

Boreal Bathonian and Biohorizons (dedicated to the memory of John Callomon, 1928–2010)

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John Hannes Callomon, a recognized chemist and outstanding paleontologist and biostratigrapher, died on April 1, 2010. He was a chemist by education and profession, but biostratigraphy was the calling of his heart. He was in many respects a remarkable person. There are people that have an invisible aura attracting others. John Callomon was one of those people. Without exaggeration, it can be stated that every participant at international meetings tried to spend at least little time with John. This was particularly clearly obvious during geological excursions. A strange power attracted people to this man to ask about something, to discuss a scientific problem, even to simply stand next

to him. His figure radiated cordiality, and a slight kind smile never left his face. His soft manner of communication with colleagues did not make him any less persistent when methods of ammonite studies or principles of biostratigraphy were discussed. He could firmly defend his views on fundamental problems of paleontology and stratigraphy. This is particularly memorable to those who were present at a meeting in Ulyanovsk in 1977 during the International colloquium on the Upper Jurassic and on the Jurassic–Cretaceous boundary.

John Callomon was born in Berlin in 1928. In 1937, escaping from the Nazis, his family came as ref-



J. Callomon among the participants of the field trip to Subpolar Urals, Jatria river, July 1977 (left to right: J. Callomon, M.S. Mesezhnikov, V.A. Zakharov, K.V. Paraketsov, T. Birkelund).

ugees to the United Kingdom. In Birmingham, where they settled, nine-year old John became acquainted with a metallurgy engineer Horace Sanders (1910–2011) also. John credits much of his success to Horace who unfortunately died on January 12th 2011, having almost reached 101 years of age. Due to his friendship with Sanders, Callomon became interested in geology. This interest remained with him all his subsequent life. In 1950, John graduated from St John's College in Oxford with a Bachelor Degree in Chemistry, and 1953 received a Ph.D. in infrared spectroscopy. He then went for a postdoctoral research in Ottawa under Canadian spectroscopist Gerhard Herzberg, a 1971 Nobel Prize Laureate in Chemistry. In 1955 John Callomon joined University College, London, and in two years he became a Lecturer in Chemistry and became a professor in 1981. John continued close communication with University College, London until his death.

In the 1950s John Callomon came to know William Joscelyn Arkell, an outstanding specialist in Jurassic paleontology and stratigraphy who, at 29 years old, published a fundamental monograph "The Jurassic System of Great Britain" (Arkell, 1933) and became internationally famous after the publication of "Jurassic geology of the world" (Arkell, 1956). John visited Arkell in Dorset in 1955 and helped him in completion of this book. Arkell's publications on ammonites from the Oxford Clay in the Woodham inspired John for his own studies of Callovian–Oxfordian ammonites. In the process of preparing the collection of ammonites John thought of the idea of sexual dimorphism in ammonites. A paper on this subject was prepared for publication in 1958, but was rejected by several journal, and was only published in 1963 (Callomon, 1963), i.e., after the publication another work on dimorphism in ammonite (Makowki, 1962). John considered macroconchs and microconchs as supposed sexual dimorphs. These names he proposed in his work in ammonites from the Oxfordian Clay for two distinct morphological groups recognized in many Jurassic ammonite taxa (Callomon, 1955). Even then John suggested that the dimorphism observed may be sexual, but the differing relative frequencies of occurrences of micro- and macroconchs in ammonite assemblages precluded him from positive statements. John's terminology later became widely accepted, and is now used to designate supposed dimorphs. Another important innovation in ammonite studies was the concept of the biospecies (Callomon, 1985). The study of rich assemblages of ammonites from England and Eastern Greenland led John to a hypothesis, that except on a few occasions, each stratigraphic level in a region contains only one characteristic species of a family (less commonly two, and exceptionally rarely

three) represented by micro- and macroconchs, whereas all the previously described diversity is a result of intraspecific variability. According to John Callomon, the transition from the "vertical" classification of morphospecies to phyletic classification by revealing successive "horizontal;" biospecies leads to the understanding of inter-taxa connections, which is not taken into account by morphological (typological) classification. John Callomon suggested that the consequences of the transition from the morphological to "horizontal" taxonomy should lead to essential changes to the Code of Zoological Nomenclature. The ideas of John Callomon on biospecies were accepted by a number of specialists, while the term "biospecies" in this sense became widely used in the scientific literature.

For over half a century John Callomon was mostly focused on the Jurassic, mainly Middle–Upper Jurassic boreal ammonites and zonal stratigraphy of England and northeastern Greenland. His contribution to the zonal stratigraphy of the boreal Bathonian of northeastern Greenland was particularly important. The term "boreal Bathonian of northeastern Greenland" was proposed by John Callomon for the interval including the Upper Bajocian–Bathonian. His own detailed studies of the Bathonian–Callovian sections showed that the zonal ammonite-based scale for this interval cannot be directly correlated with the standard zonal succession of the Bathonian and Callovian. The interpretation of the boreal Bathonian proposed by John Callomon was different from that used by Soviet and Russian authors as it included a part of the boreal Callovian. Time showed that John Callomon was right, and his interpretation is accepted in the modern standard zonal scale of the boreal Jurassic developed by a team of Russian authors. Infracallovian biostratigraphic units–biohorizons (faunal horizons) is another innovation of John Callomon.

From the 1960s, various workers attempted detailization of existing zonal ammonite scales for the Jurassic, but the principles of recognition of these strata were not developed. In the proceedings of the Luxembourg Jurassic symposium, John Callomon (Callomon, 1964) proposed definitions and principles of recognition of zones, subzones, and horizons based both on the number of taxa used for substantiation of these units and on their spatial distribution. Later John Callomon proposed a comprehensive definition of infracallovian biostrata (biohorizons or faunal horizons) which were interpreted as minimal undivided biostratigraphic units (Callomon, 1984). By that time, mostly through the efforts of English and French ammonite workers, these infracallovian units were recognized in all Jurassic stages. Beginning from the 1980s, this method was accepted by scientists in other countries. From the late 1990s, biohorizons became widely

used by many Russian workers: D.B. Gulyaev, V.V. Mitta, D.N. Kiselev, M.A. Rogov, and others. The inclusion of biohorizons in the ammonite scale allowed a high level of precision of correlation of sections of the Siberian and eastern Greenland Upper Bajocian–Callovian and detailed correlation of the Kimmeridgian–Volgian boundary interval with its Tethyan equivalents. In the recent decades, biohorizons became recognized by Cretaceous specialists, and now zonal scales with biohorizons are proposed for most Lower Cretaceous stages of Western Europe.

In July 1977, John Callomon visited the USSR. He participated in the International colloquium on the Upper Jurassic and the Jurassic–Cretaceous boundary which took place in several cities: Novosibirsk, Tyumen, Ulyanovsk and Leningrad. He presented two reports at that colloquium, “On chronostratigraphy of the Jurassic–Cretaceous boundary” and, together with Tove Birkelund, Professor at Copenhagen “Comparison of the Upper Jurassic–Lower Cretaceous sections of the Andøya Island of Northern Norway and Milne Land in Eastern Greenland” (Birkelund and Callomon, 1977; Callomon, 1977). Analyzing the chronostratigraphy of the Jurassic–Cretaceous boundary beds, John Callomon came to the conclusion that stages should be recognized in each large paleobiogeographic unit, as a sum of ammonite zones forming a standard succession. He recognized four provinces in the terminal Jurassic – Sub-Mediterranean, Anglo-Saxonian, Russian Platform, and Boreal. The idea of the need for specific standard successions in large regions is particularly important for Subpolar regions where stages are extremely difficult to follow, as their stratotypes are in the western Mediterranean region. Hence, standard zonal scale for the Jurassic and Cretaceous contributed significantly to the development of John Callomon’s ideas, as well as of another well-known English specialist in the upper Jurassic ammonites stratigraphy, i.e. John Cope.

The acquaintance with leading Russian specialists V.N. Saks, G.Ya. Krymgholz, M.S. Mesezhnikov, and an international trip to the best sections of the Upper Jurassic and Lower Cretaceous in the Subpolar Urals (basin of the Severnaya Sosva) (see photograph) made John Callomon very attentive to publications of Russian authors. John Callomon’s opinion on various problems of the Boreal Jurassic was sought and considered important. For instance, one of the letters sent to V.A. Zakharov (July 26, 1999), he wrote about the boreal zonal Mesozoic standard proposed by Russian scientists: “You have completed an excellent revision and summarized the Siberian Mesozoic. How much has changed in the past 30 years!”. He evaluated highly a Jurassic–Cretaceous eustatic curve developed in the sections of the East European- and Siberian platform. He was Chairman of the Callovian Working Group and showed considerable interest in the studies on the

Bathonian–Callovian boundary deposits. Therefore he, with ongoing interest, followed the studies of Russian stratigraphers studying this interval (D.B. Gulyaev, D.N. Kiselev, V.V. Mitta and M.A. Rogov) and favorably and quickly reacted to publications of new successions of biohorizons, the discovery of the marine Upper Bathonian in Middle Volga area, and the proposal of one of the Russian sections (Prosek) as a candidate for the Callovian GSSP. Although John Callomon thought that the best section for establishing the GSSP at the base of the Callovian is the Albstadt-Pfeffingen section in South Germany which his Working Group proposed in 1990, he considered Prosek as an important auxiliary section for this level.

John Callomon was one of those people who enjoy the simple pleasures of life. For instance, he was one of the founder members of the vine club at the Chemistry Department of “Bentham Fine Chemicals” with friendly meetings of like-minded people. Talking about the GSSP Bajocian choice in Cabo Mondego (Portugal), John emphasized that the best features of this locality are a favorable climate and a good fish restaurant nearby.

In his last days not wishing to leave the garden unprepared for next year John worked with a spade making everything good once he had gone. He put his finances in order and sent messages to friends finishing with the words “over and out” and stated to Horace Sanders “I do not fear death but greatly regret leaving as there is so much in the Jurassic left to do”. Friends of John, heard that he had died on April 1st. In England this is April fool’s day and many thought at first it was a joke! It was impossible to think he had gone. His illness did not distract him from his work. He asked his friends to remember him “in action, in the field”. The funeral took place on April 12, 2010 near his home in Brookmans Park. It was followed by a celebration of life at the Chemistry Department of University College on June 15th attended by his friends family and many prominent scientists of geology and chemistry. He is survived by his wife Esther and their three sons: Peter, Martin, and Paul. John wished for his ashes to be scattered by friends from the top of the Golden Cap in Dorset. This wish was completed by Robert Chandler, John’s sons, friends and the Wessex Cephalopod Club on December 4th 2010. On this day most of England was deep in snow, but on the Golden Cap the sun shone and the fields were green. We hope that some of his ashes reached the fields of Russia, where studies of the Boreal Jurassic beds will always be associated with the works of John Callomon.

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Reviewer Yu.B. Gladenkov

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