sarmat von Erd bei Budapest. *Földtani Közloöny,* 72: 350–356.
- Kryshtofovich, A.N. 1971. *University (1903-1908). Scientists of the Geological Committee*. Nauka, Moscow, 18–55.
- LASKAREV, V.D. 1914. General geological map of European Russia: Sheet 17. *Mémoires du Comité géologique*, 77.
- Laskarev, V.D. 1919. Review of the Quaternary deposits of Novorossiya. *Notes of the imperial society of agriculture of Southern Russia*, 88/89 (1): 32–45.
- Laskarev, V.D. 1922. Sur le loess des environs de Belgrade. *Geološki anali Balkanskoga poluostrva,* 7 (1): 14–21.
- Laskarev, V.D. 1924. Sur les équivalents du Sarmatien Supérieur en Serbie. *In*: Vujević, P. (Ed.). *Recueil de travaux offert à M. Jovan Cvijic par ses amis et collaborateurs*. Državna Štamparija, Beograd, 73–85.
- Laskarev, V.D. 1925. Sur la trouvaille des Antracotheridees en Serbie et en Bosnie. *Geološki anali Balkanskoga poluostrva*, 8 (1): 85–92.
- Laskarev, V.D. 1934. About the Buglovian layers along the outer rim of the Carpathians. *Geološki anali Balkanskoga poluostrva*,12 (1): 1–17.
- LASKAREV, V.D. 1938. Troiseme note sur le Quaternaire des environs de Belgrade. *Geološki anali Balkanskoga poluostrva*, 15: 1–36.
- Laskarev, V.D. 1950. On the equivalents of Upper Sarmatian in Serbia. *Geološki anali Balkanskoga poluostrva*, 18: 1–18.

- Laskarev, V.D. 1951. Über die Stratigraphie der quartären Ablagerungen von Wojwodina. *Geološki anali Balkanskoga poluostrva*, 19: 1–18.
- Laskarev, V.D., Petković, V.K. & Luković, M.T. 1931. Geološka karta okoline Beograda, 1: 25.000 [Geological map of the surroundings of Belgrade, 1: 25, 000 in Serbian and French]. Geological Institute of the Kingdom of Yugoslavia, Belgrade.
- Mukha, B.B. 2006. An islet of the Novorossian University. Historical pages. *Visnik Odessa National University*, 11 (3): 56–74.
- Naidin, D.P. 1986. Tethys: the term and concept. *Vestnik of Moscow State University*, Ser. 4, *Geology*, 6: 3–18.
- NEVESSKAYA, L.A., BOGDANOVICH A.K., VIALOV O.S., et al. 1975. Scale of Neogene stages in the south of the USSR. *Izvestiya of the USSR Academy of Sciences*, ser. *Geology*, 2: 104–120.
- Palcu, D.V., Maris, I., de Leeuw, A., Melinte-Dobrinescu, M., Anton, E., Frunzescu, D., Popov, S., Stoica, M., Jovane, L. & Krijgsman, W. 2023. The legacy of the Tethys Ocean: Anoxic seas, evaporitic basins, and megalakes in the Cenozoic of Central Europe. *Earth-Science Review*, 246: 104594. https://doi.org/10.1016/j.earscirev.2023.104594
- Palcu, D.V., Patina, I.S., Sandric, I., Lazarev, S., Vasiliev, I., Stoica, M. & Krijgsman, W. 2021. Late Miocene megalake regressions in Eurasia. *Scientific reports*, 11: 11471(2021).
- Papp, A. 1952. Die Molluskenfauna im Sarmat des Wiener Beckens. *Mitt. Geol. Ges. Wien*, 45: 1–112.
- Popov, S.V., Rogl, F., Rozanov, A.Y., Steininger, F.F., Shcherba, I.G. & Kovač, M. 2004. Lithological-paleogeographic maps of Paratethys: 10 maps Late Eocene to Pliocene Late Eocene to Pliocene. *Cour. Forsch. Inst. Senkenberg*, 250: 1–46.
- Popov, S.V., Golovina, L.A., Palcu, D.V., Goncharova, I., Pinchuk, T., Rostovsteva, Y., Akhmetiev, M.A., Aleksandrova, G.N., Zaporozhets, N.I., Bannikov, A.F., Bylinskaya, M.E & Lazarev, S. 2023. *Neogene of the Eastern Paratethys: the scale of regional stages, reference sections, and problems of correlations.* Proceedings of the Paleontological institute, 299, Russian Academy of Sciences, Moscow, 504 pp.
- Rundić, Lj. 2006. Paratethys 80 years since the official introduction of the term into geological science. *Zapisnici SGD* for 2004-2005: 19–22 (in Serbian).
- Rundić, Lj. 2019. On the term "Paratethys" (Laskarev, 1924) and the importance of the Neogene research in

- Serbia. Vladimir D. Laskarev Life and work. On the 150th anniversary of his birth. *Serb. Acad. Sci. and Arts. Meeting* 175, *Mat. phys., geosci.* 8: 57–67 (in Serbian, English summary).
- Rundić, Lj. 2021. Hundred years of loess research in Zemun (Serbia): from an expert note to new challenges in geology. *Bull. of Natural History Museum*, 14: 25–41.
- Rundić, Lj., Grubić, A., Banjac, N., Sudar, M. & Stevanović, Z. 2016. 125 godina Srpskog geološkog društva (1891–2016) [125 years of the Serbian Geological Society in Serbian and English]. Srpsko geološko društvo, 255 pp.
- SENEŠ, J. 1960. Entwicklungsphasen der Paratethys. *Mitt. Geol. Ges. Wien*, 52: 181–188.
- Seneš, J. 1975. Regional stages of the Central Paratethys Neogene and the definition of their lower boundaries. *Proceedings of the 6th Congress RCMNS*. Veda, Bratislava, 259–265.
- ŞENGÖR, A.M.C. 2014. *Tethys: Marine Geosciences. Encyclopedia of Marine Geosciences*. Springer, Doderdrecht, 1–17.
- Steininger, F.F., Seneš, J., Kleemann, K. & Rögl, F. 1985.

 Neogene of the Mediterranean Tethys and Paratethys:

 Stratigraphic Correlation Tables and Sediment

 Distribution Maps. Paläontologisches Institut,

 Universität Wien, 724 pp.
- Stevanović, P. 1974. 50 years since the proclamation of Paratethys in the Serbian Geological Society. In commemoration of the 20th anniversary of the death of V. Laskarev. *Zapisnici SGD* for 1974, 69–78 (in Serbian).
- Suess, E. 1893. Are great ocean depths permanent? *Natural Science*, 2: 180–187.
- Thenius, E. 1948. Die Säugetierfauna aus den Congerienschichten von Brunn-Vösendorf bei Wien. *Verh. Geol. Bundesanstalt*, 7/9: 113–131.
- Vernadsky, V.I. 1994. *Diaries. 1917-1921: October 1917 January 1920.* Naukova dumka, Kiev, 271 pp.

Резиме

Академик Владимир Ласкарев (1868-1954) и Паратетис

Владимир Дмитриевич Ласкарев (1868–1954) руски и српски геолог, једна је од важнијих личности геолошке науке последњих стотину година. Рођен је у Руском царству, у месту Бирјуч, Вороњешка губернија (данашња Белгородска област) 26. јуна (8. јула по грегоријанском календару) 1868. године. Након што је завршио класичну гимназију у Чернигову 1887. године, уписао је Царски Новоросиски универзитет у Одеси. Његови професори били су Иван Федорович Синцов (1845–1914) и Николај Иванович Андрусов (1861–1924) због којих је дефинитивно и изабрао да буде геолог. Захваљујући овом другом, Ласкарев се посебно заинтересовао за геологију кенозоика.

В. Д. Ласкарев је дипломирао на Универзитету 1892. године. После завршених студија стажирао је годину дана на Рударском институту у Петрограду где се суочио по први пут и са практичним задацима и методама рада у геологији. Тек након тога, он је постао прави геолог. С обзиром да је Н. Андрусов пуно утицао на њега, Ласкарев је обавио и прва истраживања неогена тадашње јужне Русије и његови први радови су везани за ту проблематику. Његов прави професионални рад почиње 1896. године, када је сарађивао са Геолошким комитетом (Геолошким заводом) Русије. Постављен је на место геолога Геолошког комитета и поверен му је задатак да изради 17. лист Опште геолошке карте европске Русије. Територија, која је обухватала делове тадашњих Волинских, Подолских и Кијевских губернија, износила је 47.175 квадратних миља (око 50.000 квадратних километара). Радови су изведени 1897, 1898, 1901–1904, и 1906–1907. Резултати су објављени у Известима (Зборник радова) Геолошког комитета и сажети у прегледну монографију (Laskarev, 1914).

У периоду 1898–1900, као већ признатом геологу, одобрена су му студијска путовања у иностранство која су укључивала рад у институтима, музејима и библиотекама у тадашњој

Аустро-Угарској, Немачкој, Србији, Италији и другим земљама. Тамо се упознао са тадашњим најважнијим именима европске геологије, слушао њихова предавања и дискутовао о најважнијим проблемима неогена Европе и европске Русије. По повратку у Одесу, Ласкарев је спремио своју магистарску тезу под насловом "Фауна Бугловских слојева Волиније" коју је одбранио 1903. Након тога биран је за доцента а потом и за ванредног (1904) и редовног (1914) професора на Катедри за минералогију и геологију Новоросиског универзитета. На тој позицији остао је све до 1920. године.

Посебно је важно истаћи да је у тешким околностима грађанског рата у царској Русији, међу последњима отишао из родне земље и нашао своје друго животно и професионално уточиште у тадашњој Краљевини Срба, Хрвата и Словенаца (1920). У Србију је стигао као искусан картирајући геолог добар познавалац неогена и квартара. У том смислу, јако пуно је утицао на развој геолошких кадрова у ратом порушеној Србији.

Треба напоменути да је Ласкарев започео геолошко картирање неогених терена чим је стигао у Србију и тај период представља почетак озбиљнијих истраживања неогена после Првог светског рата (Сл. 3). Из тих пионирских времена, детаљно геолошко картирање терена околине Београда у размери 1: 25.000 (Laskarev et al., 1931), реконструкције геодинамичких дешавања у млађим фазама алпске тектонике, специјалистичка истраживања фауне мекушаца и проучавање неогених сисара представљају велики допринос геологији Србије (Сл. 4). Његов рад на прочавању неогених сисара Србије и Југославије представља пионирски али изузетан допринос нашој геолошкој струци и науци. За живота је био веома поштован међу својим студентима и колегама. Све до смрти, био је професор геологије и палеонтологије на Универзитету у Београду и "добровољни кустос" Музеја српске земље (данас Природњачки музеј у Београду). В. Ласкарев је 1932. године изабран за дописног члана Српске краљевске академије (од 1947. Српске академије наука), а 1947. и за редовног члана Српске академије наука. Био је и први директор Геолошког завода Српске академије наука и на тој функцији је остао до 1951. године. За свој рад је добио бројна признања. Умро је 10. априла 1954. године и сахрањен је, уз све почасти, на руском делу Новог гробља у Београду.

Сумирајући целокупно знање о распрострањену и еволуцији неогена Европе и дела Русије, укључујући и вишегодишњи рад на детаљној геолошкој карти неогена околине Београда (простор западно од Карпата), омогућили су В. Ласкареву да саопшти своје оригиналне закључке. Обелоданио је постојање "Паратетиса", научног термина који је први званично увео у геолошку науку. "...Назив Паратетис предлажем за оно огромно море које је постанком алпијског система одвојено у почетку миоцена од Тетиса и које је пролазило кроз Ронски басен, Швајцарску, јужну Баварску, Бечки басен, Србију, Румунију, јужну Русију ка Каспијском мору....За ово море могао би се предложити назив Паратетис". То је саопштио 10. априла 1924. године, када је на 209. збору Српског геолошког друштва одржао предавање на тему: "О конгеријским слојевима и њиховом значају за тектонику околине Београда". Предавање је штампано на француском језику под насловом "Sur les équivalents du Sarmatien Supérieur en Serbie" у Зборнику радова посвећеном 35-годишњици рада Јована Цвијића (Laskarev, 1924).

Много година од тада, међународној геолошкој заједници није био широко познат овај термин (вероватно што је поменута монографија о Ј. Цвијићу била слабо доступна у Европи). Почетак његове широке употребе започет је након Другог светског рата и оснивања РЦМНСа, Регионалног комитета за медитеранску неогенску стратиграфију у Екс-ан-Провансу (1958) и током првог конгреса РЦМНС-а у Бечу (1959). Коначно, након предлога Менера, Папа и Стевановића и оснивања Радне групе Паратетис на 4. конгресу РЦМНС-а (Болоња, 1967) и њених систематских састанака, термин је широко прихваћен (Ѕтеvanović, 1974; Rundić, 2006). Термин Паратетис је постао универзално прихваћен након чувеног међународног пројекта геолошке корелације IGCP 25 "Stratigraphic correlation of the Tethys - Paratethys Neogene" који је водио Јан Сенеш. Управо је активност

овог Пројекта успоставила регионалну стратиграфску скалу Централног Паратетиса (Seneš, 1975) и трансформисала Андрусовљеве хоризонте стратиграфске скале Источног Паратетиса у ранг регионалних катова (Nevesskaya et al., 1975).

Крајем 20. и почетком 21. века прикупљени су свеобухватни подаци о фацијалном саставу, дистрибуцији и корелацији неогених наслага на целом подручју Паратетиса (Steininger et al., 1985). Објављен је низ монографија о регионалним катовима Централног Паратетиса, Палеогеографски атлас неогена Централне и Источне Европе (Намок, 1988) и литолошкопалеогеографске карте Паратетиса (Ророу et al., 2004). Током последњих неколико година,

десетине интердисциплинарних чланака додатно је истакло и интерпретирало стратиграфску и палеогеографску еволуцију појединих басена, као и целог Паратетиса (нпр. РАLCU et al., 2021, 2023). Најновија монографија о геологији Паратетиса носи наслов "Неоген источног Паратетиса" (Ророv et al., 2023).

Одјек бриљантног терминолошког и геолошког опажања Владимира Ласкарева снажно се огледа у научној литератури прошлог века али и садашњег времена. Савремена научна истраживања касног кенозоика Европе не могу се замислити без концепта Паратетиса.

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