

LANGOBARD SWORD

Conservation-restoration investigation and treatment

The sword presented in this monograph was found in the rescue archaeological research near the center of Kyjov (Hodonín district) at a burial site from the Migration Period, in grave no. 881. The burial site and artifacts in the graves can be related to the tribe of Langobards. The weapon consisted of a corroded iron blade, in places covered with the residues of organic materials which originally had formed the scabbard (wood identified as alder, and leather), and a pommel on which the surface corrosion products were blue-green colour which is typical for copper and its alloys. It was already the initial X-ray scan that revealed incrustation of the pommel with some wires of different metals than the base, and decoration of the blade by pattern welding using three twisted rods. This finding was fully confirmed by a metallographic survey of the sample taken from the blade, and by radiographs. The blade was forged from two steel blades surrounding a steel core and onto each side of these were welded three pattern welded panels consisting of four steel layers and three strips of iron, probably with an increased phosphorus content. The investigation showed that although the tip of the sword was hardened, the mandrel hardening is absent. Other interesting details revealed by the metallographic survey were that some parts of the corrosion layers have retained its original microstructure to a great extent, and that the layers are formed by a cementite netting in magnetite matrix which replaced the ferritic matrix. This suggests that even seemingly worthless corrosion products may hide valuable information. When investigating the pommel of the sword, the analysis determined its material as bronze with a lower tin content. The decorative inlay strips are then from silver of higher purity. The blade was classified as the *Illerup-Wyhl* type of *Wyhl* tendency, according to the Miks typology, and the pommel was identified as a kind of *Bülach-Obrigheim* of the Menghin typology, although quite precise analogy could not be found. The sword can probably be dated to the second half of the 6th century AD. The sword was conserved in the laboratories of the Methodological Centre of Conservation at the Technical Museum in Brno, and subsequently, its exact replica was made using the original technologies.