Systematic paleomagnetic sampling and magnetostratigraphic studies[28] of the Buda-Vár-hegy, Budakalász, Vértesszőlős, Tata, Les-hegy, Dunaalmás and Süttő travertine occurences led to the conclusion that two main periods of travertine formation occured (Fig. 8). The older one belongs to the Matuyama-chron around the c2 anomaly (Dunaalmás, Süttő, Les-hegy). The younger one may have occured in the Matuyama-Brunhes, starting at about the Jaramillo chron and ending at the reverse anomaly in the middle of the Brunhes chron (Buda-Vár-hegy, Budakalász, Vértesszőlős, Tata). A systematic palaeomagnetic log of the Tata travertine has given an uniform normal polarity record for the entire travertine section (Fig. 3), including the *"culture layer"* (Fig. 9). It seems plausible to correlate this normal polarity record with certain parts of the Brunhes.[29]

Carbonate vents, terraces, cascades

The horizontal units of the Porhanyó-Quarry are often interrupted by carbonate vents, cones and other morphological forms which were formed due to the former intensive spring activity. The microscopic photos of samples taken from the centre of the carbonate vents show clastic quartz grains cemented in the freshwater limestone (Fig. 10). These grains derived from the Pannonian siliciclastic bedrock and come to the surface with the discharging springwater and cemented in the carbonates precipitating simultaneously (Fig. 11). The clastic fabric is characteristic to the centre of the carbonate vents and the size and frequency of the quartz grains decrease with increasing distance from the spring orifice. The presence of clastic grains indicate the intensity and the discharge of the ancient spring activity. The vents are spatially connected to each other, to the cascades and to the tetaratas. The different facies (vent, cascade, pond) migrated during the evolution of the travertine complex due to changes in morphology and flow direction.

Conclusions

The travertine of the Porhanyó-Quarry of Tata can be divided to six horizontal units. The travertines can be sedimentologically classified as algal and other phytoclastic and phytohermal grainstone, boundstone and floatstone microfacies types. The lake in which the travertine was deposited was fed by thermal springs discharging on a siliciclastic floodplain or delta system. Three main lacustrine phases of the lake evolution can be distinguished (Fig. 12). Travertine formation was interrupted first by a palaeosoil formation and flooding event, followed by a fluvial-eolian event and

[28] Lantos et al. 2000.; Korpás et al. 2003, 81–105.

[29] Lantos et al. 2004, 227–236.