



'THE BRITISH CAVER'

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Section of the
AIN MIZRAQ
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drawn by P. Szablyár

THE EXPLORATION OF THE AIN MIZRAQ, LIBYA.

by Dr. Attila Kósa

It happened in 1979 when I was digging for hydrogeological information in well files in Tripoli, Libya, when the file keeper asked me whether I was the one interested in caves. My answer being affirmative, the old man pulled out a card that showed a spectacular "well" section, a bell shaped hole with an estimated depth of 80 - 100m. There was a lake shown on the sketch at the bottom of the pitch. A note: "speleological investigation recommended" and an illegible signature. The name of the phenomenon: Ain Mizraq - Mizraq spring. The location was rather unexpected, almost exactly 180 km south of Tripoli as the crow flies on the very edge of the geographical unit that is called Sahara.

To my great regret I was not able to visit the site at that time. But I was back in Libya in 1981 as we signed a contract for the research of the Bir al Ghanam gypsum karst where we succeeded in discovering seven kilometers of cave, among them the 3.5 km Umm al Masabih, the longest gypsum stream cave as we know it. That is another story. But this time we had cross country cars, cave worthy friends and gear and the Unseen, the Big Hole was within reach.

An early morning in late May when the sun was only a hint of light on the distant desert horizon we started out to visit the Ain Mizraq. If the sketch on the file-card was true we were going to see something really unique. In spite of the large scale geologic map telling about the indicated area, the existence of the large cavity contradicts the "classical" thesis that "the karsts of true deserts may be characterised with the absence of karstic phenomena".

Leaving the town of Mizdah and the paved road behind, we were at large in the Sahara with a vague knowledge of the hole's position and much less hope that we ever find it. The edge of the Sahara is a curious place; it looks absolutely deserted but whenever you stop your car suddenly someone emerges from nothingness and wants to chat with you in fluent Arabic, local vernacular. Our limited version of the same language was barely enough to ask about our way. Passing picturesque mesas topped by the ruins of Roman watchtowers of the "limes", the borderline of the ancient Empire, crossing "wadis", arroyos filled with dunes and quicksand, finally the Hammada al Hamra escarpment emerged from beyond the horizon. We realized that the Big Hole must be located somewhere between us and the scarp. Climbing a low lying limestone plateau on the single possible track we soon realized that this very track was the key to our destination. There was the Big Hole near the centre of the plateau, invisible from 100m distance, on the flat surface. Then we saw the incredible.

A circular hole, 26m in diameter as the later survey shows, opens on the flat rocky surface. On the table flat plateau there is no single blade of grass. There is nothing else but the desert and the Hole. Small structures surround the chasm some of them crumbling, some seemingly gone with a piece of the rim of the precipice. The blazing sun, the vast blue sky, the emptiness of the desert make an effect that is not normally existent at the entrances of large vertical caves. None of us, experienced vertical cavers, were able just to walk up to the edge and look into the depth. Approaching the hole one gets first on all fours then crawls to the very edge on one's belly to peer down into the unbelievable sight. The wall of the chasm is circular, ringed like an armadillo. The rings are made by the thin substrata of the limestone. For some distance the walls tilt back gently from the overhanging rim. The upper part of the pit is terminated by a protruding final ring and there is no view of the lower walls. In the unsurveyed depth there is a crescent shaped lake with an island of debris in the middle of it. The outer edges of the lake are mostly out of sight. There is a steady ghostly murmur coming from the cave where pigeons are circling.

The first instinctive action of a caver at the edge of a big hole is to throw a stone. We threw small ones. These fell and vanished out of sight. No sound came back and there was no visible impact. Seemingly we were not the first visitors at the Ain Mizraq as within a considerable distance the sizeable pieces of rock were missing. We searched for some at a distance and threw bigger stones. To see them fall was a fantastic sight. The rock released from in front of one's eyes falls and, big as a man's head, it changes direction more than once as if hitting surfaces. These surfaces are possibly air layers

of different temperature. As the rock hits the debris cone and the thud comes back with a time gap, the murmur instantly stops and there is silence for a moment. Do the birds cease their activity scared of the sudden noise?

During our Libyan stay we were well prepared and equipped for horizontal caving but not so much for vertical work. We had a single rope of 80m length for descending and ascending and two pieces of 40m tied together for belay. There was still the interesting question whether the 80m rope would reach the bottom. We lowered the rope and standing around the hole tried to find out, whether the rope touched the debris cone. As there was nothing to be seen by the naked eye we used binoculars. There was a short length of rope lying on the ground and about 2m on the surface which was together not enough. There were two possibilities for fixing the rope. It was easy to see what the structures were around the rim. They were "well heads" or structures for tapping the cave lake, probably with buckets. The curious thing was that there was no water under any point of the rim. However, we did not trust the old masonry and we had not enough rope to tie it around. The other solution was to park the Toyota as close to the rim as we dared and fix the rope on it. We chose the latter and called it a day.

The next day came with a very strong south wind carrying dust and a 45°C heat early in the morning. We arranged the car and the ropes. Regarding the heat, we decided on a single descent. The hero of the day was Andras Molnar, member of the Hungarian Speleological Society and the Meteor Caving Club, as are most of the group. He descended slowly, reporting what he saw until his voice was overwhelmed by the wind. As he described later he arrived on the slope of the debris cone which seemed flat from above but proved to be a steep-sided cone, its top standing about 15m above the water level. The first thing to do was to check for leads and Andras saw with disappointment that there were none. Looking up was a sight like being in an artery travelling the shrunken submarine of Asimov's Fantastic Voyage. What had not been seen from above was that there were trenches cut in the sides of the debris cone situated right under the "well heads". Now dry, they probably led the water under the well heads so that water can be tapped by buckets. The dry trenches indicate that the water level has dropped. Obviously people were lowered sometimes to cut and maintain the trenches. Some illegible Arabic notes on the walls indicate early discovery. Quite legibly there stands the date 1936 written on the wall with Arabic numerals. It may have been a European who visited the cave since Arabs use different numerals. The water level proved to be 86m under the surface. The water itself was clear, some feathers and other impurities floating on the water showing very little pattern caused by convectional flow in the lake and by no means by karstic water flow. Sketches made, some pictures and water samples taken, the exploration was over and after a sweaty ascend we returned to our distant camp.

The exploration of the Ain Mizraq raises many questions. The mere existence of the cave contradicts the weather conditions. The mean annual rainfall barely exceeds a 100mm. Neither the cave nor the surface show any sign of karstic solution. Still, the cave cannot be anything else but a gigantic collapse feature. The missing rock material is an estimated 230,000 cum which filled in a phreatic cavity of that volume or smaller if part of the breakdown was carried away by solution or erosion of phreatic flow. This indicates much wetter climatic conditions in the geological past. The desertification of the area is very intensive and the karstic water level is obviously receding. The "well heads" tell about an era not so long ago when the tapping of the cave-lake was very intensive.

An estimated quantity of five to eight thousand cubic meters of water of relatively good quality/TDS* : 1614ppm is stored in the cave and it is a waste not to recover it in the middle of the desert. We hope to go back some day and do something about it.

*total dissolved solids.

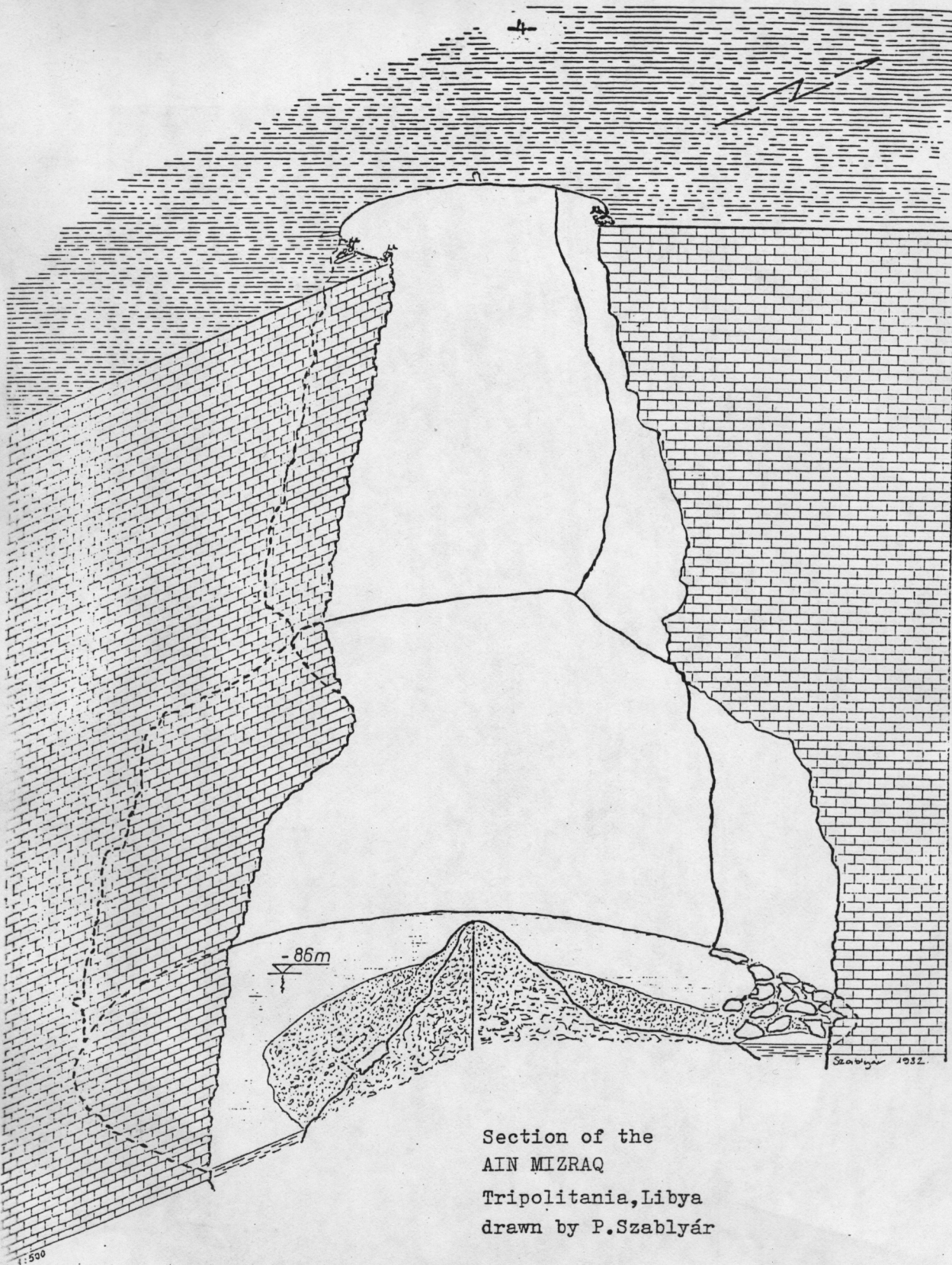
FOR FURTHER READING ON THE CAVES OF LIBYA SEE:-

The British Caver Vol 87 pp 8 - 10, and Vol 73 pp 1 - 4.



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photo by Dr Attila Kósa



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