

Arpad Lorberer: 1941-2019

senior of Hungarian karst Hydrogeology

Mr. Arpad Lorberer was born in 1944 and grew up in a small village at the NE part of Hungary as a child. His mom died when he was nine years old – he had to move to Budapest where he lived together with various relatives for a couple of years.

He attended to a live-in secondary school – actually in one of the three catholic schools which were allowed to remain in Hungary during the Stalinist era. He lived in the city of Esztergom as a live-in student of the Franciscan monks between 1955 and 1959, surviving the 1956 revolution there.

He was a serious boy, blessed with an exceptionally good memory, so school and academic achievements, as well as learning different languages were relatively easy for him.

Arriving from a religious school and a gentry noble background, he was not accepted to any Universities at first, so he started working as a technician at the newly created Water Research Institute of Budapest (VITUKI). He could get into the Budapest Technical University after a year, graduated as a civil engineer there in 1966.

Mr. Lorberer joined to the University's Caving Team as well as the Alpinist Group of the Hungarian Geographical Society as student, and enthusiastically took part in their expeditions. He also learnt Polish on his own and joined the Speleotem Team of Chęstochowa, Poland. He attended international hiking and cave-exploration meetings in the Carpathian mountains and in the Alps. His interests regarding underground karst systems, and tectonics can be traced back to his first caving and hiking experiences.

He first worked for the Water Authorities and worked on various surface and subsurface designs, and he was a member of the flood disaster protection team in times of need. He was allowed and supported to earn a second degree as Engineering Geologist. That way he succeeded to become a Geoscientist, and become a well-known first generation Hydrogeologist of Hungary. He wrote a PhD about his biggest design project in 1973, in which he identified and described the first recognized dual porosity aquifer around the city of Satoraljaujhely.

He started to work for the Groundwater section of the Water Research Institute in 1972, where he remained until the company was finally shut down in 2012.

It was a vibrant environment, where applicable research was appreciated. His main research area was to describe and help utilizing the karst and thermal aquifers of the country. Bauxite and coal-mining affected seriously the main Transdanubian karst aquifer between 1965 and 1985, so his work, which included the yearly regional groundwater-level map of the area was supported and appreciated.

He applied the detail-oriented multi-data-based mining geological interpretation methods for regional Hydrogeology, creating a large set of maps, tectonic and hydraulic sections, using mainly manual interpretations before the computer era. He had several projects in which he wrote detailed reports about the Hydrogeology and thermal capabilities of nearly all famous thermal spas of Hungary, including Budapest, and the thermal lake of Heviz, as well as Geothermal Heating and Energy Plans (Tura, Veresegyház).

Following his predecessors, he presented a more detailed description of the Budapest thermal karst flow system – the theoretic flow models he presented with Mr Alföldi could be applied to several other mountain-edge thermal karst flow around the world. His sections were included in the National Atlas of Hungary as well as in the teaching materials of the International Postgraduate Hydrologic Courses run by VITUKI.

His knowledge regarding Geological and Hydrogeological data of more than a thousand thermal wells become legendary. He became one of the most successful and respected old-school geothermal geologist of Hungary.

He never tried to make his own fortune based on his knowledge. He was known to present only his honest technical opinion about any project, even if his suggestions did not please local or regional politicians or investors.

He helped his local municipality as an environmental expert for twenty years. He was the vice-president of the Hungarian Geothermal Association between 1995-2003, then became a Honorary member here as well as in the Hungarian Hydrologist Association.

He was involved in several international projects, and presented his results in numerous conferences, including the huge International Geological Congress of Moscow in 1985. He was a founding member representing Hungary in the Mineral and Thermal Waters Committee of IAH since 1996, attended most of their meetings and organised a conference in Hungary as well.

Mr Lorberer had more than 50 scientific publications – most of them are about local Geology and Hydrogeology in Hungarian, with or without an abstract in English, German or Russian. The whole list is published on LinkedIn. Here we just present a shorter list of his main international publications – one or two more will be printed posthumously.

1. Lorberer, Á. (1979): **Hydrodinamische Untersuchung des 100-jährigen Thermalbrunnens Városliget-I., aufgrund der Daten von Wilhelm Zsigmondy** (in Hungarian with German summary) *Hidrológiai Közlöny – Hydrological Journal* Vol. 59/7. p.302-307
2. Kassai, M.-Szederkényi, T.-Lorberer, Á.-Rónaki, L. (1979): **Hydrogeological data from SE-Transdanubia as a part of marginal area of the Great Hungarian Plain and Drava Basin** *in: "Hydrology of great sedimentary basins"* Conference of IAH-IASH Budapest May/June 1976 *Annales Inst.Geol.Publ.Hungarici* Vol. LIX/fasc. 1-4 p.401-414
3. Lorberer-Szentes, I.-Lorberer, Á. (1979): **A study of relationship between ground water resources and subsurface geological structure in the NW part of the Great Hungarian Plain** (with French summary) *in: "Hydrology of great sedimentary basins"* Conference of IAH-IASH Budapest May/June 1976. *Annales Inst.Geol.Publ.Hungarici* Vol. LIX/fasc. 1-4 p.203-224
4. Liebe, P.-Lorberer, Á. (1978): **A study of the flow and temperature conditions in karstic thermal water reservoirs** *in: International Symposium on Karsthydrology* Vol. I. Karst water regime p.79-110 MTESZ-MHT-MMT edition, Budapest
5. Liebe, P.-Lorberer, Á. (1978): **A study of the flow and temperature conditions in karstic thermal water reservoirs** *in: International Symposium on Karsthydrology* Vol. I. - Karst water regimes p.79-110 MTESZ-MHT-MMT edition, Budapest

6. Lorberer-Szentes, I.-Lorberer, Á. (1979): **A study of relationship between ground water resources and subsurface geological structure in the NWrn part of the Great Hungarian Plain** (with French summary) in: "Hydrology of great sedimentary basins" Conference of IAH-IASH Budapest May/June 1976. Annales Inst.Geol.Publ.Hungarici Vol. LIX/fasc. 1-4 p.203-224
7. Lorberer, Á. (1980): **Hydrogeological characteristics of karst regions in Hungary** (in Polish with English and Hungarian Summaries) - *Kras i Spelologia - Karst and Spelology*, Vol.3. (XII) p.39-49 *Prace Naukowe Uniwersytetu Slaskiego - Scientific Works of the Silesian University, Katowice - Poland*, Nr. 385
8. Korim K. - Liebe P. - Lorberer Á. - Tóth Gy. (1984): **Subsurface waters of Hungary, Excursion Guidebook** 105 p. 52., 24 ábra *International Geological Congress - XXVIIth session, Moscow, USSR 1984. Központi Földtani Hivatal - VIZDOK SzLV edition*, Budapest
9. Lorberer-Szentes, I.-Lorberer,Á.-Maucha,L. (1994): **Hydrogeological research of karstic aquifers in Hungary** in: "Ground waters in carbonate rocks of the Carpathian-Balkan Mountain Range" - Belgrade, School of Mining and Geology, University of Belgrade - Jersey: Allston Holdint Co.p.237.pp.175-201 Institute of Hydrogeology - University of Belgrade, Serbia, Carpathian-Balkan Geological Association - IGC Project 299.
10. Korim, K.- Lorberer, Á.(1996): **Hydrogeological characteristics of the Devonian thermal water reservoir of Sárvár-Rábasömjén and Bük Spa** in: Proceedings of the 1st International **Geothermal Symposium Bad Kleinkirchheim** (Carinthia, Austria) Oct.29-Oct.31.1996., pp.29-40., Edited by ÖGG-KBGA-GBA-HGL and in: IAH-CMTW Internal Communications 1995. Enclosure Nr.8.p.34. IAH Commission on Mineral and Thermal Waters, Scientific meeting in *Dax, France*, 7-14. October 1995. Edited by IAH-CMTW, Vianen, Nederland
11. Lorberer, Á. (1997): **Lakespring Hévíz - the greatest thermal spring of Hungary "Hydro-petro-geology and Hungary" - A field trip across the country**, August 10-22, 1997. pp.291-198, Hungarian Geological Society, Budapest
12. Korim, K.-Lorberer,Á. (1997): **Hydrogeologic patterns of regional thermal water occurrences in the Little Hungarian Plain and the possibilities of their further development.** in: IAH-CMTW Internal Communications 1996. Enclosure 14. p.12, Figs.23. I.A.H. Commission on Mineral and Thermal Waters, Scientific meeting in *Espoo, Finland*, 31. August-8.September 1996. Edition par AIH Commission eaux minérales et thermales, Vianen, Nederland, and in: "Hydro-petro-geology and Hungary" - A field trip across the country, August 10-22, 1977. pp.161-181, Figs.27. Edited by the Hungarian Geological Society, Budapest
13. Lorberer Á (1999): **Harkány spa and the karst aquifer of the Villány mountains** IAH-CMTW Scientific meeting in Karlovy Vary, Czech Republic, October 8-13, 1999 & "The geology of today – for tomorrow" - A satellite conference of the ICSU World Conference on Science, 21-22 June, Budapest – Excursion guide book 23-24 June 1999, Stop 3. p.43-52. MTESZ-MhFT Budapest
14. Lorberer Á. (2005): **Hydrogeological characteristics of thermal karstic springs and wells of Budapest** In: Genesis and formations of hydrothermal caves, Budapest June 21-24.2004. conference volume KvVM-TH – MTESZ-MKBT Budapest, 2005.
15. Lorberer Á. (2005): **Some representative local geothermal anomalies due to heat convection in Hungary / Einige, durch Wärmekonvektion induzierte,**

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16. Liebe,P. – Lorberer, Á. – Maginecz, J.(2008): **The present state and development perspectives of the utilization of thermal waters and geothermal energy in Hungary** Symposium on Geothermal Energy Utilization in Central Europe – *Liptovsky Hrádok* 11-13. December 2008. p.8.