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Geology of evaporite-bearing formations – a tribute to Aleksander Garlicki

This issue of Geological Quarterly is dedicated to Professor Aleksander Jacek Garlicki on the occasion of his 80th birthday, and the authors – former students, collaborators and admirers (often all three at once) – decided to express their appreciation for his achievements and his role in the geology of evaporites during the last half of the century. The photo shot in 2010 by T. Toboła shows Professor Garlicki by his desk, in the room that for decades was a mecca for geologists and mining engineers both from Poland and abroad: a room where, in addition to colleagues expressing ideas and discussing current problems of geology and the mining of salts and other evaporite deposits, the host served an excellent, Chartreuse-like liquor we called "garlicówka".

Aleksander Garlicki was born and educated in Kraków – the capital of Poland for over half a millennium before it was moved to Warszawa in 1596. The Weliczka salt mine – situated 12 km SE of the centre of Kraków – once played a great role in the economy of the Polish Crown, as at the time one-third of its income came from salt taxes, which was used, for example, to pay the professors of the Kraków Academy.

He completed his university studies at the Faculty of Exploration Geology of the AGH – University of Mining and Metallurgy (current name: AGH University of Science and Technology) in Kraków in 1956, gaining the M.Sc. and engineer title in geology and the exploration of salt deposits, and began his geological career at the Geological Institute (current name: Polish Geological Institute – National Research Institute) in Warszawa, in the Department of Salt Deposits and Chemical Minerals. In 1962, he was transferred to the Carpathian Branch of Geological Institute in Kraków where with time he became the head of the Laboratory of Salt Deposits and then, in 1971, the associate professor. In addition, in 1959–1966, he had a part-time position in the Bochnia Salt Mine and in another salt mining enterprise ("Hydrocop"). While working for the Polish Geological Institute, he was awarded a doctorate at the Faculty of Exploration Geology of the AGH in Kraków in 1964; his doctoral thesis dealt with the autochthonous salt deposits of the Carpathian Foredeep between Skawina and Tarnów (southern Poland), was supervised by Professor Józef Poborski and published in Biuletyn Instytutu Geologicznego, ***215*** *in 1968, and awarded the K. Bohdanowicz Prize in 1969.*

In 1972 he received the fellowship of the U.S. State Department and spent a year at the Colorado School of Mines in Golden as a visiting professor. After coming back to Kraków, he transferred to the AGH in Kraków and worked there until his retirement in 2002. In 1977 he received a D.Sc. degree based on his thesis Sedimentation of Miocene salt deposits in Poland*, which was published two years later in* Prace Geologiczne*, **119**, and became a milestone in evaporite geology. Then, in 1985, he received the scientific title of professor.*

During his academic years, he supervised 78 M.Sc. theses and 8 doctoral theses, and his educational achievements went hand in hand with successful organizational, publication and expertise activities. For most of his time at the AGH in Kraków he served as the elected head of various organization units (such as the director of the institute, dean of faculty, and, in 1990–1993, First Vice-Chancellor of the AGH University of Science and Technology). He was also, since 1998, the President of the Museum Council of the Kraków Salt Works Museum in Wieliczka.

As of now, Aleksander Garlicki has published 118 papers; sixteen papers were published after his formal retirement, which clearly indicates his continued scientific activity. He was also co-author of over 250 unpublished reports, including five documentations of salt deposits in Poland. Almost one-sixth of his papers were published in Kwartalnik Geologiczny *(current name:* Geological Quarterly*) between 1961 and 2012, thus it is no wonder that* Geological Quarterly *is proud to have the honour of commemorating his jubilee with this thematic issue – its content reflects the scientific interests and the achievements of Aleksander Garlicki.*

The first set of papers deals with the Miocene of the Carpathian Foredeep Basin in Ukraine (four papers), and in Poland (four papers, including three papers dealing with the Wieliczka Mine). O. Hnylko discusses the origin of the olistostromes at the front of the Ukrainian Carpathian orogen related to Early and Middle Miocene synsedimentary thrust movements of the Carpathian accretionary prism, and N. Oszczypko et al. *characterize the Lower Miocene Dobrotiv Formation interpreted as a deltaic succession showing a transition from a fan-delta to a fluvial coastal plain. A. Galamay* et al. *present new determinations of sulphur isotopes in anhydrites from Badenian salts of the Hrynivka area, and D. Peryt* et al. *characterize foraminiferal and palynological records of the Late Badenian transgression in Shchyrets near Lviv. P. Krzywiec* et al. *discuss the structure and evolution of the Carpathian thrust front between Tarnów and Pilzno (southern Poland) based on the integrated analysis of seismic and borehole data. M. Gonera* et al. *present taxonomic and quantitative analyses of the Wielician foraminifers from the stratotype locality, Z. Sawłowicz* et al. *characterize secondary halite deposits represented by various forms of speleothems, and K. d'Obyrn and A. Postawa assess the qualitative and quantitative stability of the Wieliczka brines and their possible use in medicine.*

The second set of papers deals with the Zechstein evaporite basin. M. Jasionowski et al. *deal with dolomitization of isolated reefs in the Wuchiapingian Zechstein Limestone of SW Poland, and K. Dyjaczyński and T.M. Peryt present controls on basal Zechstein evaporite deposition in that region, and conclude that the deposition occurred in a far more complex and dynamic system than was previously assumed – what results is that instead of three conventionally recognized evaporitic units in the PZ1 cycle, five units occur. J. Paul describes gypsum domes and diapirs formed very early in the diagenetic history of German Zechstein, and T. Toboła discusses the influence of tectonics on the petrological characteristics of anhydrite and anhydrite-halite intercalations in the Oldest Halite of SW Poland. The next three papers discuss various aspects related to the Kłodawa Salt Structure in Central Poland. J. Wachowiak and T. Toboła document phase transitions in the borate minerals clearly indicating that – at least locally – temperatures exceeded 339°C, S. Burliga presents analysis of folds showing that the Zechstein siliciclastic-evaporitic succession is heterogeneously folded, and M. Wagner and S. Burliga demonstrate that coalified bitumens provide evidence for the migration of hydrothermal fluids in Zechstein deposits.*

The third paper Aleksander Garlicki ever published dealt with the Devonian evaporites of Belarus – and hence the third set (consisting of one paper), an overview by A. Makhnach et al. *of anhydrite and gypsum in the Devonian and Permian evaporite lithofacies of Belarus, acknowledges this field of his interest.*

The fourth and final set of papers deals with historical aspects of the geology of salt deposits. A. Harding considers the nature and extent of salt production in prehistoric Europe, and in light of recent fieldwork E. Szychowska-Krąpiec and K. Dudek present results of dendrochronological analysis of spruce wood from the Wieliczka Salt Mine, J. Rajchel et al. *present examples of the usage of alabaster from the Ukrainian Carpathian Foredeep Basin in the architecture and sculpture of Kraków, and in the final paper devoted to geological cartography in Poland in the 19th century, S. Wołkowicz and K. Wołkowicz reproduce, amongst others, a cross-section through the Wieliczka Mine, drawn by R. Townson, and a drawing of the Mine given in the 18th-century Great French Encyclopedia.*

On behalf of the contributors to this volume we would like to wish Professor Aleksander Garlicki a lot of satisfaction of his past, present, and future achievements. May he enjoy good health, success, personal happiness, and the profound friendship of his colleagues. Plurimos annos!

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