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DENDROCHRONOLOGICAL ANALYSIS OF THE MANOR HOUSE IN MIEJSCE NEAR ŚWIERCZÓW ON THE BASIS OF HISTORICAL WOOD

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ABSTRACT: Miejsce is a small village located in the northern part of Opolskie province, which was recorded in historical chronicles for the first time in the thirteenth century. During the renovation of a hunting castle, which belonged to the Duchy of Oleśnica 27 dendrochronological samples were collected from dilapidated roof rafters. Some datings were obtained for 12 samples. All samples subjected to dendrochronological analysis were dated at the 19th century; the two phases or stages of renovation or extension of the building were distinguished. These preliminary studies illustrate the possibility of applying this method in studies of Opole Silesia at the times of renovation of historic buildings.

KEY WORDS: dendrochronological analysis, absolute dating, Miejsce, Schwirz, Stadttel

Introduction

The village of Miejsce is located in the northern part of Opolskie province, in southern Poland. The village was first mentioned (Schwirz = Stadttel = Miejsce) in 1294 (Golinski et al. 2006). The documents show that there was a castle or a fortified town, which probably survived until the early seventeenth century when the town was burned. However, Miejsce enjoyed a status of the town until 1813 when the mayor resigned from his post and the town became a village (Knie 1845). The castle was fortified and it had three moats: one for the fortified town, one for settlements outside town walls, and one for the town proper; the moats are visible even today. At the site of the old castle, the Prince of Oleśnica built a hunting castle, which has survived until today. The building dates back to the turn of the sixteenth and seventeenth centuries (Skarbek 1998). Most probably, it was rebuilt and extended many a time. Dendrochronological analysis

enables one to retrace a sequence of historical events when the information about the building is not fully preserved. Based on the custom-designed scale (Ważny 2001), one may attempt to conduct a dating of the object.

Methods

On the occasion of renovation of the historic manor house (hunting castle), the rings from the timber roof trusses were collected in order to subject them to dendrochronological analysis. Cross-sections of roof rafters were sanded and then measured with the use of Rinntech Lintab 6 (with an accuracy of 0.01 mm), and the measurement software TSAP Professional. Then, the sequences obtained from the annual increments of the dated object were matched to dendrochronological scale on the basis of visual verification of an incremental model with the use of a computer program COFECHA, which facilitates statistical dating and verification of measurements (Grissino-Mayer 2001). The material was dated on the basis of a dendrochronological scale *Pinus sylvestris* from Opole Silesia (Opała 2010) covering the period 1565-2010 AD.

Specification of the date of the construction of the building was based on the date of cutting down the trees as well as on the analysis of additional factors such as seasoning of wood, or the possibility of its reuse.

As for the criteria for exact dating (apart from visual matching), the following ones were adopted: (1) the value of the correlation coefficient above the value 0.328 (statistical significance threshold of 95% for 50-year-old segments; see: Grissino-Mayer (2001), and (2) number of annual increments in the sample over 50.

Results

The analyzed elements of the historic manor house came from the roof rafters of the timber roof trusses. In total, dendrochronological analysis encompassed 27 samples of wooden elements in the form of tree rings. All samples came from pines *Pinus sylvestris*. The average number of increments in the measured samples was 74. Exact datings were obtained for 12 samples (Table 1); remaining samples were dismissed due to a low number of tree rings or a statistically insignificant value of the coefficient "r" taken from referential chronology.

The datings revealed that all samples come from the 19th century (Fig.1). The results obtained throughout the analysis enable one to distinguish between the two phases of expansion or renovation of the building. Five wood samples come from the period 1819-1825, and another five from the period 1845-1850.

The results show high correlation with the referential chronology from Opole Silesia, which indicates local origin of the wood. The lack of success in dating of some samples was mainly due to the low number of tree rings. In most cases, the outer layer of wood has been damaged by mechanical and biological factors. The fact that no tree ring from under the bark was preserved made it impossible to determine the date of cutting down the trees to an accuracy of one year.

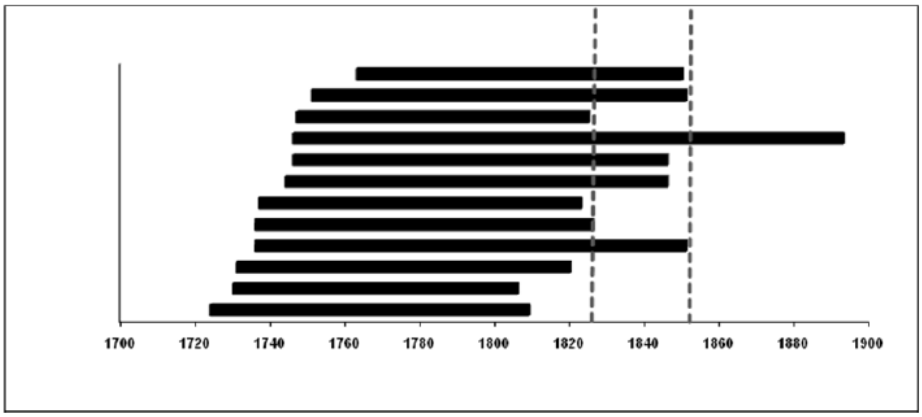

Fig. 1. Position at growth sequences of structural timber from the manor house in Miejsce

Table 1. The results of dating of wood samples from the manor house in Miejsce

Sample code	**Number of increments**	**Dendrochronological date**	**Correlation coefficient with referential chronology**	**Tree ring preserved under the bark**
DM02	86	1737-1822	.493	present
DM04	100	1746-1845	.602	absent
DM05	78	1747-1824	.487	absent
DM06	87	1763-1849	.376	present
DM09	85	1724-1808	.487	absent
DM11	89	1731-1819	.649	absent
DM12	102	1744-1845	.360	absent
DM13	115	1736-1850	.390	absent
DM15	100	1751-1850	.323	present
DM17	90	1736-1825	.614	present
DM18	76	1730-1805	.480	absent
DM19	74	1746-1819	.593	absent

Discussion

Dendrochronological analysis of the collected samples of timber roof trusses showed that there had been two phases or stages of extension or renovation of the building. In the samples subjected to the analysis, no older fragments - dating back to the probable time of the construction of the building (16^{th}/17^{th} century) - were found. It is therefore assumed that the new timber roof trusses were laid in the 1830s. There are indications that the renovation of the roof trusses took place in the 2^{nd} half of the 19^{th} century. There is also an element dating back to the last decade of the 19^{th} century, which is a sign of the renovation works. After the World War II, the building has been subjected to general destruction, and in the 1980s the dormers collapsed, and in the early 21st century the timber roof trusses were not suitable for any reuse. As a result, these construction elements were substituted with the new ones. Dendrochoronological analysis also provided information concerning renovation works completed in the past. During architectural works conducted in the building, the elements of the framing wall, also referred to as 'timber framing', were found, which date back to distant past. The analysis should also include exposed ceiling beams. This analysis is an example of bringing new information on timber found in historic buildings, which in combination with the study of historical materials may enable one to further explore the history of a forgotten hunting castle, which long time ago belonged to the Duchy of Oleśnica.

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