

In memoriam

Professor Ivo Sapunov, DSc (January 18, 1932 – May 14, 2020)

The prominent Bulgarian geologist and respected researcher, who left an invariable trace in the Bulgarian paleontology and stratigraphy, Professor Ivo Sapunov, DSc, passed away on May 14, 2020, at the age of 88. Having had a long and fruitful career, with significant contributions in the field of the Jurassic geology, Prof. Sapunov made a name for himself as a modest, but demanding, profound and erudite scientist. His studies are of fundamental importance for the official lithostratigraphic scheme and the ammonite zonal subdivision of the Jurassic System in Bulgaria. He contributed to understanding the geological history of the present-day Bulgarian lands during the Jurassic, but also to revealing the relationship between the Bulgarian Jurassic paleoenvironments and fossil associations and their equivalents in Northwestern, Central and Eastern Europe, the Caucasus and the Mediterranean region in Europe and North Africa.

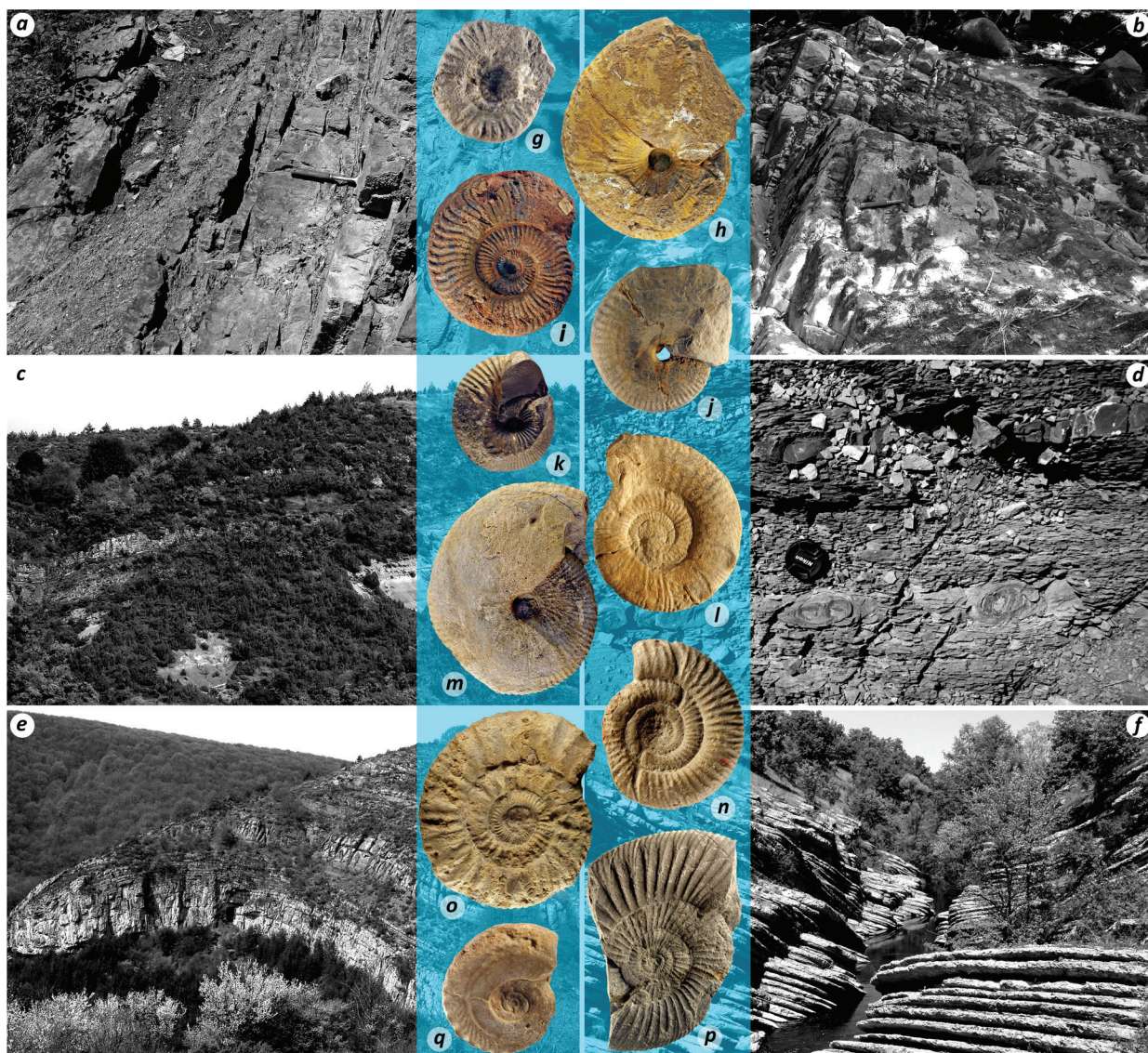
Professor Ivo Sapunov was born on January 18, 1932, in the town of Ruse (NE Bulgaria), into the family of Georgi and Tsvetana Sapunov. In Ruse, he completed his primary education and was admitted to Deutsche Schule, the only German-language school in Southeast Europe, which has become known for its demanding teaching and high-quality education. Ivo Sapunov studied at Deutsche Schule for two years until its closure in the early summer of 1944, when the school principal and German teachers left Bulgaria because of the advancing Soviet army. His family moved to Sofia, where he was enrolled and later graduated from the Second Boys' High School. Sapunov's family survived the heavy bombing of the British and American Air Forces in the city center of Sofia and managed to rebuild their home in the difficult years after World War II. In the autumn of 1949, Ivo Sapunov applied and was admitted to Sofia University "St Kliment Ohridski", studying Natural History, and graduated in 1954 as a geologist. His student life went well

and in parallel with his great love, jazz music. Ivo Sapunov studied English intensively, played trombone and piano, and became a member of one of the first jazz ensembles in Bulgaria, "The Youth Jazz", together with young musicians from various high schools in Sofia (Lyudmil Georgiev, Maurice Aladjem, Emanuil Manolov, Dimitar Simeonov, Kostadin Chlev, Nedko Troshanov and Vili Kazasyan). The band rehearsed at night, played in Sofia restaurants and, every Sunday morning, on Rakovski Street, pieces by Artie Shaw, Duke Ellington, Benny Goodman, Glen Miller, Woody Herman, Stan Kenton and others. In his famous book *History in Syncopation*, published in 2000, Lyudmil Georgiev wrote that Ivo Sapunov (The Elephant) was an avid and talented musician and arranger, who should be sorry that he did not stay in the field of jazz. The intolerance of the communistic authorities towards Western culture and the tragic fate of some of his peer musicians, often evicted from their home places or sent to prisons and labor camps, forced Ivo Sapunov to give up his big dream to play jazz in America and he devoted entirely to the geology.

Soon after graduation from Sofia University, Ivo Sapunov began working as a geologist at the Geological Institute of the Bulgarian Academy of Sciences, only seven years after it had been founded. It was part of the Department of Geology and Mineralogy-Petrography of the National Museum of Natural History, with Prof. Strashimir Dimitrov as director, and Ivo Sapunov was the youngest scientist. In 1966, Ivo Sapunov became an Assistant Professor at the Geological Institute, where he was successfully promoted and continued working until his retirement in 2004. In 1959, he specialized under the guidance of Prof. Marian Książkiewicz at the Jagiellonian University (Kraków, Poland). He defended his PhD thesis in 1966 and his DSc thesis in 1985. From 1979 to 1999, Ivo Sapunov was head of the Department of Paleontology and Stratigraphy

for three terms, and in 1999 he founded and became the first head of the Laboratory for Geocollections of the Geological Institute. During his active work, Prof. Sapunov actively participated in various pro-

fessional teams working on oil and gas prospection in the Moesian Platform, the Bulgarian geological expeditions in Algeria, and also compiling map sheets from the Geological Map of Bulgaria in scale



Selected contributions of Professor Ivo Sapunov represented in pictures.

a–f) Field views of key Jurassic strata from the Balkan Mts: a) coal-bearing paralic rocks of the Bachiishte Formation, Hettangian, Svinska Reka River Valley (Sapunov, 1969; Sapunov *et al.*, 1976, 1990); b) uppermost part of the type-section for the Kostina Formation, Hettangian, Kostina Reka River Valley (Sapunov, 1969; Sapunov *et al.*, 1967, 1996); c) the Jurassic succession (Hettangian–upper Pliensbachian) near Ravna Village (Sapunov, 1969; Sapunov *et al.*, 1976); d) black shales with concretionary level of the type-section for the Etropole Formation, lower Bajocian, St Iliya, near Etropole (Sapunov, 1961b, 1969; Sapunov *et al.*, 1967); e) the pelagic succession (Yavorets, Gintsi and Glozhene formations) near Gintsi Village, Callovian–Berriasian (Sapunov and Ziegler, 1976; Sapunov, 1973, 1974, 1976a, 1976b, 1977a, 1977b, 1979); f) regularly-bedded limestones of the Glozhene Formation, section Nechinska Bara, Tithonian–Berriasian (*ibid.*).

g–q) A few representative ammonite taxa from the Jurassic of Bulgaria: g) *Xipheroceras* sp., upper Sinemurian (Sapunov, 1961a; Sapunov *et al.*, 1967; Sapunov and Metodiev, 2007); h) *Liparoceras* (*Becheiceras*) *bechei* (J. Sowerby), lower Pliensbachian (*ibid.*); i) *Pseudogrammoceras pachu* Buckman, upper Toarcian (Sapunov, 1968); j) *Bradfordia tyrrhenica* (Renz), lower Bajocian (Sapunov, 1971b); k) *Frogdenites spiniger* Buckman, lower Bajocian (Sapunov, unpublished); l) *Siemiradzka repljanensis* Stephanov, lower Bathonian (Metodiev and Sapunov, 2017); m) *Macrocephalites gracilis* Spath, lower Callovian (Metodiev and Sapunov, 2019); n) *Perisphinctes* (*Dichotomosphinctes*) *episcopalis* de Loriol, middle Oxfordian (Sapunov, 1979 and references therein); o) *Crussoliceras aceroides* (Geyer), lower Kimmeridgian (*ibid.*); p) *Virgatixioceras setatum* (Schneid), upper Kimmeridgian (*ibid.*); q) *Glochiceras* (*Paralingulaticeras*) *lithographicum* (Oppel), lower Tithonian (*ibid.*).

1:100 000 based on lithostratigraphic principles. He participated in many scientific symposia, congresses and conferences, both in Bulgaria and abroad, including the Jurassic Symposia in Luxembourg (1964), Erlangen (1984) and Lisbon (1988), and the Arkell Symposium in London (1993), where the best specialists in Jurassic geology met. Prof. Sapunov was a voting member of the International Commission on Stratigraphy and a member of the National Commission on Stratigraphy of Bulgaria. He guided a specialized course of Taxonomy and Nomenclature at Sofia University. Along with that, he was a longtime editor and member of the Editorial Board of *Geologica Balcanica*. His active work established lasting professional contacts with geologists from all over the world and was of great benefit to many talented young colleagues. Prof. Sapunov maintained lively scientific correspondence and close friendly relations with famous scientists, such as Prof. Hollis D. Hedberg (USA), Prof. John Callomon and Prof. Desmond Donovan (UK), Prof. Bernhard Ziegler (Germany), Prof. Giacomo Cantaluppi (Italy), Prof. Raymond Enay and Prof. Jacques Thierry (France), Prof. Reinhart Gygi (Switzerland) and many others, which is a high recognition for his scientific work.

At the Geological Institute, Ivo Sapunov established himself as a respected professionalist, with numerous contributions in more than 200 publications. His first scientific article in 1957, published in the Bulletin of the Geological Institute, was devoted to the stratigraphy and tectonics of the Fore-Balkan Mts in the area between the Dryanovo and Veselina rivers and reflected his initial steps as a young geologist. Prof. Sapunov's earliest contributions, authored and co-authored with Ivan Nachev and July Stephanov, pioneered the modern ammonite biostratigraphy and the concept on the stage boundaries of the Lower and Middle Jurassic in Bulgaria, in stratigraphic sections from the Sofia, Etropole, Teteven and Troyan regions, on the basis of which successful zonations and correlations between the Jurassic successions from Bulgaria and Northwestern Europe, the Carpathians, the Caucasus and the Russian Platform were made. Also noteworthy are Prof. Sapunov's publications on ammonites of the families Liparoceratidae, Dactylioceratidae, Graphoceratidae and Oppeliidae from the Lower and Middle Jurassic of Bulgaria. Later, these data, supported by new evidence, allowed him to do intraregional paleogeographical zoning, which was met with interest and found a place among the main authors of the generalization of the Groupe Français d'étude du Jurassique, *Biostratigraphie du Jurassique Ouest-Européen et Méditerranéen:*

Zonations parallèles et distribution des invertébrés et microfossiles, from 1997. The deep regional knowledge, gained over the years of hard work with his colleague and friend Platon Tchoumatchenko, attracted the attention of the leading French geologists who guided the International Peri-Tethys Correlation Program, and this resulted in the publication of the remarkable synthesis on the geological development of Europe during the Mesozoic, *The Peri-Tethys Atlas*, accompanied by original paleogeographic maps in 2000.

Especially significant are the contributions of Prof. Sapunov, co-authored with Platon Tchoumatchenko and Vladimir Shopov, on the parallel zoning of the Lower Jurassic strata by ammonites, brachiopods and bivalves. Their ideas about the paleotectonic structure and the paleogeographic development of present-day Bulgarian lands during the Jurassic are also well known. The trio's precise descriptions and dating of the successions of the Balkan and Fore-Balkan Mts and the Kraishte region, as well as of numerous borehole sections of the Moesian Platform, together with Lilia Dodekova, Lilka Nikolova, Deshka Bakalova and Svetlana Černjavaska, created a reliable basis for their knowledge and further study. Among the contributions of Prof. Sapunov are those that led to the establishment of the lithostratigraphic units in Bulgaria. Also, he was among the authors who compiled the first Bulgarian Edition of the International Code of Zoological Nomenclature (ICZN). He made significant contributions to the ammonite taxonomy and zonal subdivision of the Upper Jurassic in Bulgaria, published in several articles in *Geologica Balcanica* and summarized in the monograph *Les fossiles de Bulgarie. III. 3. Jurassique supérieur. Ammonoidea* in 1979. The co-authored paper on the same subject, with Bernhard Ziegler, is also famous. Professor Sapunov made original contributions on both the regional stratigraphy of the Upper Jurassic and Lower Cretaceous and the Jurassic/Cretaceous boundary in the Balkanids, together with his colleague and friend Prof. Todor Nikolov. The same scientific tandem was at the basis of the Second Edition of the Stratigraphic Code of Bulgaria (2002), which is highly consistent with the principles, procedures and terminology of the International Stratigraphic Guide. On behalf of the Bulgarian National Commission on Stratigraphy, Prof. Sapunov corresponded regularly with the President of the International Commission on Stratigraphy, Prof. Hollis D. Hedberg. Thus, he maintained the common aspiration of our science to be at the level of the world achievements.

Since graduating from Sofia University, Prof. Sapunov had worked at the Geological Institute of the

Bulgarian Academy of Sciences, growing to the level of a world-renowned scientist. He was thorough in his research and precise in his work, but he was also open to cooperation with his colleagues from Bulgaria and abroad. Although he was left alone in the last years of his life (his wife Lilia Dodekova, also a great Bulgarian scientist, passed away in 2016), and despite his health problems, Prof. Sapunov worked actively and was interested in the news, both in Bulgarian geology and in the Geological Institute. I feel deeply grateful to have known this man. He was one of my early mentors and he had a large impact on my professional life. I was fortunate to be in the field with him on many occasions and to publish with him papers together. I met him when I was a student, then we gradually became close friends and he always helped and encouraged me, and if I have achieved anything as a geologist, it is mainly thanks to him. I am so privileged to have encountered Prof. Sapunov, and honored to produce this account. I am forever indebted to him for the unstinting guidance, friendship and help he has given me. He may pass away but the contributions he has made will continue. Professor Sapunov left a big gap in our science, but he is survived by his daughter and granddaughter, as well as by numerous colleagues, who will all miss him.

Lubomir Metodiev

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