

THE WORKS OF CAVE EXPLORATION GROUPS

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More than 40 cave exploration groups of the Hungarian Speleological Society are currently active, and consist of communities of people with different professional training, interests and age.

There are groups specialized in cave sciences, while others focus on cave exploration. Special attention is due to groups which are self-taught, developing their own knowledge and practical skills. Groups with special features or contrasts are described in this review, which is intentionally not exhaustive.

Alba Regia Cave Exploration Group

The group was formed in the General Engineering and Communication Industrial School of Székesfehérvár in 1961. Its activity is closely associated with the exploration of caves on the Tés Plateau, eastern Bakony Mountains.

When the group started its work, there were only two minor caves known there, and the geology and geomorphology known at that time had indicated only limited speleological potential.

The primary goal of the group was the through geomorphological and speleological research of the Tés Plateau. A basic condition for the diverse, but intensive activity was the formation of a permanent research base, which was established at Csószpuszta in 1965. The research station, under continuous development from its own resources, became the centre of exploration and scientific research on the

Tés Plateau. The facility occupies 1700 m² and houses chemical and biological laboratories as well as mechanical workshops, stores and residential rooms with dressing-rooms and showers. A small exhibition room is also at the explorers' disposal and the centre of the Bakony Mountains cave rescue service is also accommodated here.

The core of the activities here is exploration, which has resulted to the survey of almost 150 caves on the Plateau. Several of these are deeper than 100 m and the Alba Regia Cave, with 3 km of passage, is the longest in Transdanubia. The major exploration successes have been founded on theoretical and practical scientific work and the regular evaluation of new results.

Most of the equipment necessary for regular explorations in the 5 km of caves on the Plateau was produced by group members themselves. The most outstanding are the several generations of electric and electronic instruments developed and employed in the past decades.

They conducted important biospeleological research in the caves of both the Plateau and the Bakony Mountains, and this led to the identification of 293 species. The primary task is the collection and identification of cave microfungi.

Other activities are hydrological, climatological, radiochemical, petrographic, mineralogical and pedological analyses in caves and on the surface; they also undertake volcanospeleological investigations all over the country.

Typical landscape of Tés Plateau with small sinkholes



The group presented a good example to be followed when it published the annual summary reports of research in a year-book. Survey data, maps, measurements, observations and the conclusions drawn from them provide the foundation for the gradual expansion of knowledge on the Tés Plateau.

The work of the group in the popularization of science is also important. They guide 200 cave tours in an average year involving 600—800 people. There are 10—15 annual lectures on the activities and results of the group, and these recruit new contributors to cave exploration in the area.

The group has a history of successes and forms a true cave-exploring community and acts as a decisive component of Hungarian speleology. This statement is also confirmed by numerous awards.

Bekey Imre Gábor Cave Exploration Group

The name of the group grew from its involvement with the exploration of the Pál-völgy Cave, greatly extended in length due to their work. Today the total length of this cave is almost 7 km and it is the third longest cave in Hungary.

Until the end of 1980 there had been no important exploration in this cave, since its discovery in 1904, although generations of Hungarian explorers visited it and attempted to advance further. Its survey in 1910 shown a length of 1,200 m.

The group was formed in 1979 and took the name of Imre Gábor Bekey, one of the first explorers of the cave. Studying the surveyed plan of the tectonically influenced cave, some points of attack were identified and then led to new explorations.

The length of the known cave grew year by year (Fig. 1). Almost simultaneously with the explorations, the new passages were surveyed. This allowed the efficient recognition of new points of attack and further exploration.

Along with the explorations, scientific observations were made and data collected. Geological mapping and geomorphological observations were continued to increase knowledge of the cave system and to provide preliminary information for further exploration. Sediment analyses proved that, during the history of the cave, water from the surface had found its way into the system, which was basically formed by thermal waters. The fluctuating water level of the intermittent lake at the cave bottom is regularly gauged. Climatic data, of air CO₂ content, temperature and air current at various places are gathered. They have long-term data records on the bats which spend the winter in the cave; when compared to observations from the fifties, these clearly show the ecological consequences of environmental change.

The annual reports contain the detailed presentation of scientific results and also the detailed exploration diaries, with photographs of excellent quality to illustrate their work.

The group of 20—30 people spend most weekends in the Pál-völgy Cave and they organize

explorers' camps for work requiring team effort. They take special care over the cave maintenance, building signed paths and providing guides for visitors.

Hajnóczy József Cave Exploration Group

For the students of the Hajnóczy József Grammar School of Tiszaföldvár (in the Great Hungarian Plain), summer camps of cave exploration have been organized on the Odorvár, southern Bükk Mountains, since 1963.

The teachers (Gy. Németh and L. Varga), who first conducted the cave visits and geographical work, found tasks suitable for secondary school children in the area, where interested pupils could be involved in the mysteries of ethnography, archaeology, biology, geography and, last but not least, the special excitement of speleology.

The first area of work was the Hasadék Cave at Odorvár, but after 10 years of perseverance the cave was still only 215 m long in 1971. Then, that year when opening a "fox-hole" they discovered the major cave named after their school, József Hajnóczy, and year by year they explored long additional sections. The stages of exploration are shown in Fig. 2. As a result of more than 15 years work by several generations of secondary school children, the Hajnóczy Cave is the 13th longest (2,250 m) and 15th deepest (117 m) cave in Hungary today.

The explorations are immediately followed by surveying and photographic documentation. Regular climatological measurements are made in the cave. Analysing the chemical composition of infiltrating and dripping waters the effect of acid rain in the cave environs is investigated. The diversity of the Hajnóczy Cave also allows morphological and morphogenetic observations. Since 1977 the Nuclear Research Institute of Debrecen performs radiation measurements in the cave.

The results are published in papers; eight of them were presented to students' scientific circles, and six were diploma works, one as a doctorate dissertation, and about 15 academic articles appeared.

The activity and results of the group prove a secondary school of progressive spirit and high level of scientific education can also succeed in cave exploration and motivate a generation which loves nature and protects the environment.

Papp Ferenc Karst Research Station

The station was established by the Budapest Technical University in 1957, at the initiative of Dr Ferenc Papp, Professor of Mineralogy and Geology. He set a research objective of climatological, hydrological and geological research of the Aggtelek Karst, as well as the detailed study of karst processes.

The measurement network of the station first covered the Vass Imre Cave, and flow temperature and conductivity of the water at the Kis-Tohonya spring were measured from 1959 on a daily basis.

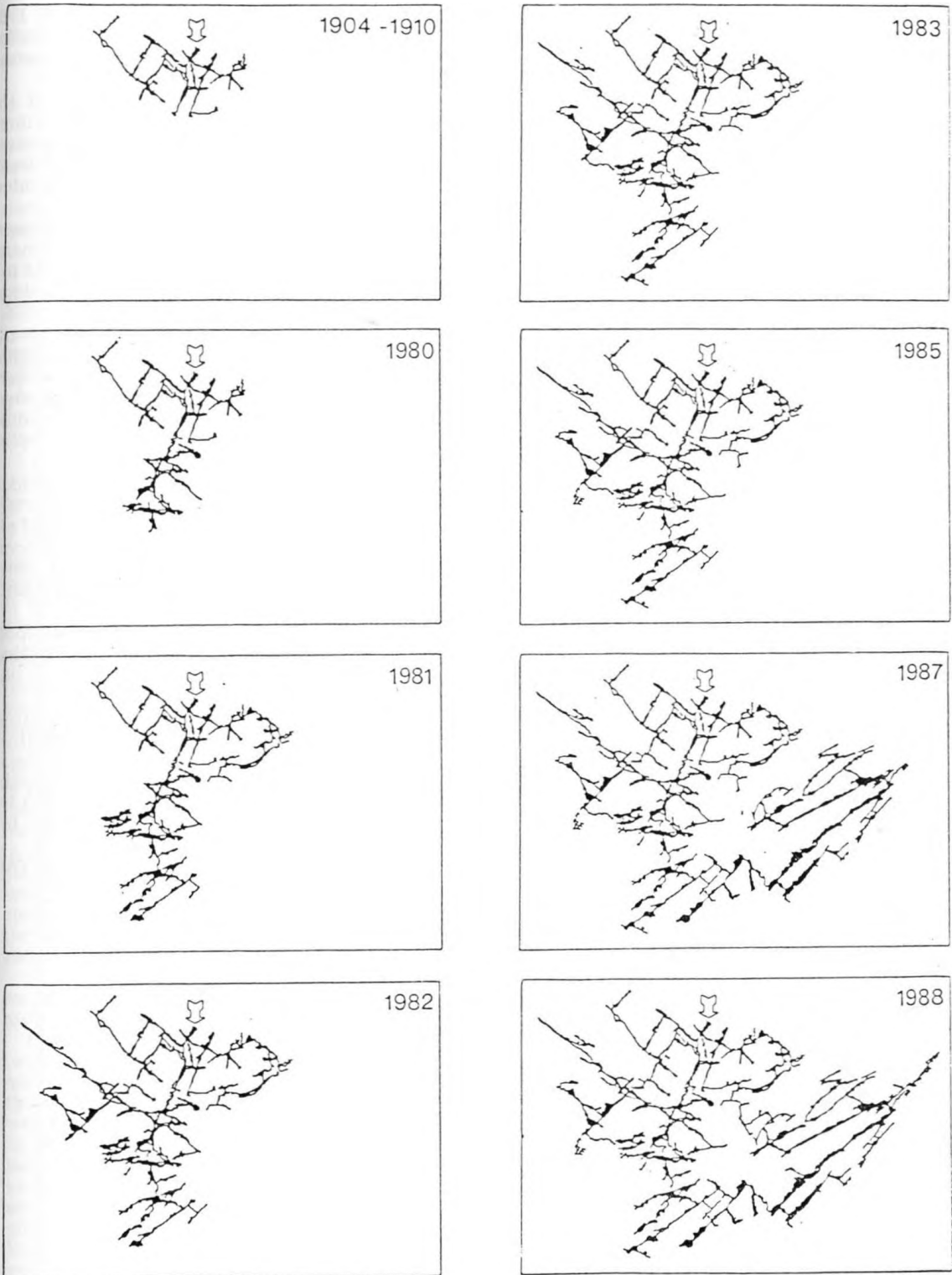


Fig. 1. Growth of the explored passages in the Pál-völgy Cave at various times

In the meantime, the National Meteorological Survey established a surface meteorological station next to the karst research station. The cave exploration group of the Budapest Technical University set up an automatic recording station to measure microclimate and the flows of dripping waters in the Vass Imre Cave three times a day. In 1960, regular quantitative and qualitative measurements of the neighbouring springs were started, and were gradually replaced by the monitoring of flow and the weekly recording of water temperature and

resistance. In 1965 an indicator-clock, and in 1967 an electric telerecording instrument, was installed to observe and record the rock tide phenomenon in the Vass Imre Cave.

According to the objectives formulated at the foundation of the research station, in the last three decades there has been a systems-theory-based investigation of the solid, fluid and gaseous phases of karst to allow the analysis of the intricate interactions governing karst development.

Both surface and underground clastic sediments within the karst, and also aragonite-calcite mineral deposits in the caves were studied. Of special importance were results concerning transformations, helictite formation and dripstone colouring.

Investigations of the fluid phase involved the recording and analysis of quantitative and qualitative drainage data series. Notable achievements were made in modelling karst spring activity, in the interpretation of earth-tide changes, and in the recording and evaluation of temporal changes in dripping waters.

The investigations of the gaseous phase included the automatic recording of climatic parameters from the Vass Imre Cave, the effect of external air pressure changes on cave climate, and the observation of helictite formation related to aerosol generation. They developed the necessary instruments and methods themselves.

In the first decades of operation, the station took a major share in the practical training of engineering students. The results of field-work appear in numerous publications.

The long tradition of the karst research station of Jósvaló confirmed the commendable objectives of its founder. In spite of the undeniable achievements, the future of the station became uncertain on several occasions. The survival was ensured by the strong spirit bestowed by the founder on his successors.

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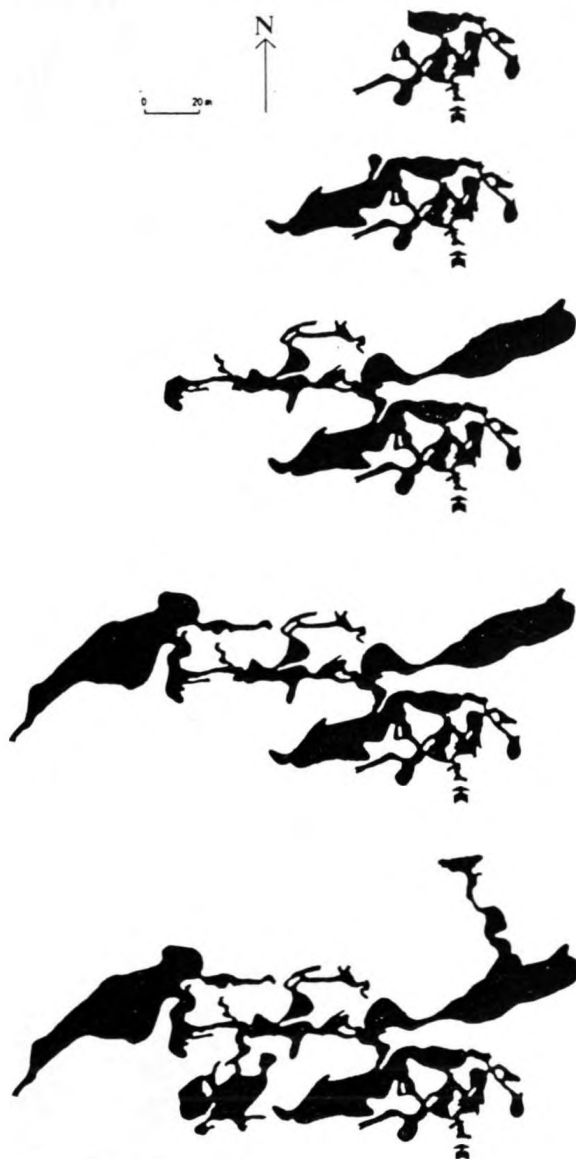


Fig. 2. As a result of the constant exploration's work, the known passages of Hajnóczy Cave were growing from year to year