



MENTE ET MALLEO THE CHIEF GEOLOGIST OF POLAND

Polish geology — tradition and experience

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The 32nd International Geological Congress in Florence (16–26 August, 2004) provides a welcome opportunity for presentation of former and recent achievements of Polish geological thought on a worldwide forum. Polish geology has long and exquisite tradition. Mines existed within the current territory of Poland already some three thousand years BC. Near Kielce (Central Poland) banded flints were excavated and used to produce various neolithic tools. Salt mining near Wieliczka (Cracow Upland) dates back to the 11th century; the Wieliczka Salt Mine, because of its unique values, has been added to the UNESCO World Heritage List in 1978. Also during the Middle Ages began mining of metal ores, including silver, near Olkusz (Cracow Upland). Records on underground exploitation of coal in the Upper Silesia go back to 1740. The science of geology in Poland has history extending back to the 18th century; at that time the fundamentals of mining law were also established. First Mining Academy was founded in Kielce by a pioneer of geological thought, Stanisław Staszic. He was also the author of Poland's first geological map, published in 1806 and of the first description and assessment of national mineral resources. In 1833–1837, the first exhaustive professional monograph on the geology and paleontology of Poland was published by a Professor of geology and mining at the Cracow and Freiberg universities, Georg Gottlieb Pusch. Paweł Edmund Strzelecki, member of the Royal Society in London, provided pioneering data on the geology of Australia and Tasmania; Ignacy Domeyko developed mining in South America, published the first geological map of Chile and descriptions of the country's rich natural resources; Aleksander Czekanowski organised first geological expeditions to Siberia and Mongolia; a similar expedition was also undertaken by Jan Czerski in 1871–1873. At the turn of the 19th century Wawrzyniec Teisseyre discovered the transcontinental tectonic suture running across Poland and known now as the Teisseyre-Tornquist Zone. Discoverer of the kerosene lamp (in 1853), Ignacy Łukasiewicz was the first geologist worldwide to exploit oil (from the Bóbrka field in 1854). This commenced the blooming of the oil industry in SE Poland (then Austro-Hungarian province Galizien), peaking in 1909.

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In 1919, the Polish Geological Institute in Warsaw was established, also as the national geological survey. The 1918–1939 period was marked by intensifying coal mining in the Upper Silesia and extraction of oil from the Forecarpathian area. It was also time of developing Polish geological sciences. Research by Prof. Jan Samsonowicz opened perspectives for discovery of large coal resources in the Lublin area, later confirmed. Paleontological studies by Prof. Roman Kozłowski, especially on graptolites, gained wide recognition; Earth sciences have been enriched with new, biologically oriented research on fossils. Prof. Henryk Makowski developed a theory of sexual dimorphism in ammonites. During the 1950s and 1960s many discoveries of sulphur, copper, oil, gas and brown coal expanded the known mineral resources of Poland. Oil and gas have been successfully exploited since the 1980s from the Baltic undersea reservoirs. Then new resources of hydrocarbons were identified throughout northern and western Poland. The used-up gas reservoirs are turned into underground storage tanks enhancing the energy safety of the country; out of seven such stores, the largest is located in Wierzchowice (Lower Silesia). Surveys conducted since the 1970s located amber deposits along the Baltic shore; currently, prospecting expanded to the marine area within the state border. Since 15 years Poland participates in deep-sea research as a member of the *Interoceanmetal* consortium. The cooperation resulted in documenting resources of polymetallic nodules in the Clarion-Clipperton Field (Central Pacific). The Hydrogeological Survey is organized in a unique way, attracting interest from many other countries.

Another important discipline is geological mapping. The whole country has been covered with serial geological maps, both general and thematic, in 1 : 200,000. Another achievement, outstanding in Europe and worldwide, is elaborating the *Detailed Geological Map of Poland* in 1 : 50,000 scale, together with thematic maps. Now most of the country is already charted, and the remaining sheets will be published within the next few years. The *Hydrogeological Map of Poland* in 1 : 50,000 scale is already completed. Polish geologists are actively involved in major European and global research projects. Because the country is located at the margin of the East European Platform and the Central European tectonic units, Poland participates in international geophysical projects aimed at studying deep geological structures, such as the seismic experiment POLONAISE'97 or CELEBRATION 2000 — the largest such operation in the world. Accession to the European Union and opening of Poland towards the European markets means new challenges for Polish geology. The tradition and experience in geology and mining, together with growing economy, make Poland a reliable partner in international investment projects aimed at geological resources.

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