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History of hard and soft coal exploration in Hungary till 1945

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The serious interest in coal exploration was evoked in Hungary by the Imperial and Royal Order of Mary-Therese offering 50 golden sovereigns revard to those discovering new pits, soft or hard coal deposits. Although a big number of discoveries were announced, no significant mining activity started as yet, due to to lack of demand.

In the first decades of the 19th century the industrial consumption of coal began all over Europe, involving also Hungary. Mining was not preceded by systematic geological exploration the more because no Hungarian geologists were available to carry out the task.

Geological exploration for coal was started by the geologists of the Imperial-Royal Geological Institute, Vienna showing some very valuable results, not seldom of basic importance, in different coal basins in Hungary.

When after the tragic end of the Liberty War in 1848/49. the restrictions of retorsion were lifted and Hungarian geoscience began to be developed gradually, Hungarian geologists joined the coal exploration activity more and more. The Hungarian Geological Society, founded in 1848 accentuated the importance of coal exploration already in 1867, the year of agreement between Austria and Hungary.

The Hungarian Royal Geological Institute was organized in 1869, and began the systematic geological mapping of the country. The evaluation of the results of geological surveying in the field, based upon profound laboratory examination of the collected materials were consecutively published opening the path for systematic and well planned coal exploration.

One of the most excellent examples of application scientific results for practical mineral exploration is the stratigraphical work of Miksa HANTKEN, a paleontologist of European reputation. HANTKEN succeeded by the accurate determination of some typical *Nummulina* species to draw up the stratigraphy of the Eocene coal deposits, being the most significant in Hungary, facilitating the correlation of Eocene occurances in the different districts of the country, thus promoting the survey of Eocene coal deposits.

The geological survey of the Hungarian Miocene soft coal deposits, second in importance to those of the Eocene, was started by József SZABÓ, the master architect of the Hungarian geological organization, with the examination of the Salgótarján coal basin already in 1852.

The geological tasks in the lower-Liassic hard coal basin in the Mecsek-Mountain (the only one in present Hungary) were carried out mainly by Austrian geologists even after 1867, being the mines owned by the First Danube

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Steamshipping Company, founded by the Hungarian count I. Széchenyi, yet of Austrian ownership. Hungarian geologists began to join the staff only in the last decades of the century.

In contrast, the other hard coal deposit in Old-Hungary: the Zsil basin in Transsylvania was surveyed already from the beginning by some Hungarian geologists being the Hungarian Fiscus most interested in the production. The geological survey of the Zsil-basin supplied the material for the first Hungarian paleobotanic monography, working up the Aquitanian flora and published by Mór STAUB in 1887.

The above period of Hungarian coal exploration, connected very strongly with the activity of Miksa HANTKEN, can be concluded with the discovery of the Tatabánya Eocene coal basin in 1896, preparing a strong basement of florishing mining continued even today.

The outstanding significance of HANTKEN's work is indicated also by the fact, that the first mining-geological book in Hungarian language, summarizing the coal-deposits of Hungary was written by himself, published in 1878. The fast development of Hungarian geology in one or two decades is well indicated in the book by numerous quotations from the publications of several Hungarian authors.

The very successful work completed in the Tatabánya-basin coincided with increasing demand for coal, due to fast growing industrialization and railway network. In 1846 the total length of Hungarian railway tracks made 35 km only, increasing to 14878 km in 1896.

The requirements of industrial and economical development could not have been satisfied without the similar development of the geological science in Hungary. Some prominent Hungarian geologists were active in this period taking part directly or indirectly in coal prospecting. This was the Era of the second classical generation of Hungarian geologists.

As an example Ferenc NOPCSA can be mentioned. He reached world fame by his scientific research on Sauria. He clarified the geological structure of Southern-Transsylvania giving new impetus to coal prospecting in the Zsil-valley.

The explosion-like developing mining activity in the Dorog basin created new problems. The shafts driven into bigger depths and the growing coal mines came more often in unexpected contact with the carstic water flooding at the turn of the century. Mining was severely hampered and came nearly to its end. To save the basin, geologists joined the common efforts. This was the school in which Hungarian hydrogeology reached international authority.

The period was terminated by the publication of the handbook: „The iron ore and coal reserves of the Hungarian Empire", written by Károly PAPP in 1915. The book, giving an account even of the smallest occurrences, is a valuable source of information still today.

The upswing of Hungarian coal mining was broken by the first World War. Following the lost war the energy supply of the, area strongly reduced, to the country was of crucial importance to strengthen the demolished economy. Coal should be supplied from local sources, due to restricted import possibilities, provoking an increased interest in coal exploration. Geological exploration was much hindered by the more and more worsening economic situation and inflation, yet it could not be stopped.

The leading geologist in this period was István VITÁLIS, exploring and developing the coal reserves of the country well over some 32 years. Alone the enume-

ration of his mining-geological works would fill several pages. His most successful works were carried out in the Eocene coal basins. While reworking the rock sample materials of prospecting drillings completed in 1900—1902 and declared as barren, he recognised that the drillings were terminated before reaching the main coal level. The prospecting wells recommended by him and carried out in 1923 discovered some 70 million tons of new reserves alone in the Nagyegyháza area. Utilizing these results, in the last years the amount of known reserves were considerably increased by recently completed prospecting wells and one of the biggest investment of our present time began to make recovery possible.

Further, very intensive exploration activity was carried out also in other coal basins of the country. The amount of coal reserves were multiplied by the work of Elemér VADÁSZ, Károly TELEGDI-ROTH, Jenő NOSZKY SEN., Zoltán SCHRÉTER and others, laying a solid foundation to the development of Hungarian coal mining. In addition practical results, several scientific results were obtained in nearly every respect of coal-geology.

The vehement argumentation about the Oligocene—Miocene boundary e.g., provoked by the exploration of the Nógrád coal-basin, gave impetus to further, more profound, scientific research.

Soon some new fields of research appeared as well. For instance at the beginning of the thirties Elemér VADÁSZ promoted the introduction of coal-petrological examinations on Hungarian coals, and began the first investigations with E. STACH together.

It is very typical for the period, that utilizing the results of numerous detailed investigations several monographies were consecutively compiled, discussing intensively the mining-geological conditions of Hungarian coal-basins. While reviewing the mentioned monographies it is interesting to note, that all these were published by the Hungarian Geological Institute as the Institute considered always as a main task to disclose the scientific results of coal prospecting in Hungary for the public.

Similarly to the previous periods also this period has its own summarizing publication: „The coal occurrences of Hungary", written by István VITÁLIS in 1939. The book is an important source of information for every researcher, dealing with mining-geological problems even today.

The efficiency of coal prospecting between the two World Wars is clearly shown by the development of known reserves, which were doubled between 1918—1938 by the addition of some 730—760 million tons of new reserves, praising the work of the generation of the above period. Yet the still more important result of those geologists was the solid foundation of the most recent prospecting work, the scale of which was never immaginable before, yielding some more thousand million tons of new reserves and securing further long-time development of Hungarian coal mining.