

PIONEERS OF THERMAL ANALYSIS IN CZECHOSLOVAKIA

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At the Meeting of the ICTA Council at Liblice near Prague (15–18 August 1985) and the 8th ICTA in Bratislava (19–23 August 1985), an exhibition entitled “Tradition in Thermal Analysis in Czechoslovakia” was arranged by M. Nevřiva. The unusual interest in this exhibition shown by participants inspired us to write this contribution, devoted to the life and work of the five most famous thermoanalysts in Czechoslovakia, considered to be pioneers of thermal analysis. The first is the Czech pedagogue, philosopher and writer Johannes Amos Comenius [1]. The development of classical thermal analysis in Czechoslovakia is connected with Otakar Kallauer and Josef Matějka. About 15 years later, Stanislav Škramovský became known as an enthusiastic supporter of thermal analysis not only in Czechoslovakia but in many respects also in the world. Rudolf Bárta, an active organizer and one of the initiators of ICTA, died only 2 years ago [2].

JOHANNES AMOS COMENIUS (1592–1670)

The most famous person in Czech cultural history, Johannes Amos Comenius, was born on 28 March 1592 in Nivnice, Moravia. He attended school in Přerov from 1608, then proceeded to study theology at the University of Herborn and later Heidelberg. When he returned to Moravia in 1614, he became a teacher in Přerov and a pastor in Fulnek. After the unfortunate battle at the White Mountain (Bílá Hora) in 1620, life became very difficult and he had to go in hiding in various places before emigrating to Leszno (the Polish centre of the Unity of Brethren) in 1628, where he

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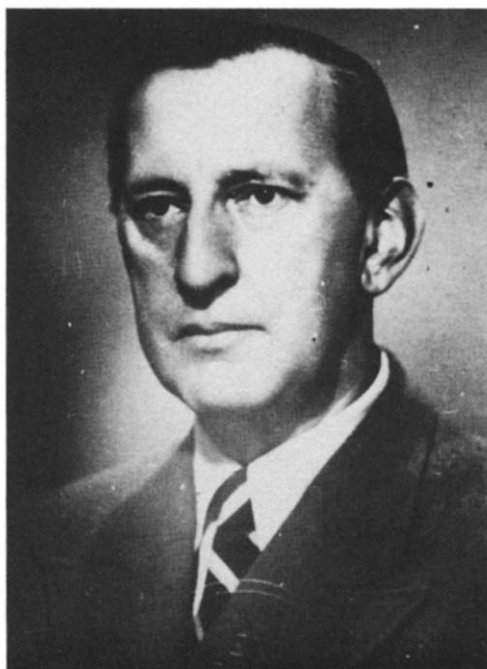
became bishop and rector of the Gymnasium. In 1641, he accepted an invitation from Samuel Hartlib to help to reform the school system in England. In the next year, however, having obtained two similar requests—one from Cardinal Richelieu in France and the other from Chancellor Oxenstierna—he chose the latter and moved to Sweden, where he remained until 1648, when, disappointed with the Treaty of Westphalia, he returned to Leszno. At the invitation of Zigmund Rakoczy, he spent 1650–1654 in Hungary; afterwards he returned to Leszno. After the destruction of his valuable library in the Swedish-Polish war, he made his home in Amsterdam, where he died on 15 November 1670. He is buried in Naarden.

In his work he solved both philological questions, e.g., *Linguarum reserata* (1631), i.e., “The open door to languages”, and educational questions, e.g., *Orbis sensualium pictus* (1658), i.e., “The world of senses illustrated”. Nevertheless, his place in the history of philosophy belongs to Comenius for his whole life’s effort to unify the total human knowledge on a single principle, to create pansophy. His most famous work in this field forms seven volumes, containing “*De rerum humanarum emenditione consultatio catholica*”, i.e., “General discussion about the amendment of human affairs”. In addition to his educational and pansophic books, Comenius wrote several scientific works: “*Physicae ad lumen divinum reformatae synopsis*” (1642) [3], i.e., “Survey of physics reformed by divine light”. The most important

work of Comenius on heat is his “Disquisitiones de caloris et frigoris natura ...” (1659) [4], i.e., “Discourses on the nature of heat and cold, true knowledge of which is the key to many secrets of nature”. From the thermoanalytical viewpoint, the most interesting part of the book is Chapter 3, which starts with: “To observe clearly the effects of heat and cold, let us take a visible object and let us observe the changes that occur on heating and cooling so that the effects of heat and cold are apparent to our senses”. This statement surely embraces the aim of all thermoanalytical experiments and gives Comenius a prominent place among thermoanalysts not only in Czechoslovakia but also in the world.

OTAKAR KALLAUNER (1886–1972)

Professor Kallauner was born on 7 December 1886 in Klatovy, Bohemia. He graduated from the Technical University, Prague, and after receiving his PhD he went to the Institute of Refractory Materials and Ceramics at the Royal Technical University, Wrocław. In 1910 he became Assistant Professor at the Technical University in Brno and in 1914 he was appointed Professor, becoming the youngest Professor at that University, where he was active until 1952. He died on 6 August 1972 in Brno.



Professor Kallauner laid the foundations of the chemistry and technology of silicates in Czechoslovakia. His investigations in the field of cement were of great importance for the construction of the largest water dams of the period. He was among the founders of the Czech Technical University in Brno before the Second World War and he also acted in its renewal after the War. He published more than 700 papers and 5 books, influenced the professional education of more than three generations and was well known far beyond Europe.

JOSEF MATĚJKA (1892–1960)

Professor Matějka was born on 1 April 1892 in Česká Třebová. He completed his studies at the Technical University, Prague, in 1913 and in the following year he obtained his PhD in technical sciences from the same University. After the First World War he became Assistant Lecturer at the Technical University, Brno. From the same University he obtained an extraordinary Professorship in 1929 and in 1937 he was appointed Professor. In 1951 he moved from Brno to the Technical University in Bratislava. He died on 18 April 1960 in Brno.

Professor Matějka became famous in the field of the chemistry and technology of silicates in Czechoslovakia. In 1914 he elaborated, together



with Professor Kallauner, a new method of rational analysis [5]. In his most important treatise, Matějka was the first to describe the quantitative determination of the mass content of kaolinite in soils by thermal analysis [6,7]. His authorship of 520 scientific and technical works and 5 books in the field of ceramics illustrates his activity, which influenced the progress of this scientific discipline not only in Czechoslovakia but also in the world.

STANISLAV ŠKRAMOVSKÝ (1901–1983)

Professor Škramovský, the father of thermogravimetry in Czechoslovakia, was born on 24 November 1901 in Kolín, Bohemia. He studied at the Faculty of Science of Charles University, Prague. After finishing his studies he started work as Assistant at the Institute of Pharmaceutical and Applied Chemistry. In 1929 he obtained his PhD in natural sciences from the same Institute. He qualified as a University Lecturer in Inorganic Chemistry at the Charles University in Prague in 1936. During the Second World War, when the Czech Universities were closed, he worked as Head of the Laboratory of Professional Medicine at a Prague clinic, where he became acquainted with the problems of medical chemistry. For this reason he was called, after the War, to the Institute of Medicine of Charles University in

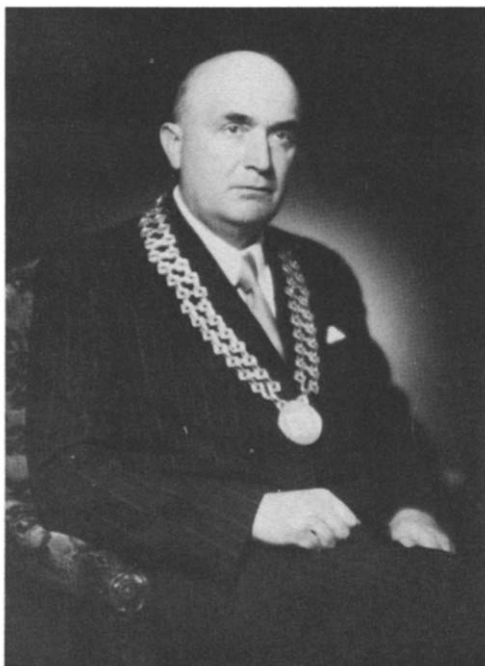


Hradec Králové where, in 1946, he was appointed Professor. From 1950 to 1953 he was the Head of the Institute of Inorganic and Forensic Chemistry at Charles University in Prague and from 1953 to 1970 he acted as Head of the Department of Inorganic and Forensic Chemistry. Professor Škramovský died on 18 August 1983.

His wide scientific activity covered inorganic, analytical and medical chemistry. The investigation of the thermal decomposition of organic compounds led him, in 1932, to the construction of an apparatus he named a stathmograph [8], the name being derived from the Greek “stathmos”, weight. Professor Škramovský applied his apparatus to the investigation of a large number of inorganic compounds. He even applied thermogravimetry in domains where it became commonly used only several decades later, e.g., in pharmacology.

RUDOLF BÁRTA (1897–1985)

Professor Rudolf Bárta, one of the strongest proponents of thermoanalytical techniques, was born in Prague in 1897. He started as a skilled worker in his father's cement and lime factory. In 1918 he graduated (M. Eng.) from the Technical University, Brno, and in the following year he obtained a PhD



from the same University. In 1927 he was promoted from Assistant Lecturer to Assistant Professor and later moved to the Technical University, Prague, also as an Assistant Professor. In 1938 he received a Personal Professorship in Glass and Ceramic Industry. Between 1919 and 1941, in addition to his academic duties, he also held various managerial and consulting posts in the building industry. His fruitful work was interrupted in 1941 by his imprisonment in the concentration camps at Terezín and Oswiecim. After the War he was appointed Professor at the Institute of Chemical Technology, Prague, and from 1952 to 1953 he was Vice-Dean of the Institute. A serious illness, brought on and aggravated by his sufferings in the concentration camps, forced him to retire from most of his activities in 1974 [9]. Professor Rudolf Bárta died on 1 March, 1985.

In addition to his educational activities he also initiated three journals: *Stavivo* (Building Materials) in 1920, the *Archive for Industrial History* in 1932 and *Silikáty* (Silicates) in 1957. The last one (which he edited until fairly recently) rapidly acquired a world-wide reputation for its high standards and studies devoted to thermal analysis. He also took a very keen interest in the ICTA, serving on the Organizing Committee of the 1st ICTA (1965) as Vice-President (1968–71), being appointed Honorary President for the period 1971–74.

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