PLISSN 0081-3834

SPRAWOZDANIA ARCHEOLOGICZNE

INSTYTUT ARCHEOLOGII I ETNOLOGII POLSKIEJ AKADEMII NAUK

KRAKÓW 2020

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Editor's Address
CENTRE FOR MOUNTAINS AND UPLANDS ARCHAEOLOGY, INSTITUTE OF ARCHAEOLOGY AND ETHNOLOGY, POLISH ACADEMY OF SCIENCES, 31-016 KRAKÓW, UL. SŁAWKOWSKA 17

Ministry of Science and Higher Education
Republic of Poland

Volume financed by the Ministry of Science and Higher Education from the founds for science popularization activities, Contract Nr 651/P-DUN/2019

PL ISSN 0081-3834
DOI: 10.23858/SA/72.2020.2

Printed by
PARTNER POLIGRAFIA Andrzej Kardasz, Grabówka, ul. Szosa Baranowicka 77, 15-523 Białystok

Edition: 300 pcs.

Sprawozdania Archeologiczne is regulary listed in the: SCOPUS, CEJSH, ERIH Plus

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Sprawozdania Archeologiczne is regulary listed in the International Current Awareness Service: Anthropology. Selected material is indexed in the International Bibliography of social and Cultural Anthropology.
Indexed in:
IBZ – International Bibliography of Periodical Literature
IBZ – CD-ROM

Dedicated to Professor Jan Machnik for His 90th Birthday

SPRAWOZDANIA ARCHEOLOGICZNE 72/2, 2020
PL ISSN 0081-3834
DOI: 10.23858/SA/72.2020.2.2095

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DIGGING THE HISTORY. ABSOLUTE CHRONOLOGY OF THE SETTLEMENT COMPLEX AT CZERMNO-CHERVEN' (EASTERN POLAND). RESEARCH STATUS AND PERSPECTIVES

ABSTRACT

Dzieńkowski T., Wołoszyn M., Florkiewicz I., Dobrowolski R., Rodzik J., Hajdas I., Krąpiec M. 2020. Digging the history. Absolute chronology of the settlement complex at Czermno-Cherven' (eastern Poland). Research status and perspectives. *Sprawozdania Archeologiczne* 72/2, 409-466.

The article discusses the results of the latest interdisciplinary research of Czermno stronghold and its immediate surroundings. The site is mentioned in chroniclers' entries referring to the stronghold Cherven' (Tale of Bygone Years, first mention under the year 981) and the so-called Cherven' Towns. Given the scarcity of written records regarding the history of today's Eastern Poland, Ukraine, and Belarus in the 10th and 11th centuries, recent archaeological research, supported by geoenvironmental analyses and absolute dating, brought a significant qualitative change. In 2014 and 2015, the remains of the oldest rampart of the stronghold were uncovered for the first time. A series of radiocarbon datings allows us to refer the erection of the stronghold to the second half/late 10th century. The results of several years' interdisciplinary research (2012-2020) introduce qualitatively new data to the issue of the Cherven' Towns, which both change current considerations and confirm the extraordinary research potential in the archeology of the discussed region.

Keywords: Polish-Rus' borderland; Cherven'; Cherven' Towns; strongholds; absolute chronology; interdisciplinary research

Received: 08.06.2020; Revised: 18.06.2020; Accepted: 15.07.2020

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I. INTRODUCTION

Strongholds have always been – and still are – regarded as the most important archaeological sites representing early medieval Slavic culture. Zorian Dołęga-Chodakowski (in fact: Adam Czarnocki [1784-1825]), one of the fathers of Slavic archaeology, believed that it is the construction of strongholds that differentiates the Slavs from other peoples (*cf.* Abramowicz 1991, 11-22). Today we know, of course, that this is not true, but fortified settlements still attract the attention of medievalists: "These sites have long been portrayed as physical, monumental and landed manifestations of fractured states, high levels of warfare – external and internecine – and a growing localization of elite power" (Christie and Herold 2016, XIX).

Progress in the development of the natural sciences contributed to the establishment of a more a precise chronology of the excavated sites. Hence, since the time of the "dendrochronological revolution" (on dendrochronology and archaeology *cf. e.g.* Polaček and Dvorská eds 1999; Biermann 2013), the amount of data based on the results of archaeological investigations has continued to increase, including data pertaining to strictly historiographic works dedicated to, *e.g.*, the origins of Eastern Europe or Poland (basic data on the archaeological image of early Piast Poland – Kara 2015; historical studies included archaeological data – *e.g.*, Lübke 2004; Mühle 2020, 265; mutual relationship of archaeology and history – Sikorski 2018). Paradoxically, a stronghold in Czermno (Tomaszów Lubelski district, Lubelskie voivodeship; Fig. 1), although identified with historical Cherven' as early as in 1817 – noteworthy, according to the aforementioned Zorian Dołęga-Chodakowski (more on the subject – Musin and Wołoszyn 2017) – remains barely recognized even today!

Cherven' appears in one of the oldest references to the Polish-Ruthenian border. *Tale of the Bygone Years* reports that in 981 [6489], the Ruthenian prince Vladimir "[...] marched upon the Lyakhs and took their cities: Peremyshl', Cherven', and other towns, all of which are subject to Rus' even to this day" (PVL, 95). Widespread is the assumption that the ethnonym "Lyakhs" indicates "Poles" (subjects of Piasts), thus the statement that "Lyakhs" have lost Cherven' serves as a baseline for the reconstruction of the eastern border of tenth-century Poland (*i.e.*, the princedom of Mieszko I [966-992]). Therefore, the verification of the thesis about the identification of the stronghold in Czermno with Cherven'

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Fig. 1. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship). The stronghold and its hinterland; Photo by K. Trela, illustrated by J. Ożóg; computer processing by R. Ratajczak. A – an aerial view of the stronghold (site 1); B – the early medieval settlement complex (simplified: the plan also includes local names); a – area of the settlement; b – causeways and tracks; c – rampart; d – inhumation cemeteries; e – marshy area; f – Sieniocha River channel prior to the 1960s improvement projects; I-IV – places of acquiring samples for dendrochronological analysis in 1997; V-VI – hoards found in the Czermno stronghold (2010-2011); VII-VIII – hoards found in Perespa in 2014 (VII) and 2015 (VIII). Selected sites: 1 – Czermno, site 1 (the stronghold [Polish names: Grodzisko; Zamczysko]); 2 – Czermno, site 2 (fortified settlement beyond the walls [Polish names: Podgrodzie bliższe; Wały; Zameczek; Mały Zameczek]); 3 – Czermno, site 3 (the so-called "further" open settlement, beyond the walls [Polish names: Podgrodzie dalsze; Podzamcze])

from *Tale of the Bygone Years* has long aroused the intense interest of historians, and still does today.

Both the limited number of written sources regarding eastern Poland in the 10th and 11th centuries, as well as the fact that the name Cherven' is relatively popular in the Slavonic territories (see Zschieschang 2017, 182) – *e.g.*, the stronghold Cherven' in Bulgaria (see Dikov 2020) – are among the main reasons for the diverse hypotheses concerning location of Cherven' (see Błachowska 2017 for a comprehensive review of the discussion). For over half a century, historians have been eagerly anticipating archaeological efforts to elucidate the chronology of the stronghold in Czermno and its identification with Cherven' (*cf. e.g.* Poppe 1954, 228-229; Labuda 1996, 28). It is important to mention a series of excavation campaigns (1940; 1952; 1976-1979; 1985; 1997), as well as the acquisition of the first dendrochronological datings for Czermno in 1997 (see below IV.2.4.4). The oldest dates from the rampart allowed researchers "[...] to assume that the samples come from trees felled at the end of the first half of the 11th c. or later" (Kara and Krąpiec 2000, 308). This would imply that Czermno did not exist in 981, hence it could not have been a victim of the above-mentioned expedition of the Rus' troops! Such a statement would have – as already mentioned – far-reaching consequences for our knowledge of the course of the eastern border of the early Piast state. Although Andrzej Urbański emphasized the limited credibility of these dates (Urbański 2000, 242), this did not stop historians from denying the identification of Cherven' and Czermno (*cf. e.g.* Tyszkiewicz 2004, 195; Matla-Kozłowska 2008, 170-219). The reaction of Elżbieta Kowalczyk-Heyman was much more accurate. The researcher – being fully aware of the methodological deficiencies of the 1997 excavations, as well as the earlier ones from the 1970s, emphasized primarily the need for comprehensive study of the issue of the Cherven' Towns (Kowalczyk-Heyman 2000, 56; see also Poleski 2004, 386-387; 2013, 189, footnote 128).

Consequently, in 2008-2012, when the international Cherven' Towns research team was completed, it seemed clear that we should not limit ourselves to the elaboration and publishing of past investigations, but also include in the research agenda verification excavations, primarily in order to resolve the question of the reliability of the thesis concerning the relatively late (11th c.) chronology of the Czermno stronghold.

The following text summarizes investigations undertaken by our team from 2013-2020. Regrettably, recent changes pertaining to research carried out under the National Program for the Development of Humanities does not allow for further financing of excavations. Thus, we were not able to complete the examination of the entire rampart of the stronghold. While it seems evident to us that our excavations should be carried on further (see below, V), we nonetheless consider the results of the research from 2013-2020 deserving of publication. Longstanding delays in the publication of results from excavations on early medieval sites are not a vulnerability of the archeology of Eastern Poland alone (see *e.g.* Kurnatowska 1997; Brather 2008); nevertheless, the history of research in Czermno serves as an excellent example of the importance of a relatively swift introduction of

results into scientific circulation. Awareness of past delays arrears has additionally mobilized our team to prepare this study.

II. REMARKS ON THE RESEARCH METHODOLOGY

Current research in Czermno is a joint enterprise of archaeologists, historians, onomasts, palaeogeographers and specialists in natural-science dating methods.

Given the vast array of literature discussing interdisciplinarity in research on the past (*cf. e.g.* Banaszkiewicz 2006; Meier and Tillessen 2011; Buko 2016; Izdebski *et al.* 2016; Hardt 2019), we are not going to formulate general theses and guidelines regarding this issue. Not long ago, Gerard Labuda (1916-2010), a senior scholar of Polish mediaeval studies, pointed to the need to separate the research workshops of historians and archaeologists, who he thought should confront each other only at the level of independently established facts (*cf. e.g.* Labuda 2001, 268). In essence, this concept is described by the well-known motto of General Helmuth von Moltke (1800-1891) *Getrennt marschieren – vereint schlagen*. Nowadays, such a perspective is rather criticized, and the need to cooperate at an early stage of research is emphasized, as recently stated by Philipp von Rummel: "The German proverb 'marching separately but striking together' of diverse historical subdisciplines, citing the strategic military advice of the 19th century Prussian general Helmuth von Moltke, is therefore not possible either, and particularly not in the collaboration of humanities and natural sciences: Before we march we have to decide where to head" (von Rummel 2019, 203; see also: Sikorski 2012; Urbańczyk 2017, 186).

In our research on Czermno, we tried to work together and not in parallel – we hope that we succeeded.

The title of the article is not intended to discredit the efforts of historians whom archaeologists would like to replace. We do not feel overwhelmed by the *Tyranny of the Historical Record* as happens to some archeologists (*cf.* Thurston 1997). The truth is, however, that archeology plays and will play an increasingly important role in the study of East-Central and Eastern Europe, including the Polish-Rus' borderland, since we are at in possession of but a few written records concerning its early history in the 10th-12th centuries (for recent literature about the increasing significance of archaeology in studies of the Early Middle Ages: Nagy *et al.* 2018, 3; Curta 2019, 15).

III. CZERMNO SETTLEMENT COMPLEX. STATE OF RESEARCH

III.1. Written sources and archival maps

Although the reconstruction of the history of the Polish-Rus' borderland begins, in general, with an analysis of the aforementioned expedition of Vladimir in 981, it should be emphasized that the volume of information regarding the history of today's Eastern Po-

land and western Ukraine and Belarus in the 10th and 11th centuries is minimal. The situation changes only in the 13th century, for which detailed information is provided by the *Galician-Volhynian Chronicle* (*cf.* Bartnicki 2008).

It should be stressed here that Rus' sources provide us with much more information than those originating in the Latin Circle. Although Thietmar describes the battle between the forces of the Bolesław the Brave and Jaroslav the Wise in July 1018, he does not know the name of the river on which this skirmish took place ("On 22 July, the duke [Bolesław – Authors] came to a certain river, where he ordered his army to set up camp and prepare the necessary bridges", *cf.* Thietmar VIII.31, 382-383).

Gallus Anonymus reports colorfully and in detail about the successes of Polish forces in battles with Ruthenians "at the river Bug"; however, these fragments prove his literary artistry more than his knowledge of geography (*cf.* Gallus I.7., 45, I.10., 51-54; see Cetwiński 2005; Althoff 2009, 410; in particular Żmudzki 2015; 2017).

On the other hand, in Ruthenian sources, the Cherven' stronghold is frequently mentioned, for the first time in 981 [6489], when the Ruthenians conquered it. In 1018 [6526], the first king of Poland, Boleslaw the Brave, occupies the Cherven' Towns, and in 1031 [6539], Jaroslav the Wise regains them.

From that time, Cherven' remained within Rus' (see Jusupović 2017 for the entire list of mentions and detailed analysis).

Cherven' was not mentioned among the strongholds destroyed during the first Mongol invasion (re: the havoc of the neighboring stronghold in Volodymyr-Volynskyi, *cf. Chronicle*, 50) or among the fortifications of the lands of Galicia-Volhynia, which Burundai ordered the Romanovichi to destroy in 1259 [6769] as a part of the repression (*cf. Chronicle,* 78-79). The last mention about Cherven' refers to 1289 [6797; *cf. Chronicle,* 113), after which it disappears from the history pages. It cannot be ruled out that neighboring Belz took over its role, although the stronghold did not have a direct successor (*cf.* Janeczek 2016).

For the association of today's village of Czermno with the Cherven' stronghold known from the written sources, the description in the *Galician-Volhynian Chronicle* of the Polish-Ruthenian fights in 1266 [6776] is of prominent importance (*cf. Chronicle*, 85).

In this context, the recent observations of Adrian Jusupović, showing the evolution of the spelling of the name "Cherven'" in codices dated from the 14th-16th c. (Червѣнъ→ Червьнъ→Чермно), should not be ignored (Jusupović 2017, 33, Fig. 4). They constitute an additional – paleographic – premise for identifying Cherven' with the contemporary village of Czermno.

In bringing to a close the short description of the written sources, it is important to return to the issue of the accuracy of the first mentioned date of the stronghold – 981 [6489]. As discussed above, according to a widespread assumption, the dating of the Czermno fortifications to either before or after 981 determines the legitimacy of its association with Cherven'. It is worth emphasizing in this context that of the three Polish-Rus'

conflicts (981/1018/1031), only the chronology of the Kyiv expedition of Bolesław the Brave (summer 1018), as described by (the very well informed) Thietmar, is without question (for Thietmar see papers in: Cottin and Merkel eds 2018). Furthermore, the dating of Vladimir's expedition to Cherven' to 981 is not unequivocal. This has been pointed out repeatedly; recently, Adrian Jusupović articulated it very clearly, writing that "[...] it must be concluded that Nestor described a certain historical process in three dates (entries), only one of them certain, namely 1018. The other two were presumably manufactured by Nestor himself, who knew from his sources about the rivalry of the rulers of Poland and Rus' over the border region, one that lasted approximately fifty years, possibly a little longer, and ended the success of Yaroslav the Wise. Consequently, both narratives entered under the year 981 and 1031 in the *Tale of the Bygone Years*, in addition to containing brief histories, or better said, stages of the conflict over the Cherven' Towns and Przemyśl, are – let me emphasize this – artificial milestones in the historical process and important testimony to the territorial growth of Rus'" (Jusupović 2017, 49).

It should be borne in mind, when comparing radiographic and dendrochronological dates from Czermno, that the assumption they should be older than 981 to confirm the association of Czermno with Cherven' can be regarded as *Tyranny of the Historical Record*. Written records inform us that Cherven' was captured before 1018, but it cannot be excluded that it took place a little later than 981.

The oldest cartographic image of the stronghold in Czermno is dated only to the end of the 18th century, and was prepared for the so-called Josephine Map (*Josephinische Landesaufnahme*; *cf.* Fig. 2: A). Certainly, its analysis does not provide a basis on which to establish the chronology of the stronghold; it is, however, an important source for the reconstruction of the past landscape of the site, particularly river courses (comments from the *Josephinische Landesaufnahme*, along with subsequent maps are also helpful; see Janeczek 2016 for an erudite analysis of this category of sources).

III. 2. Environmental data

III.2.1. Material and research methods

The primary research task was to define the contemporary environmental conditions in the vicinity of Czermno, and to reconstruct the early medieval ones, with particular focus on the impact of anthropogenic changes. The following research activities furthered this goal: (1) query of archival cartographic materials (Jan Rodzik, Przemysław Mroczek); (2) geological, geomorphological, and pedological surveys, both on the site and in the surroundings (Radosław Dobrowolski, Jan Rodzik, Przemysław Mroczek); (3) sedimentological analysis of deposits and soil sequences in 70 profiles of soil catenas, as well as in the geological drillings (Radosław Dobrowolski, Jan Rodzik, Przemysław Mroczek); (4) geospatial analysis of the site with the use of GPS techniques and GIS modelling (Piotr Zagórski);

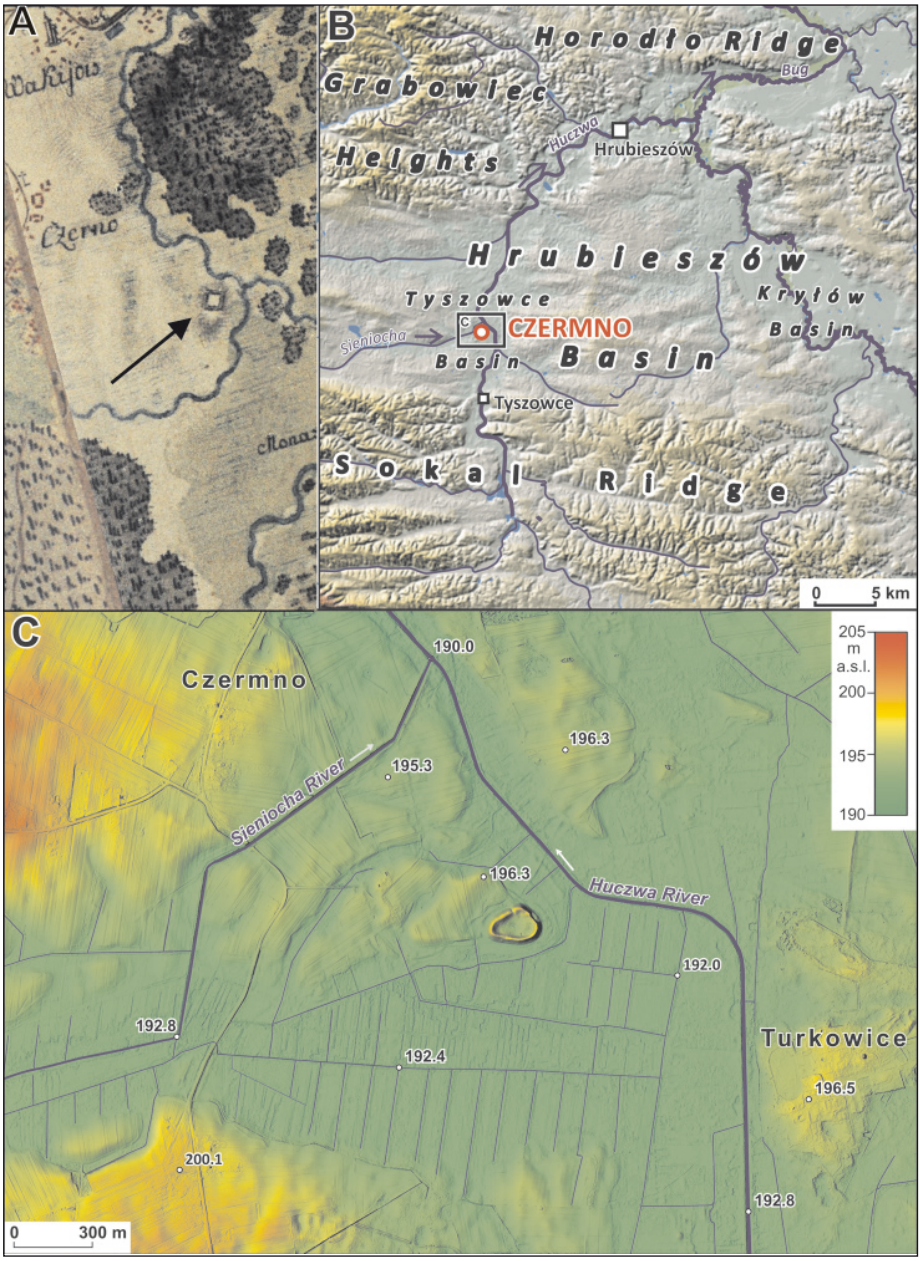

Fig. 2. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship). Location of the site on contemporary and archival maps; computer processing by R. Ratajczak. A – Czermno on the Josephine Map of Galicia (the Mieg Map, 1779-1783; after Janeczek 2016, Fig. 4); B – Czermno on the background of the mesoregions of Eastern Poland (after Solon *et al*. 2018); C – digital elevation model of the stronghold and its vicinity, prepared by P. Zagórski (after Dobrowolski *et al*. 2016b)

(5) palynological analysis (Krystyna Bałaga) of two biogenic sediment profiles (outer moat and Huczwa river palaeochannel); (6) accelerator mass spectrometry radiocarbon dating (AMS) of 32 samples taken from benchmark profiles (Irka Hajdas). The location of the site was analyzed in the context of geomorphological, geological, climatic, hydrological, pedological and floral conditions (Dobrowolski *et al.* 2016b; 2018).

III.2.2. Location and environmental conditions

Czermno is located within macroregional unit of the Western Volhynian Upland, and mezoregional unit of the Hrubieszów Basin (Solon *et al.* 2018). Its western part includes the Tyszowce Basin, drained partially by the Huczwa river, formed by soft carbonates of the late Cretaceous (marls and chalk). Locally, the sediments are superimposed by patches of boulder-clay of the Elsterian glaciation, sands and silts of the Saalian glaciation, and loess-like sandy-dusty sediments of the Weichselian glaciation (Dobrowolski *et al.* 2016b; 2018). The Tyszowce Basin constitutes a part of the West-East passage, several kilometers wide, limited by the loess edges of the Sokal Ridge from the south, and Grabowiec Heights and Horodło Ridge from the north (Fig. 2: B). The passage, characterized by relatively convenient conditions for movement and travel, connects Lublin and the Volhynian Uplands (Maruszczak 1972).

The thickness of Quaternary sediments in the floor of the Huczwa River valley exceeds 20 m. Loamy sediments with lenses of sand constitute the lower part, while the upper one is built of carbonaceous silts that accumulated in the course of the Weichselian glaciation (Wojtanowicz 1974). In the course of the Late Weichselian, the sediments were cut through to a depth of several meters by riverine erosion in variable climatic conditions. In the Holocene, silts were decalcified in the upper parts by soil-forming processes. Nowadays, their surface forms an above-the-floodplain terrace, which in Czermno is situated approximately at 195 m a.s.l. Between the former and current mouth of the Sieniocha River into the Huczwa River, the terrace developed the form of a fan cut by a system of palaeochannels of the Sieniocha River (Fig. 2: C). The discussed terrain form served as a basis for the principal elements of the entire settlement structure, primarily with regard to its natural predispositions. The stronghold and adjacent suburbs were located on isolated elevations of the cone, while arcuate hollows/channels located in between were deepened and transformed into moats (Dobrowolski *et al.* 2016b; 2018).

The upper terrace rises 2-3 m over the floodplain. The latter is built with deposits of predominantly biogenic nature – peats and gyttja (with sandy insertions). In general, the thickness of the deposits is 1-2 m; however, in the depressions of the Huczwa River palaeochannels, it reaches 4 m. The area in question is characterized by the strong influences of the continental climate, including harsh winters, hot summers, as well as relatively low cloud cover and rainfalls. The annual average air temperature is 7.2°C, with the average for July reaching 17.7°C, and for January -4.3°C. The average annual precipitation is equal to

approximately 550 mm. The snow cover remains here for a long time (75-80 days), while the growing season is relatively short – 213 days (Kaszewski 2008). Among the consequences of the relative continental nature of the climate, limited water resources and low spring efficiency and density are noteworthy, although the groundwater level of the Cretaceous-Quaternary floor is relatively shallow (Michalczyk and Wilgat 2008). The Huczwa River, running through Czermno, flows into the Bug River in Gródek near Hrubieszów (Fig. 2: B). Thus, the river course connects two important settlement and defensive centers of the so-called Cherven' Towns. The average flow of the Huczwa River at its confluence with the Bug River is 4.2 m/s (Michalczyk and Wilgat 2008), while in the vicinity of Czermno it reaches 2-3 m/s. The gradient of the Huczwa River in its lower course is <0.5‰, which is typical for the lowland rivers. Nowadays, a majority of the Huczwa River course is regulated and straightened. Traces of former meanders are, however, discernible in its lower course. Undoubtedly, in the Middle Ages the river was longer and deeper, with a lower gradient, slower stream, and more even flows – sufficient to transport tree trunks and flat-bottomed boats with commodities (Dobrowolski *et al.* 2016b; 2018).

The mosaic of soil types in the vicinity of Czermno results from the transitional nature of the climate, diverse surface formations, and the groundwater level. The largest area around Czermno is covered by Luvisols, formed on dusty sediments, silts, and clayish sands, usually occurring along with Cambisols. Such soil types can be described as relatively light and favorable for agricultural activity. The most fertile soils – Chernozems, included in the highest quality classes – occur in the loess areas southwards and northwards from Czermno. Hydromorphic soils – Gleysols and Histosols – appear in the bottoms of the Huczwa and Sieniocha river valleys (Turski *et al.* 2008).

In geobotanical terms the surroundings of Czermno are dominated by oak-hornbeam forests (*Tilio-Carpinetum)* and patches of Continental pine-oak forests (*Querco*-Pinetum) (Matuszkiewicz 2007). The latter ones served as the major source of construction wood for the stronghold and adjacent settlements (Dobrowolski *et al.* 2016b; 2018).

III.3. Archaeological data

III.3.1. Stronghold, settlements, and cemeteries

The settlement complex in Czermno, situated on the middle Huczwa River (left-bank tributary of the Bug River), occupies an area of 150 hectares (Figs 1 and 2). The stronghold (site 1; also known as *Zamczysko*), with dimensions of approximately 190 × 120 m, is the focal point of the entire structure. Its ramparts are preserved to a height of 6 m (measured from the outside). They are located on a dry island at the confluence of the Huczwa River and the old channel of the Sieniocha River, straightened and turned into an artificial channel in the course of recent land development works.

Another dry island, separated by a wet hollow, neighbors the stronghold from the west. In the local tradition, the place is known as *Wały*, *Zameczek*, *Małe Zamczysko* or *Mały Zameczek*. An archaeological site located there is described as a *nearby* suburb or Czermno, site 2, in the archaeological literature. Apparently, as indicated by incomplete data, it was also fortified (see below IV.2.4.4). Directly to its north-west, an *outlying* borough is situated, marked as Czermno, site 3, which, in the local tradition, is known as *Podzamcze*. It occupies the highest of the dry elevations in the floodplain of the Huczwa River. Beside the settlement, an inhumation cemetery was discovered.

A group of further sites, also occupying elevations and dry islands of various size, extends to the west and north-west of the stronghold, among them Czermno, site 4, Czermno, site 5, and Czermno, site 6. Sites Czermno 4 and Czermno 6 also include inhumation cemeteries, situated next to the settled areas.

Other early medieval sites are situated on the southern bank of the Sieniocha River. An elongated, two-kilometer long embankment (Czermno, site 66) that spans the banks of the Huczwa and Sieniocha Rivers, encloses the entire complex from the south. Nowadays, it is preserved only in part, but even in the 1950s its height reached approximately 50 cm, with the width of the base reaching up to 6 m.

The aforementioned sites are located on the left bank of the Huczwa River. Another extensive early medieval settlement, accompanied by an inhumation cemetery, is situated on the right bank, on the so-called *Ostrów*, in the land of a now-defunct hamlet called *Doliwa* (the apellation *Doliwo* was also in the use). In the archaeological literature, it is described as Wronowice, site 1, or Wronowice-Doliwo, site 1.

As was already mentioned, the first description of fortifications in the village of Czermno dates back to 1817. Archaeological research began here over a hundred years later, during World War II (1940). The excavations were headed by the Ukrainian archaeologist Levko Chikalenko, and focused on site 3. In 1952, a research team led by Konrad Jażdżewski excavated the interior of the stronghold (site 1). Further excavations, headed by Jan Gurba, were carried out in 1976-1979. While the works from 1940 and 1952 can be described as preliminary reconnaissance, the excavations of Jan Gurba's research team were, in turn, of permanent character. The works concentrated on the stronghold (including ramparts), the suburb (site 2), and the cemetery/settlement (site 3). In 1985, Andrzej Urbański excavated a small test-pit on site IIG (wooden trackway; Fig. 3: A). Another small-scale excavation took place in 1997 in order to obtain wood samples for dendrochronological analyses. The works were headed by Andrzej Urbański and Jan Gurba. In the same year, Irena Kutyłowska conducted excavations on site 3 (Fig. 4; for further information about excavation campaigns in the years 1940-1997 see: Florek and Wołoszyn eds 2016; Auch 2017).

Surveys with the use of metal detectors took place in 2010-2011 (team of Andrzej Kokowski, Marcin Piotrowski, and Artur Troncik), as well as in 2015 (Marcin Przybyła). The works from 2010-2011 brought excellent results (*cf.* Piotrowski and Wołoszyn 2012), which

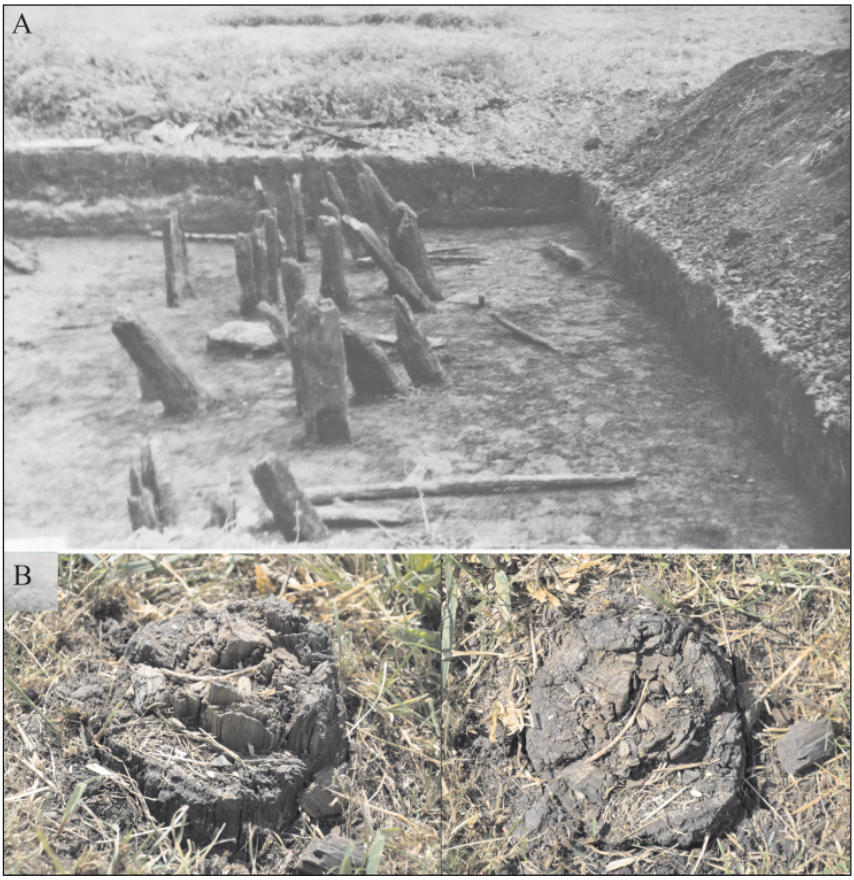

Fig. 3. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship). Wooden structures – vestiges of the trackways; computer processing by R. Ratajczak. A – site IIG. Wooden structures, discovered in the excavation area of 1985 (Photo by A. Urbański); B – wooden piles visible in 2016 on the ground surface at the foot of the stronghold (Photo by M. Wołoszyn)

triggered the emergence of the international research team dedicated to the elaboration and publication of the results of past research in Czermno and Gródek.

Although the research program, funded by the National Program for the Development of Humanities, focused on the publication of data from previous research, it also included excavations in Czermno. In 2013-2014, the fieldworks, headed by Marcin Piotrowski, Iwona Florkiewicz, and Marcin Wołoszyn, were concentrated on site 3 and site 1 – the rampart. In the years 2014-2016, the excavations, under the direction of Tomasz Dzieńkowski and Marcin Wołoszyn, included site 1 – the rampart of the stronghold, and site 70.

The re-examination of the stronghold's rampart in 2014-2016 can be regarded as the biggest research effort of the entire project. The scope of fieldwork included three trenches,

marked as 1/2014, 2/2015, and 3/2016 (2014 – 5 × 10 m; 2015 – 4 × 15 m; 2016 – 3 × 3 m), with a total area of 119 m² and a depth of 2.5 to 6 m (Fig. 5). The rampart was investigated along a length of 25 m; the trenches encompassed its top, a part of the outer slope, and the inner slope, as well as its junction with the layers of the stronghold interior. The three-year-long excavation campaign brought recognition of approximately 60% of the entire width of the fortifications (further works on the outer slope are indispensable; see V below).

From 2013-2016, comprehensive measurements and drilling for soil samples were executed by the team of Radosław Dobrowolski in order to reconstruct the palaeoenvironmental conditions. These data made a significant contribution to the Czermno settlement complex research agenda (see IV.1 below).

Concurrently, from 2011-2015, Marek Poznański, Robert Solecki, Michał Aniszewski, and Piotr Kittel conducted archaeological and palaeoenvironmental investigations on site 68 in Czermno (Solecki *et al.* 2019). In 2013, Łukasz Pospieszny carried on geophysical prospections on sites 1, 2, and 3 (*cf.* Pospieszny 2016).

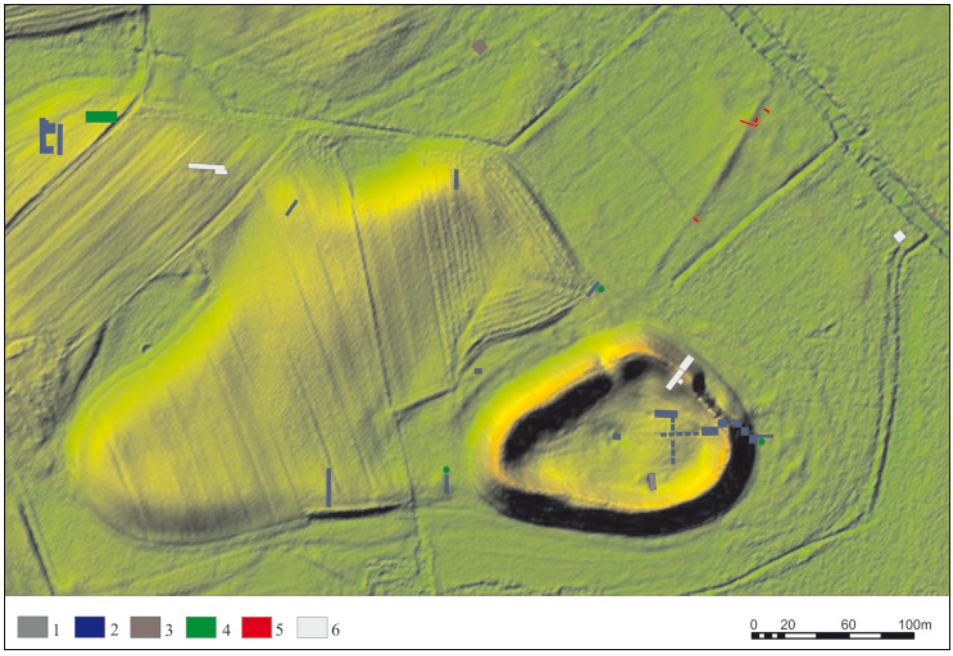

Fig. 4. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship). Digital elevation model of the stronghold and its vicinity. Sites 1-3 with location of archaeological trenches excavated in 1952-2016 (areas surveyed with the use of metal detectors in 2010-2011 and 2015 are not marked); prepared by P. Zagórski and T. Dzieńkowski. 1 – 1952 (team of Konrad Jażdżewski); 2 – 1976-1979 (team of Jan Gurba); 3 – 1985 (team of Andrzej Urbański); 4 – 1997 (team of Irena Kutyłowska & Andrzej Urbański); 5 – 2012-2015 (team of Marek Poznański); 6 – 2013-2016 (research project *Golden apple of Polish archaeology...*)

In 2015, the museum in Tomaszów Lubelski acquired two excellent hoards discovered in the vicinity of the Czermno stronghold (in the village of Perespa). In the following year, Jolanta Bagińska and Łukasz Wyszyński from the museum conducted verification excavations thereof, obtaining further fragments of jewellery from the deposit (see below IV.2.3).

The location (approximate in some cases) of trenches hitherto explored in the settlement complex in Czermno are presented in Figs. 4 and 5.

Despite the long-lasting research history, however, the state of our knowledge on the Czermno settlement complex remains incomplete. As stated above, research carried out in 1940 and 1952 should be regarded as nothing more than preliminary sondages. Regretta-

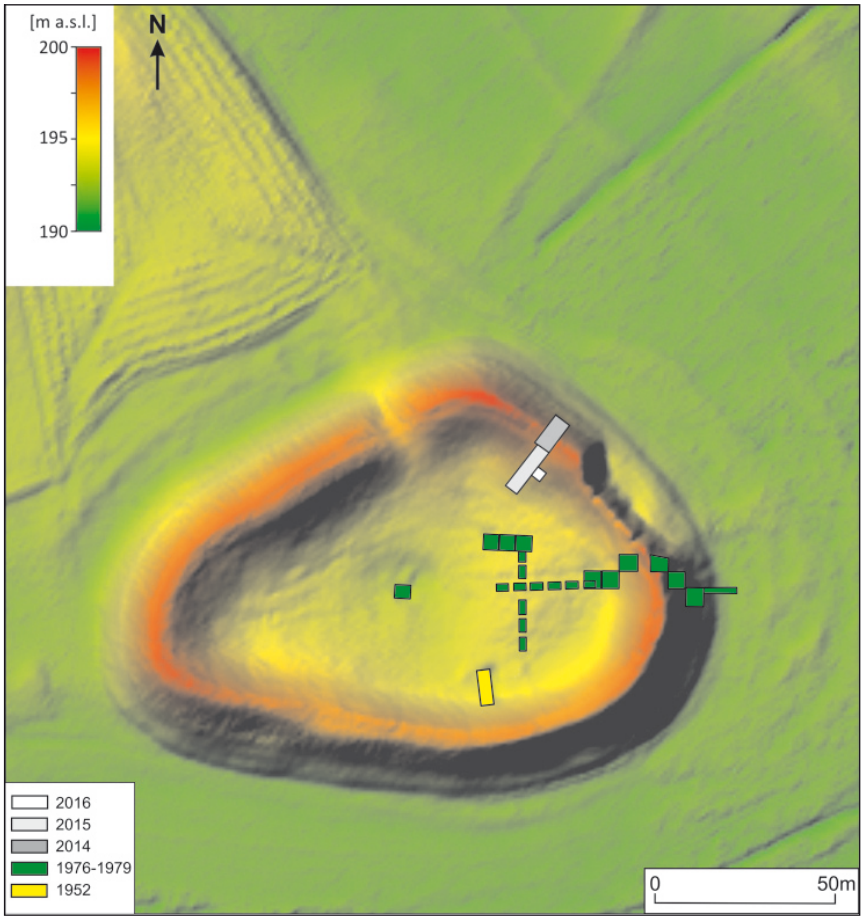

Fig. 5. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship), site 1 (stronghold). Location of archaeological trenches excavated in 1952, 1976-1979, 2014-2016; prepared by P. Zagórski and T. Dzieńkowski. 1952 – team of Konrad Jażdżewski; 1976-1979 – team of Jan Gurba; 2014-2016 – research project *Golden apple of Polish archaeology...*

bly, we are lacking basic data on archaeological layers and features discovered in the course of large-scale excavations held in the years 1976-1979, as well as in 1997 (see Florek 2016a for the details and comments). The inaccuracies are particularly severe in the case of excavations carried on at the stronghold. Despite the relatively large scale of the area excavated, it is hardly possible today to reconstruct the stratigraphic sequence, the structure of the built-in area in the stronghold's interior, or the range of the cemetery (given the numerous human remains acquired from the trenches within the ramparts). Apparently, the cemetery is stratigraphically younger than the stronghold, although we do not have unequivocal evidence (*e.g.*, burial pits cutting the relics of settlement features).

The rampart was excavated only in 1977, and, regrettably, only a portion of it was excavated. Furthermore, the majority of the trenches did not reach the subsoil, and the drawings of cross-sections are incomplete, frequently lacking descriptions and interpretation. Similar remarks concern the excavations undertaken in 1997. Samples for dendrochronological analyses were taken from their stratigraphic contexts without detailed prospection, location, or appropriate documentation – neither drawings nor photographs.

Similar inadequacies apply to the research carried out in 1976 and in 1977 on site 3. Although excavations encompassed an area of 3.4 ares and yielded discoveries of several houses, along with storage pits and skeleton graves, we are lacking basic documentation, *i.e.*, plans of the unearthed archaeological features.

Such a defective state of recognition of the settlement complex in Czermno was the catalyst for – as was already mentioned – the renewal of excavations in Czermno, included in the research project *Golden apple of Polish archaeology...*

III.3.2. Trackways

Publications dedicated to Czermno frequently mention wooden piles visible in the ground, or bridges discovered, which were to enable travel between the various parts of the settlement complex (research in 1940; see Chikalenko 1998). Konrad Jażdżewski refers to remains of bridges in the report from excavations held in 1952. He describes a four-meter-wide construction, consisting of four rows of wooden posts covered with planks. Such a structure was discovered, with a length of 100 m, between the stronghold and the River (Wronowice-Doliwo, site 1; nowadays – site 68; *cf.* Jażdżewski 1959, 73ff).

Wooden constructions have also been documented in other parts of the settlement complex in Czermno; regrettably, only a few of them can be located today (even approximately). Given the incomplete field documentation, the results of research conducted by Andrzej Urbański in 1985 on site IIG (today – Czermno, site 67; Fig. 3), are of primary importance. He excavated a small fragment of a wooden bridge that led from the banks of the Huczwa River towards the *nearby suburb* (site 2). A concentration of 58 wooden posts, arranged in eight groups, partially visible at the ground level, and partway sunk into peat layers, was uncovered in an 8 × 8 m trench, which was excavated to a depth of 90 cm.

Among but a few finds, potsherds, fragments of glass bracelets, and spindle-whorls (among them, one of Ovruch slate) should be mentioned (*cf.* Florkiewicz and Urbański 2016).

In 2010, Marek Poznański initiated prospections focused on trackway remains around the stronghold in Czermno. In the course of excavations held on site 68 (2012-2015), vestiges of more than 50 posts were discovered (Solecki *et al.* 2019).

Additional wooden structures were documented in 2014, in the course of rescue excavations preceding the construction of the lookout tower in the bank of the Huczwa River (Czermno, site 70). The finds can be interpreted as fragments of a trackway or a dyke lined with fascine, probably to harden the muddy ground (Wołoszyn *et al.* 2016a, Fig. 64).

III.3.3. Stray finds (hoards)

It should be stressed that but a few finds from Czermno refer to the period before the late 10th century. A series of sites in the vicinity of the stronghold, discovered in the course of surveys, can be – in general – referred to the 8th-10th and 9th-10th centuries (potsherds; *cf.* Dzieńkowski and Sadowski 2016). An element of an Avar-type belt suit, dated to the 8th century was discovered in 2014 (Wołoszyn *et al.* 2016b; Figs. 4, 5: 1). It was found in the outer layers of the rampart. Although it is the oldest early medieval find from the site, it cannot be, however, regarded as a premise to date the erection of the stronghold back to the 8th century. Undoubtedly, these finds (potsherds, Avar-type belt suit) indicate an open settlement functioning on the site (or in the vicinity) in the given period.

Both the beginning, as well as the decline of the stronghold are, however, elucidated by four deposits of silver jewellery. In 2011, in the course of the aforementioned survey, with the use of metal detector, two silver hoards were discovered in the interior of the stronghold. Regrettably, we do not know their primary stratigraphic context. Several years later, another two silver deposits were found in the neighboring village of Perespa (Perespa, site 81 – discovery from 2014, and site 85 – discovery from 2015; for its location see Fig. 1: B).

Indubitably, the aforementioned collections of jewellery are not of decisive value in the discussion on the chronology of the settlement complex in Czermno, although it is worth considering them in further studies.

IV. CHRONOLOGY OF THE COMPLEX IN LIGHT OF CURRENT RESEARCH

IV.1. Contribution of natural sciences

The results of comprehensive environmental research have enabled the reconstruction of selected elements of the geographical environment in the period preceding the construction of the stronghold and adjacent settlements, in particular: (1) determination of

mineral and biogenic sediment succession within the valleys of the Huczwa and Sieniocha Rivers in the vicinity of the stronghold, along with (2) separation of natural and anthropogenic lithological segments (Fig. 6: A), (3) reconstruction of the palaeomorphology of the area, together with palaeohydrological interpretation focused on the evolution of the riverbed system (Fig. 6: A-B), (4) evaluation of anthropogenic transformation of topology and hydrology in the immediate vicinity of the site, as well as (5) reconstruction of the history of vegetation, both in the context of its natural succession and the impact of anthropopressure on the trends of subsequent changes (Fig. 6: C-D).

Principal conclusions resulting from the environmental studies described above indicate that: (1) increased medieval settlement activity in the area in question started in the 7th-8th centuries (as indicated by the significant growth of anthropogenic bioindicators, recorded in a chronostratigraphically correlated benchmark profile of the outer moat – CZ-29; Fig. 6: C), i.e., in a period of relatively dry and cold climatic conditions (Fig. 6: D), and with predominantly coniferous communities occupying the sandy habitats in the vicinity of the site; (2) intensive landscape transformations (i.e. adaptation of the valley topology for settlement purposes) were carried out on a large scale in the following centuries (significant leveling of land, reorganization of drainage, construction of moats, embankments and log roads), (3) human impact on the environment was particularly intense, as shown by reliable multi-proxy data (among others, increase in the share of crops and ruderal plants, two distinct phases of oak felling), in the mid-9th century, at the turn of the 10th and 11th centuries, as well as in the second half of the 12th century, (4) all major settlement phases were associated with a relatively warm and humid climate (Fig. 6: C).

The intensity of settlement between the 10th and 13th centuries is difficult to ascertain. Economic activity in the area of the stronghold complex decreases significantly from the first half of the 11th century up to the mid-12th century. The development of deciduous forests, reconstruction of the mixed forest stand and decreasing share of open areas with cereal cultivation are among the principal factors of the process.

Subsequent intensification of the human economy, coinciding with the early medieval climate optimum, started in the mid-12th century. Palynological indicators document significant deforestation, an increase in pastures, cultivated fields, and fallow areas (permanent up to the present day; see Dobrowolski *et al.* 2018).

IV.2. Contribution of archaeology

The aforementioned methodological weaknesses of the excavations held in Czermno, both in the 1970s and in 1997, have left a wide array of questions regarding the chronology of the settlement complex in Czermno unanswered.

Undoubtedly, the chronology of the fortifications is among the most important issues (rampart on site 1). We decided, however, to preface the considerations on this subject with comments on three other categories of archaeological sources.

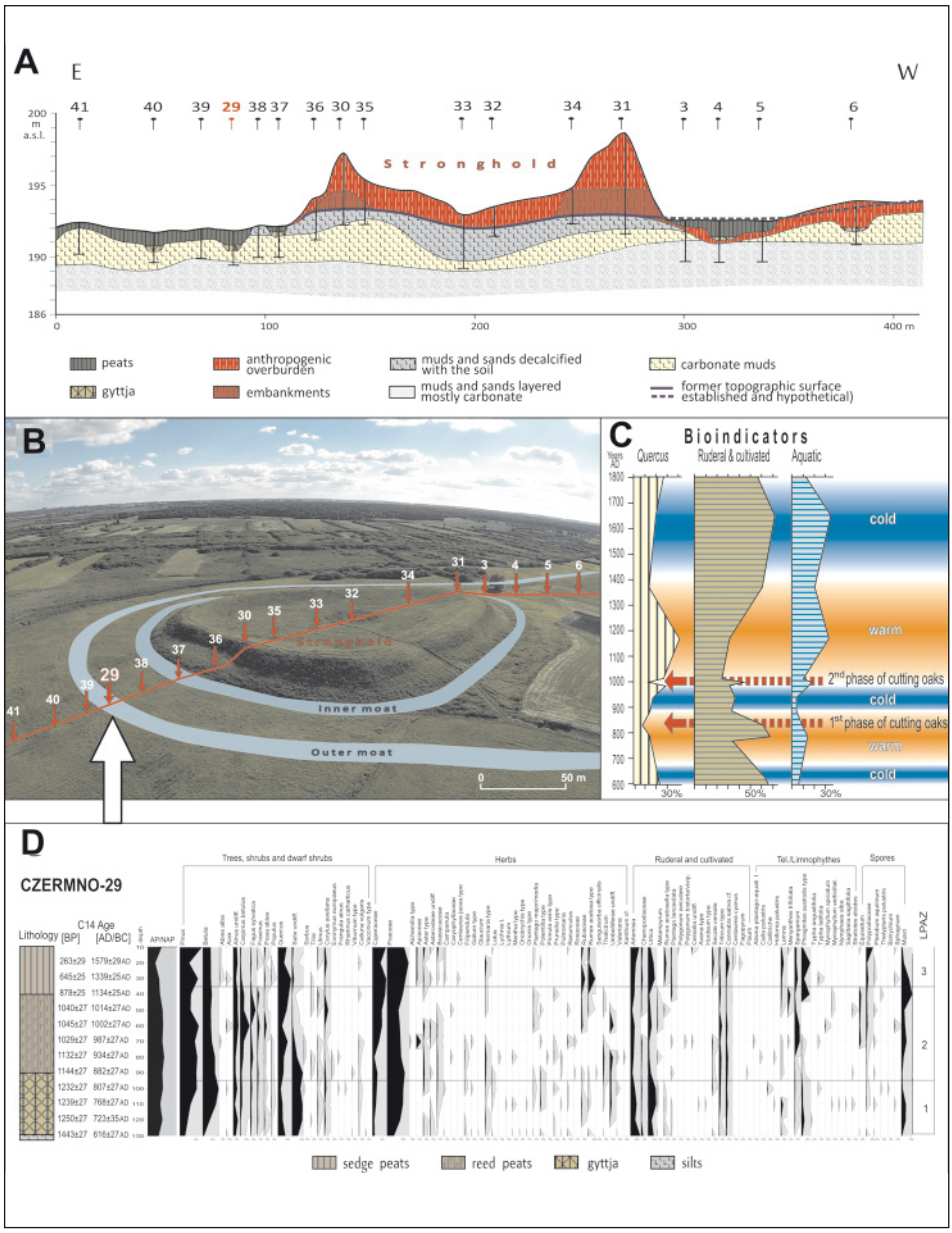

Fig. 6. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship). Main results of environmental investigations; prepared by P. Zagórski.

A – geological cross-section through the stronghold in Czermno (location as Fig. 6: B); B – distribution of the drillings in the Czermno site (Photo by Mariusz Gala/Zdzisław Cozac Media Promocja); C – main bioindicators based on pollen diagram from CZ-29 profile (after Dobrowolski *et al*. 2016b); D – pollen diagram CZ-29 with the results of radiocarbon dating (after Dobrowolski *et al*. 2016b)

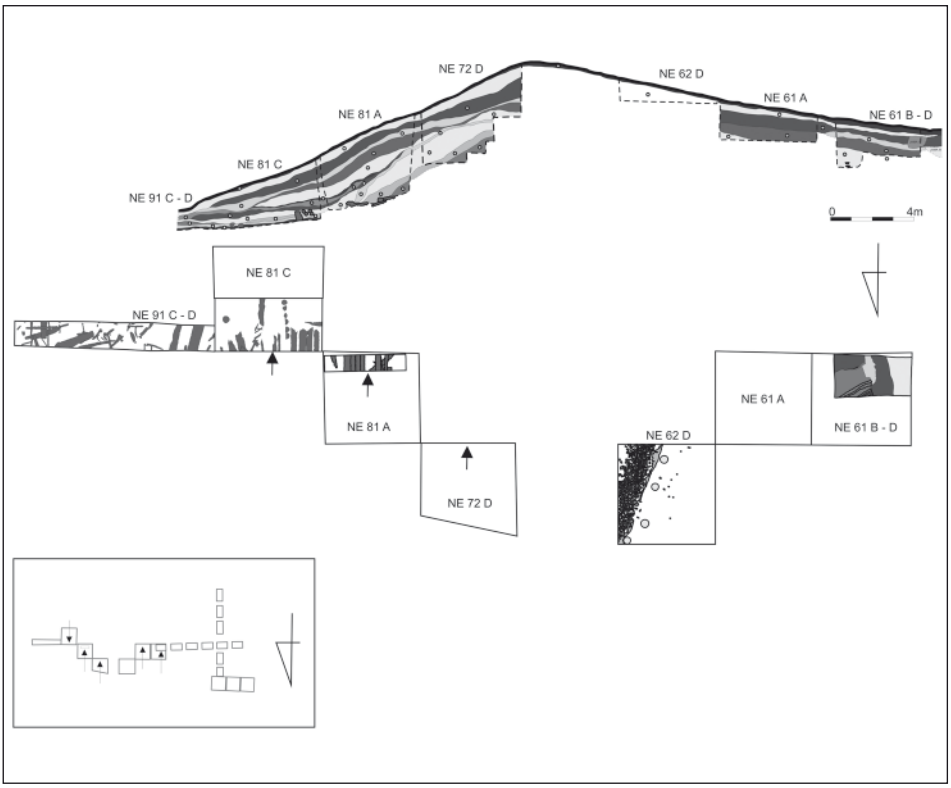

Fig. 7. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship), site 1 (stronghold). Excavations in 1977. Reconstructed cross-section of the rampart and plan of the trenches with remains of wooden constructions (after Kamińska-Koj and Koj 2016; rampart profiles marked with arrows); prepared by T. Dzieńkowski, computer processing by R. Ratajczak

IV.2.1. Inhumation cemeteries

As a matter of fact, there are no clear premises for establishing the chronology of skeletal burials discovered either in the interior of the stronghold (site 1; chronology of the grave discovered on the rampart will be discussed below, in the context of chronology of the fortifications – see IV.2.4) or at site 3. The latter provided 15 skeletal graves, unearthed in 2013, along with a group of archaeological features of typically settlement functions (foundation pit [?] among them). Stratigraphic data indicate that the burials are younger than the settlement features. Radiocarbon dates of samples taken from skeletons found in double grave No. 14, obtained in the Poznań Radiocarbon Laboratory, generally point to the 12th-13th centuries (^{14}C: 1059 [0.4%] 1063; 1154 [95.0%] 1264; 1276 [95.4%] 1392) as the period during which the necropolis was functioning (Voloshyn *et al*. 2014).

IV.2.2. Premises for absolute chronology of the trackways

The location of Czermno in the wet valleys of the Huczwa and Sieniocha Rivers forced the construction of bridges to enable travel between particular sites. Their vestiges were investigated in the most comprehensive way in 1985, in the course of excavations on site IIG, located between the suburb (site 2) and the Huczwa River (Fig. 3: A). In 1997, a new trench (2 × 6 m) was opened east of the area excavated in the 1980s. Wooden posts, unearthed in the trench and interpreted as the foundations of a trackway, provided eight samples for dendrochronological analysis. The results, obtained in the Marek Krąpiec Laboratory, are as follows: after 1175, after 1200, and 1186, 1202, 1203). Additional samples were taken from the posts situated in the middle of the trackway, as well as from a pile located outside the trackway and inclined towards it. The results, obtained in the Marek Krąpiec Laboratory, are as follows: 1189, after 1215, after 1242, and 1240, 1242 (*cf*. Krąpiec 1998, 38-39; Urbański 2000, 240ff., Tab. 1; Florkiewicz and Urbański 2016; see Table 1).

Datings obtained in 1997 proved the functioning of wooden structures in the 12th-13th centuries (1186-1242). Given the fact that a certain part of the samples refers to the period

Table 1. Settlement complex in Czermno.
Results of dendrochronological datings of samples acquired in 1997 (after Krąpiec 1998, 38-39; Urbański 2000; updated by M. Krąpiec); prepared by T. Dzieńkowski and M. Krąpiec

Sample No. on Fig. 1	Sample		Number of rings	Sapwood	Date I	Date II
Rampart/stabilization constructions						
1	Are 81, qr. C	oak beams, outer part (basis) or elements of stabilization of the rampart	85	lack	939-1023	after 1030
1	Are 81, qr. C		58	lack	943-1000	after 1007
2	Trench II D		111	lack	910-1020?	after 1027?
2	Trench II D		82	lack	962-1043	after 1050?
Trackway constructions						
3	Trench II G	trackways (oak posts)	128	117-128	1115-1242	1242
3	Trench II G		102	102	1131-1232	after 1242
3	Trench II G		125	114-125	1116-1240	1240
4	Post		260	lack	946-1205	after 1215
4	Post		62	48-62	1142-1203	1203
4	Post		77	68-77	1110-1186	1186
4	Post		99	86-99	1104-1202	1202
4	Post		122	lack	1044-1165	after 1175
4	Post		114	103-114	1077-1190	after 1200
4	Post		121	120-121	1072-1192	1203 (-6/+8)
4	?	?	47	lack	1136-1182	after 1189

after 1240, one can assume that the settlement complex survived the first Mongol invasion (capture of Kyiv – 1240; raid on Poland and Hungary – 1241).

Discoveries of recent years prove that the trackways also functioned earlier. Although wood samples from site 68 have not provided dendrochronological dates, radiocarbon analysis conducted in the Marek Krąpiec Laboratory resulted in dates (with a probability range of 95,4%) of 776-982 AD, 975-1155 AD, 1021-1155 AD, and 1038-1213 AD (Aniszewski *et al.* 2015, 22; Solecki *et al.* 2019). A vertical, pointed wooden post, unearthed in 2014 at site 70, provided a dendrochronological date of 999 AD (Marek Krąpiec Laboratory; *cf.* Wołoszyn *et al.* 2016a).

IV.2.3. Chronology of silver hoards from Perespa and Czermno with regard to the functioning of the Czermno settlement complex

The precise chronology of jewellery discovered in Perespa near Czermno requires thorough study, although the hoards were hidden undoubtedly in the 10th century (mid-10th c., first half of the 10th c.?). Significantly, both of the assemblages include not only items with clear east European analogies (*e.g.*, lunulas), but also objects typical of East-Central Europe (eastern Austria [Burgenland], Czechia, Transylvania), and also of post-Great-Moravian character (earrings of a form well known from Stará Kouřim refer to the first half of the 10th century (!); *cf.* Wołoszyn *et al.* 2016b, 702-709; Poleski 2017, 86-87, with remarks on analogies with Stará Kouřim); Duczko 2018, 544 (with remarks on finds from Drassburg in Burgenland; description of the site – see: https://histarch.univie.ac.at/mitarbeiterinnen/univ-prof-dr-claudia-theune/projekte/abgeschlossene-projekte/reiterkrieger-und-burgenbauer-die-fruehen-ungarn-und-das-deutsche-reich-vom-9-11-jahrhundert/die-mittelalterliche-burg-von-drassburg/ [accessed: 28.05.2020]).

Certainly, hoards from Perespa do not provide premises for, *e.g.*, the chronology of erection of the Czermno stronghold rampart. The deposits testify, however, to the formation of a local elite in the 10th century, with decidedly supra-regional contacts.

In the course of the aforementioned metal detector survey in 2011, two hoards of silver jewellery were discovered in the interior of the Czermno stronghold (for their location see Fig. 1: B). Regrettably, both assemblages are deprived of archaeological context. Typological analysis points to the second half of the 13th or the early 14th century as the most probable time of deposition (*cf.* Piotrowski and Wołoszyn 2012). Apparently, at the time the hoards were deposited, the stronghold had ceased to exist.

IV.2.4. Archaeological excavations in Czermno in 1977, 1997, 2014-2016

IV.2.4.1. Excavations of the rampart in 1977

The archaeological work on the stronghold in 1977 was the first large-scale investigation of the rampart, and perhaps the most important in the course of the entire excavation

campaign held in the 1970s (Florek and Wołoszyn eds 2016). The principal goal was to cut the fortification line by an east-west axis, to obtain a complete cross-section of the stratigraphic sequence (Figs. 4-5, 7). Following the above-mentioned criteria, six trenches with different parameters were opened during the research – four on the eastern, outer slope (No. 72D, 81A, 81C, 91C-D), and two on the western, inner slope (No. 61A, 62D; Kamińska-Koj and Koj 2016,194, 204; Florek 2016a, 243-246; 2016b, 275-283; Fig. 7). Trench 51B-D, located at the junction of the rampart and the interior of the stronghold, explored in 1977-1978, also yielded substantial information. The results gave background to separate two construction phases of the rampart and establish their preliminary chronology (Kamińska-Koj and Koj 2016, 195-196). The rampart of the older phase was placed on a wooden grate, secured from the outside with a fence and a wooden-clay structure, serving as a breastwork, which was later destroyed by fire. In the younger phase, the upper part of the embankment was elevated and rebuilt with the use of a combined grate-and-box wall construction. The entire chronological frame of the stronghold, synchronized with the results of the excavations held in 1952, was separated into the following sequential phases: 1) fortified (?) settlement and initial phase of stronghold construction in the 10th century, including Level 3 (the oldest) and layer 10 – sandy-clayish subsoil with relics of the wooden rampart construction on its top (lower layers 11-13 were also of natural origin); 2) occupation of the stronghold until its destruction in the 11th century, including Level 2, rampart layers 5-9, and layer 4 – defined as a layer of conflagration of the rampart; 3) reconstruction of the rampart and occupation of the stronghold until its final destruction in the 12th-13th centuries, including Level 1 and rampart layers 1-3 (*cf.* Kamińska-Koj and Koj 2016, 200, 210; Florek 2016b, 278-280; Florkiewicz and Sikora 2016).

*

The discovery of the suburb rampart on site 2 (excavations in 1976 and 1979) should also be mentioned here. Wooden relics unearthed there can be interpreted as remains of a fence and wooden stabilization of the embankment construction (Pomarański 2016, 378-381). Given the relatively small scope of excavations, it was not possible to identify the structural details of the rampart, its parameters, or its course. Regrettably, we are lacking the data necessary to establish the chronology of the fortifications.

IV.2.4.2. Sampling archaeological wood in 1997

In the last decade of the 20th century, Andrzej Urbański recommenced excavations in Czermno in order to obtain wood samples from the rampart and trackway constructions for dendrochronological dating (*cf.* Urbański 2000). Four spots were selected (Fig. 1: 2; Table 1):

No. 1 – at the foot of the eastern part of the stronghold rampart (site 1), south of trench 91C-D, lack of precise location – according to the Author: "[...] samples from wooden con-

struction uncovered in the outer rampart base, in the vicinity of the stack construction and the older fence" (Urbański 2000, 240), which indicates that the samples were taken from the junction of trenches 81C and 91D (location: Fig. 1: B: I); results – after 1007 AD, after 1030 AD (without outer sapwood);

No. 2 – hollow between the rampart and the suburb area – site IID, excavated in 1979. Two layers of wood were uncovered and considered to be elements of the trackway (I) and wall support (II). Samples were taken from the lower level (II), uncovered in a test-pit adjacent to the trenches from the 1970s (Urbański 2000, 240; 2016, 595, 614; location: Fig. 1: B: II); results – after 1027 AD, after 1050 AD (without outer sapwood);

No. 3 – outer part of the suburb rampart (site IIF); samples were taken from constructions uncovered in 1979, which were associated with the embankment and fence supporting its outer slope (location: Fig. 1: B: III); lack of the results;

No. 4 – area between the suburb (site 2) and the Huczwa River, indicated as site IIG (location: Fig. 1: B: IV).

Excavations in 1985 revealed two rows of wooden stakes and horizontal beams, considered as relics of a wooden trackway. Eight samples of wood were taken in 1997 from a test-pit (2 × 6 m) situated east of the older trench (Urbański 2000, 240; Florek 2016a, 248; Florkiewicz and Urbański 2016, 385-388; (*cf.* Figs. 1 : B : III; 5; Table 1).

Following the author of the research (Urbański 2000, 242), it should be stressed here that the samples obtained in 1997 are deprived of stratigraphic context, which radically reduces the value of the results obtained.

IV.2.4.3. Rampart investigation in 2014-2016

New excavations on the stronghold started in 2014 and continued for the next two years. The primary strategic goal was the rampart – well-preserved, 30 meters wide, and six meters high. Two trenches – 1/2014, 5 × 10 m, and 2/2015, 4 × 15 m – cut the eastern part of the fortification along a NE-SW axis. Trench 3/2016 (3 × 3 m), was located in the area of the discovered burial and the remains of the rampart constructions (Figs. 5, 8-9). The arrangement of the trenches allowed for the investigation of the fortifications along a length of 25 m, including the upper face and a part of the outer slope of the rampart (trench 1), as well as its inner slope and the junction of the rampart and the interior of the stronghold (trench 2, 3; Fig. 5). Over the course of three seasons, researchers excavated an area of 119 m^2, with the depth of the trenches ranging from 2.5 up to 6 m. The works followed the rules of a stratigraphic method of exploration. A volume of 249 stratigraphic units was distinguished and marked with ordinal numbers from 1000 to 1099, and 2000-2150. Stratigraphic analysis led to the selection of 188 units related to the construction, functioning and destruction of the fortifications. To complete the statistics, a set of 20,393 finds is worth mentioning, along with a series of 127 samples, which finally provided 22 radiocarbon (plus two samples from grave 14 on site 3) and 9 dendrochronological dates.

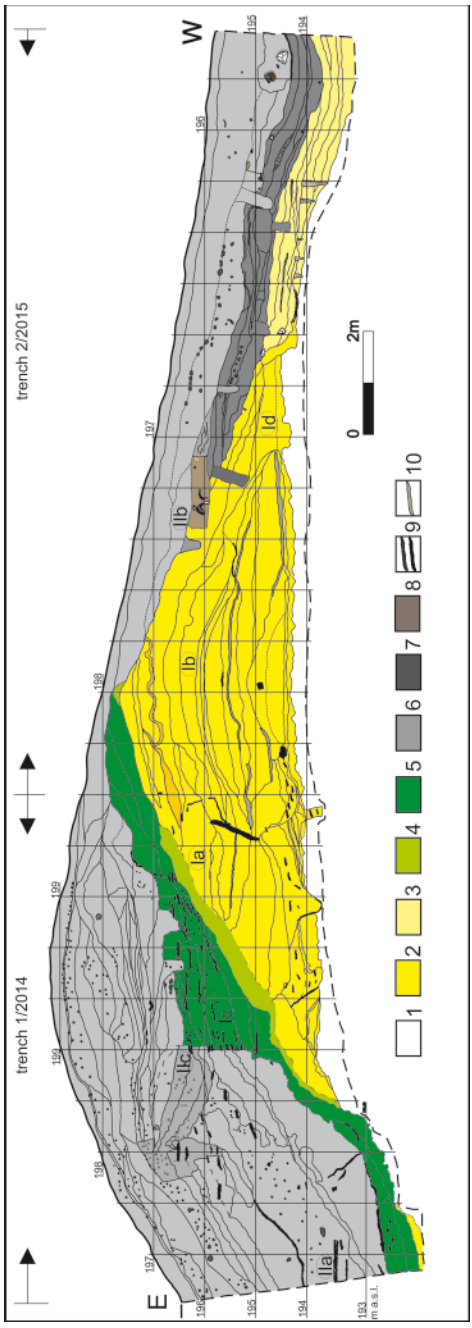

Fig. 8. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship), site 1 (stronghold). Cross-section of the rampart excavated in 2014-2016, with phases Ia-Id, and IIa-IIc; prepared by T. Dzieńkowski, computer processing by R. Ratajczak.

1 – subsoil level; 2 – embankment of the rampart, Ia and Ib; 3 – stronghold's interior layers, phase I; 4 – levelling (s.u. 1042_1); 5 – embankment of the rampart, Ib; 6 – embankment of the rampart, Ia-IIc; 7 – stronghold's interior layers, phase II; 8 – burial; 9 – wooden constructions; 10 – peat

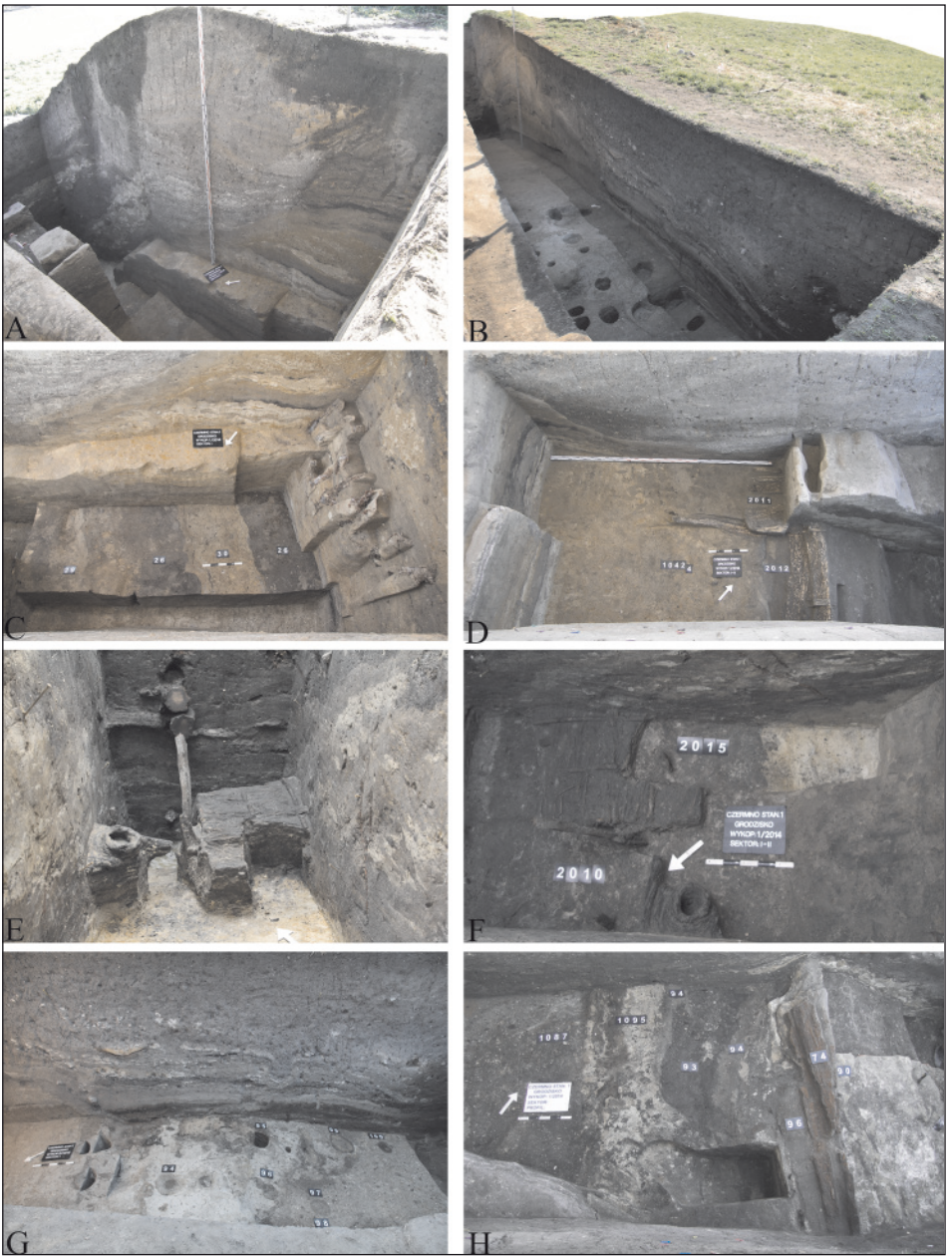

Fig. 9. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship), site 1 (stronghold). Excavations 2014-2015; Photo by T. Dzieńkowski, computer processing by R. Ratajczak. A-B – southeastern profile of the rampart; C-F, H – wooden constructions of the rampart I, II (C – construction Ia; D – construction Ic; E – construction IIa; F – wood, phase I; H – construction IIc), G – stronghold's interior construction and layers, phase I, II

Results of the last three excavation seasons are undoubtedly groundbreaking – they gave a solid basis for the verification of previous conclusions and provided a significant volume of completely new data, not to mention the re-examination of approximately 60% of the rampart. The new data set, supported with information from excavations held in the 1970s and 1990s, allows for a thorough analysis of the stratigraphy and construction details of the wall, along with the establishment of a preliminary chronological frame.

The conclusions described below followed a standard research procedure. Field data went through detailed analysis, focused on the association of stratigraphic units according to such criteria as structure, stratigraphic relations, and anthropogenic content. As a result, layer groups related to the sequential phases of rampart construction have been separated. A series of radiocarbon and (less numerous) dendrochronological datings for wooden elements of wall construction allowed for the establishment of a preliminary chronology of the building phases. Archaeological finds, from both the original rampart structure and secondary deposits, were included in the chronological analysis, though on a limited scale. Analysis of the stratigraphy and absolute chronology data indicate two (I, II) phases of the construction and use of the rampart (Figs. 8-11).

Rampart I

Subsoil

Both former and present conclusions are consistent – the stronghold was erected on a headland of an upper fluvial terrace, elevated above the floodplain by 3 m (*cf.* Dobrowolski *et al.* 2016, 120; 2018). Data from trenches 1-3 (2014-2016) indicate that the primary soil layer was partially levelled over a length of 15-16 m. The highest elevation ordinate of the area, equal to 194.5 m a.s.l., was documented in the central part, with a slight decline towards the eastern edge of the trench, down to 193.8 m a.s.l. (Fig. 8).

Earthworks and constructions Ia and Ib

A thirteen-meter-wide rampart, made of earth and wood, was constructed on a levelled surface. The embankment was formed of yellow, sandy silt, interleaved with layers of peat and gray clay. Despite the use of a uniform material, the east (Ia) and west (Ib) sections of the rampart differed in terms of construction details. The eastern part consisted of an earthen embankment, 5-6 meters wide, internally strengthened by several levels of wooden constructions (Figs. 8, 9: A, C). Additionally, the foundations of the eastern part were prepared differently – the top of the subsoil was covered with a layer of branches and planks, as indicated by traces of decomposed wood (s.u. 2025; the reference to stratigraphic units serves ordering and information purposes – *cf.* Table 2, 4; for technical reasons s.u. numbers are not marked on profile drawing, Fig. 8, 9). The internal part of the embankment was stabilized with the use of stakes and fascine. Three rows of one-meter-tall stakes with a diameter of approximately 10 cm, embedded in the ground (subsoil) up to 20-30 cm, were documented on the level of the natural soil (s.u. 2030, 2031, 2115). Excavation works

Table 2. Czermno. Results of dendrochronological datings of oak samples acquired from rampart and trackway constructions (excavations 2015; after Krąpiec 2015a); prepared by T. Dzieńkowski

Sample No.	Description	Rampart/ construction	Number of rings	Sapwood	Dating of sequence	Date of felling
CZER41	Trench 1/2014; stake from rampart (s.u. 2000_{18})	IIa	61	-	918-978?	after 985
CZER46	Trench 1/2014; beam from rampart (s.u. 2000_{15})	IIa	81	-	893-973	after 983
CZER47	Trench 1/2014; root beneath rampart	I?	70	-	898-967?	after 973
CZER48	Trackway (site 70)	-	97	-	894-990	after 1000
CZER49	Trench 1/2014; beam from rampart (s.u. 2000_{17})	IIa	102	-	878-979	after 989
CZER51	Trench 1/2014; beam from rampart (s.u. 2000_{11})	IIa	120	112-120+5	877-996+5	1001 (-0/+8)

uncovered 3-4 stakes in each row, with upper and lower heights ranging between 193.6-194.2 and 195 m a.s.l. (Level I). An analogous line of stakes was discovered in the embankment, approximately 1 m above the subsoil. This time, up to eight stakes in a row were registered, on the level between 195 and 196.1 m a.s.l. (s.u. 2021; Level II). Another wooden construction occurred in the upper part of the embankment, on the level of 196-197.1 m a.s.l., although its structure was not clearly legible. It consisted of horizontally-placed wooden elements, apparently beams/planks or stakes, which were, regrettably, in a bad state of preservation (s.u. 2105; Level III). The wood was heavily decomposed, although with no traces of exposure to fire. Given the size and arrangement of the stakes, it is hardly possible to consider them as a part of a defensive structure. Presumably, they protected the earthen parts of the embankment from sliding apart. Although no traces of braid were found, the distance between the stakes, equal to approximately 10 cm, indirectly hints to its presence. It should be noted that, also, no remains of horizontal wooden elements have been identified between the stakes.

The stakes and beams from Levels I-III formed a "stepped" structure stabilizing embankment Ia, adjacent to the western part of the rampart (Ib), 6.5-7 m wide. Embankment Ib consisted of alternating horizontal and embowed layers of earth (s.u. 2087, 2101, 2111) and peat (s.u. 2109).The inner part contained no traces of wooden constructions, whereas posts and stakes forming the rampart wall were discovered at its western edge (s.u. 2084, 2084a, 2091-2093).

Both embankments Ia and Ib, although different in terms of constructional details, were erected simultaneously, as indicated by the traces of levelling of the natural soil, the homogenous earthen material applied to the construction (yellow and grey silt interleaved with peat), and the stratigraphic relations of layers overlapping each other. Apparently, rampart sections Ia and Ib were built as a series of alternate levels – starting from rows of stakes and a lower embankment in the eastern part, followed by embowed layers of earth in the western section, and enhanced with stakes and braid, again in the eastern portion. Such an arrangement was documented up to a height of 3 m. The clay material utilized in the construction was acquired from the neighboring Sieniocha and Huczwa River valleys (Dobrowolski *et al*. 2016, 120).

Construction Ic

The aforementioned elements of the rampart, as well as the subsequent stages of construction, are unambiguous. The reconstruction of stratigraphic relations on the eastern edge of the rampart (Ia), along with the construction of the wooden wall (Ic), however, appears to be more problematic. Particularly, the layer marked as s.u. 1042_1, sloping diagonally and covering a set of horizontal and slightly elevating deposits, poses certain interpretive dilemmas (Figs. 8-9: A). The extent and structure of layer 1042_1 indicate changes, possibly temporary exposure of the embankment interior to variable weather conditions (leaching traces), therefore indicating either short or long interruption of construction works. The documented sequence of layers raises some ambiguities and provokes discussion. The question arises whether the Ic construction was not erected in the place of pre-existing structures, *e.g*. a rampart facade? Such a supposition is supported by the stratigraphy in regard to the "rising" layers below s.u. 1042_1. The units would be deposited in such a position only due to a vertical barrier. Unequivocal conclusions cannot be drawn, however, mostly due to the lack of legible traces of destruction, conflagration or construction works. We hope to resolve this issue in the course of further research.

Such an episode, although requiring further clarification, ended with the erection of subsequent construction elements. Layer 1042_1, along with the other deposits of embankment Ia, served as a basis for the groundwork, consisting of two to three wooden beams (preserved only partially; s.u. 1087a, 2012; footwall at the level of 195-195.2 m a.s.l.). It supported the vertical wooden wall, preserved to a height of 1-1.4 m, fastened with long horizontal beams (s.u. 2011; Fig. 9: D), anchored in the core of embankment Ia. Regrettably, ties between the above-described elements are currently not legible. the entire construction formed a simple hutch lacking a back wall, filled with hardened (tamped) gray earth (s.u. 1087), and stabilized with planks and branches laid crosswise to the rampart line (the form approximates a single-track stack construction, though more chaotic).

Presumably, the eastern wall of the rampart (Ic) was secured by clay and wood (s.u. 1095_1, 2009, 2015), as indicated by remains of padding at the foot of the rampart, along with traces

of wood processing, including the trunk that provided a dendrochronological date. A hollow or ditch of intentional character (ditch E) was discovered as well.

Western construction (Id) and junction with stronghold interior

Only the lower parts of the elements comprising the western face of the wooden rampart wall were preserved. Negatives of wooden posts with diameters of 20-30 cm (s.u. 2091-2093) can be regarded as remains of vertical elements (so-called pilots), spaced evenly apart (about 20-30 cm), that supported the horizontal construction (s.u. 2084), which consisted of wooden beams (30-40 cm wide), arranged parallel to the fortification line. Both of the elements constituted the inner side of the rampart wall (Figs. 8, 9: B, G). Posts

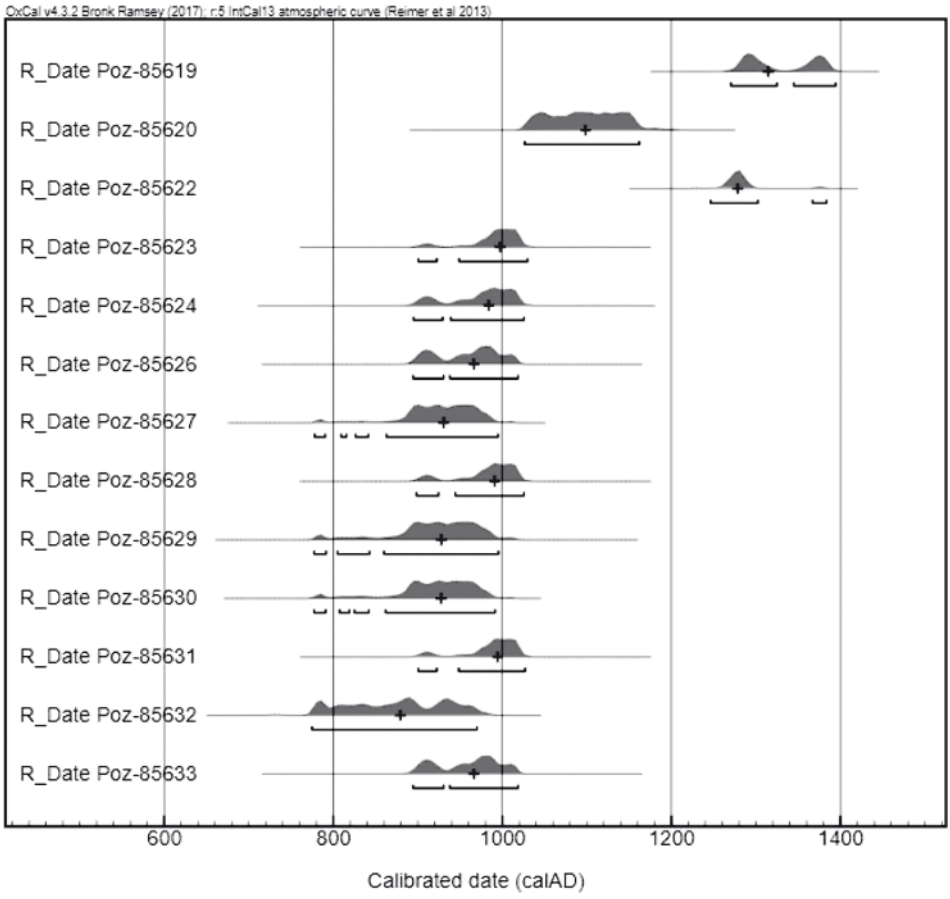

Fig. 10. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship), site 1 (stronghold). Radiocarbon datings of organic residues on potsherds (after Auch 2017); prepared by T. Dzieńkowski

with braiding, in turn, limited the construction from the side of embankment Ib. The estimated width of the "barrier" filled with earth is about 1.3-1.4 m.

Excavation results indicate that the area by the inner face of the rampart was built up. The inhabitation zone is marked by discoveries of postholes, with diameters of 20 cm, and vertical stakes – traces of braid construction, documented in an area, about 2-2.5 m wide, between the rampart and the inner ditch (W). The posts supported the roof construction, while the stakes and braid padding protected against waterlogging. They served to stabilize the horizontal planks – a street surface or a house floor. The aforementioned constructions, discovered in the occupational layer of gray soil (s.u. 2066), were documented as deposits of decomposed wood (without traces of conflagration), only rarely preserved as elongated planks/beams. Pottery finds acquired from the occupational layer, according to the studies and ^{14}C dates of Michał Auch, correspond to a time between the second half of the 10th century and the mid-12th century (Type III – 10th-11th c.; Type VIII – second half of the 10th – 12th c.; *cf.* Auch 2017,110, 220, 263-280; 2018, 197-201; Fig. 10).

Ditches

Traces of two intentionally arranged hollows/ditches, filled with water and alluvia, were discovered both on the western, inner side of the rampart, as well as on the eastern, outer side (Fig. 8). The height of the inner ditch was measured to be about 193.8-194 m a.s.l. Its depth ranged to 50 cm, while its width was over 1 m (the full width exceeded the area excavated). Apparently, the ditch drained water from the area adjacent to the rampart. An analogous structure discovered on the outer side of the rampart presumably fulfilled similar functions, yet it was excavated on a small scale only. The ditch, sunk into the ground up to 60 cm, had a documented height of 192.4 m a.s.l., with a width exceeding 1.3 m. Regularly arranged padding (s.u. 2015), as well as traces of wood processing, including a felled tree trunk that provided a dendrochronological date, were noted in the vicinity of the ditch.

Stratigraphy, chronology, and reconstruction of rampart I

Stratigraphic analysis indicates that the oldest rampart was erected on the levelled surface of an elevation in the middle of the river valley. Its width reached 13 m. The rampart included two embankments – eastern (Ia), stabilized by wooden stakes, planks, and braiding (Ic), and western (Ib), constructed exclusively with earth, limited by a vertical wooden wall (Id). Both of the structures were built simultaneously, as indicated both by the range of natural surface leveling, as well as by the identical material used in their construction (grey-yellow silt and peat), containing a scarce number of finds with little diagnostic value. The wooden wall separating the rampart from the stronghold interior was built with beams stabilized by posts and braiding from the inner side. A much more complicated situation was found in the eastern part, given the presence of an oblique layer cutting the horizontal embankment structure. Apparently, it testifies to a temporary, fairly

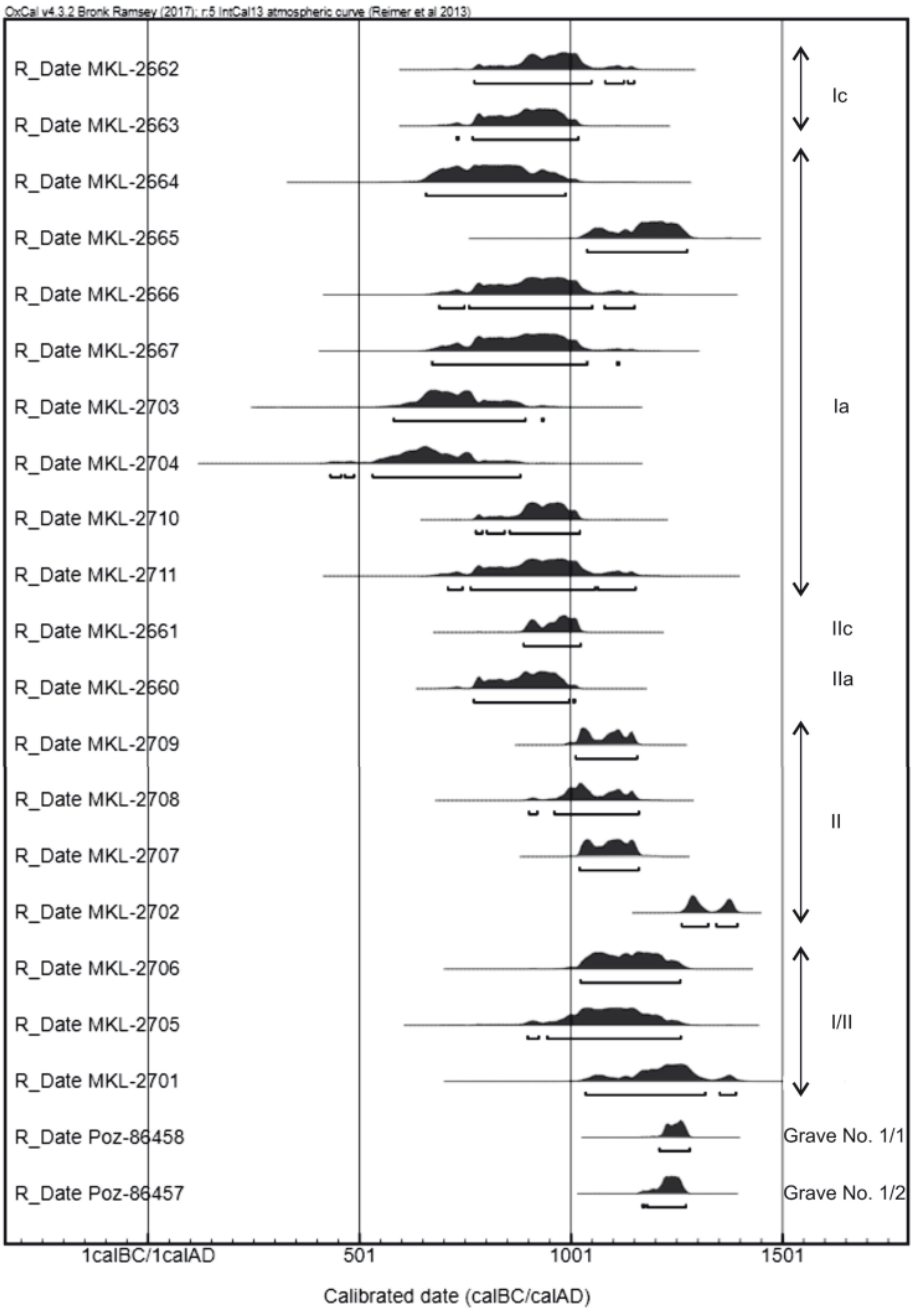

Fig. 11. Czermno (Tomaszów Lubelski district, Lubelskie voivodeship), site 1 (stronghold). Rampart Ia, Ic and II (inner constructions and grave 1/2016) – results of radiocarbon datings (after Krąpiec 2015c and Wołoszyn *et al.* 2018); prepared by T. Dzieńkowski

short, break in the construction works. Such an event – a change of building concept – was followed by the erection of the outer wall of the rampart. It was built 0.5-1 m above the elevation surface, in the form of a wooden structure (box, hutch?), consisting of horizontal beams stabilized by tamped, firm layers of humus overlapped by wood. The destruction of the upper part hinders our ability to reconstruct the details.

Stratigraphically defined components of rampart I (Ia, Ib, Ic, Id) underwent chronological analysis with the use of dendrochronological and radiocarbon datings (*cf.* Krąpiec 2015a, 2015b, 2015c; Figs. 8; 9: B; 11). Dendrochronological analysis provided but a single date – after 973 AD, which was obtained from the trunk of a felled tree found at the foot of rampart I, regrettably without the sapwood layer (Fig. 9: E, F). The trunk was not an element of the rampart structure; nonetheless, its connection with construction works seems undeniable. Radiocarbon dating brought much better results. Analyses yielded 10 dates – eight for wooden elements of embankment Ia, and two for structure Ic (*cf.* Krąpiec 2015c). Samples from embankment Ia were acquired from stakes of Level II (s.u. 2021) and Level III (s.u. 2105), while structure Ic provided samples from planks (s.u. 1086). The results are illustrated in Figure 11 and Table 4. Dates of nine samples vary between the 9th and, primarily, the 10th to the early 11th century, with a 95% probability range. Within the 68% confidence interval, six dates do not exceed the 11th century, while three of the samples reach the second decade of the 11th century. Such results should not be, however, considered as unequivocal, since dates indicating early 11th century cannot be rejected. Nonetheless, interpretation of the probability distribution of the dates (after calibration) for the samples at issue points to the 10th century as having the highest plausibility, with the median in its second half for six of the samples.

Two ^{14}C samples (Nos. MKL-2703 and MKL-2704) provided slightly earlier dates (Fig. 11). Presumably, they were obtained from the so-called old wood, reused in the constructions, since border dates in both ranges reach from the end of the 9th century up to the 930s. The only sample clearly distinguishable from the others is No. MKL-2665, with a range between the 1040s and 1270s. The sample was obtained from a stake construction (s.u. 2021, Level II) dated to the 10th century; given the lack of other samples enabling verification, it was excluded from the analysis. The following radiocarbon samples were taken from occupational layers adjacent to the rampart. In terms of stratigraphy, the earliest phase of occupation of the stronghold (rampart I) is represented by s.u. 2066 (occupational level1/a). It contained huge amounts of decomposed wood, lacking traces of fire, that yielded samples for dating. The results obtained indicate 1023 (95.4%) and 1259 calAD (Table 4) with equal probability. It should be, however, borne in mind that the formation of occupational layers was a long-lasting process, and not a single event. Furthermore, given but a single sample, it is difficult to draw far-reaching conclusions.

Rampart II – enlargement of the fortification

The subsequent stage of the functioning of the stronghold includes the rebuilding of rampart I, namely its enlargement outwards. The relevant parts of the fortifications were investigated in the 1970s and in 1997, when dendrochronological samples were acquired at the foot of the rampart, although the results did not solve chronological questions. Acquisition of the complete cross-section of the rampart in the course of the last excavation campaign (2014-2016) was shown to be nearly impossible. Thus, only the upper part of the outer slope, which included relics of wooden constructions, was thoroughly investigated. Stratigraphic analysis and technical data, however, point to a planned extension, considering existing embankments. Nonetheless, given the lack of complete data, the following conclusions are to be regarded as preliminary.

Construction IIa

The western edge of wooden structure IIa was uncovered in 2014. It consisted of five horizontal beams, each 30 cm wide (entire items and preserved fragments – s.u. $2000_{1\text{-}18}$; Figs. 8, 9: E), stacked on top of one another, forming a side-wall of a wooden box (?). The box is preserved from the ground beam at 192.6 m a.s.l. up to 193.7-193.9 m a.s.l. (upper part). In terms of stratigraphic relations, it was located above the fill of the ditch (E), the leveling layer of clay (s.u. 1095), and the wooden padding (s.u. 2015). The construction was located at a distance of approximately 1 m from the slope of the elevation, and 2 m from the façade of wall Ic. Two lower beams (s.u. $2000_{14, 17}$) were provided with intentionally cut holes for mounting vertical posts. Structure II can be interpreted as the remains of a sidewall of a box construction, which appears to have been open on one side, given the traces of anchoring and lack of vestiges of the back wall. Beams provided samples for dendrochronological dating (see below). Given the limited range of excavation, complete reconstruction of described part of the fortification appears to be hardly plausible – this is particularly true of the most distant, eastern part of the construction, preliminarily investigated in the 1970s, which is still awaiting re-examination.

Western wall IIb and junction with the stronghold interior

As evidenced by stratigraphic data, the rearrangement of the fortifications also included rebuilding the western wall, which secured the rampart from the stronghold's interior, in order to both widen the area inside and raise the occupation level. A shift of the wall 2.5-3 m eastwards was the first significant change. The second one was associated with construction techniques. Two postholes (s.u. 2056a and 2060), along with negatives of beams preserved in layer 2056, constitute remains of a new vertical edge of the rampart. It was composed of a 1.8-meter-wide barrier, which included two separate wooden walls, built of horizontal beams stabilized by vertical posts, with the space in-between filled with earth. On the west side, layers associated with the occupation of the interior of the adhered

to the rampart (Figs. 8; 9: B, G). Two occupational levels were distinguished: 2a – stratigraphically older, including a layer of gray soil (s.u. 2047) with finds and constructions (posts B, D), which accumulated on the levelling layer of chalk (s.u. 2053a), 2b – the younger one, which also included gray soil (s.u. 2040, 2041) along with burnt material (s.u. 2054), constructions (post, s.u. 2073, beam s.u. 2068), and a levelling layer of chalk (s.u. 2053). Double burial 1 (see below), which was dug into the destroyed rampart construction and occupational layer, was the youngest structure discovered (2/b; Wołoszyn *et al.* 2018). The grave was covered by the debris of the destroyed rampart (s.u. 2032, 2033; 2/c; Figs. 8; 9: B).

Among the remains of housing structures adjacent to the rampart, a construction consisting of large, 60- to 70-centimeter-wide posts (s.u. 2079, 2080, 2081, 2083) shallowly embedded in the ground, and filled with conflagration layers, deserves particular attention. The posts were arranged along an E-W axis. Three of them were spaced every 40-50 cm, while the fourth one was placed 3 m westwards. Given the present state of research, it is hard to determine the construction type (building?), and stratigraphic relations with the aforementioned occupational layers remain unclear as well. It cannot be excluded, however, that the traces of fire correspond with layers of burnt matter registered in unit 2070, which were related to the final stage of rampart I or the early phase of rampart II. Vestiges of occupation of the stronghold, described above, such as occupational layers, constructions, and the burial, provided samples for radiocarbon dating (see Table 4).

Breastwork – construction IIc

In the course of excavation, the remains of the upper part of the rampart – the so-called breastwork – were discovered. It was composed of a type of vertical wall built of horizontal beams (s.u. 1074; 195,95-196,82 m a.s.l.), probably supported with posts; however, given the state of preservation, precise reconstruction is hardly feasible. One cannot exclude that postholes discovered 4-4.5 m westwards (s.u. 1085, 1085a; 196,8 m a.s.l.) were associated with a wooden wall closing the entire construction. The interior of the „box" was filled with loose gray earth, containing a considerable number of finds (s.u. 1081).

Rampart II was 25 m wide in its entirety. Apparently, it was built in the form of a „terrace" construction (IIa) surmounted by breastwork – a row (or two) of 3- to 4-meter-wide wooden boxes (IIc; Fig. 9: H) – or another defensive structure. Concentrations of daub and postholes, discovered in 1977 on the western slope of the rampart, along with negatives of beams and posts found in 2015, indicate that the zone in question was provided with additional fortifications, although it is hard to reconstruct them in detail (Fig. 8).

Grave 1/2016

A double burial, partly dug into the rampart, was discovered in the course of the excavations held on site 1. It included the skeletons of a man and a child, placed deponed in a barely-visible burial pit (Wołoszyn *et al.* 2018). The male skeleton was in an atypical

position – strongly flexed shrunken and headless. The grave inventory, including a battleaxe and 13 silver temple-rings, can be dated to the 13th century. The archaeologically established chronology finds its confirmation in the radiocarbon analysis, which points to the 1220s-1260s (^{14}C – male skeleton: 1217 AD [68.2%] 1261 calAD; 1181 AD [94.2%] 1273 calAD; skeleton of the child: 1224 AD [68.2%] 1270 calAD; 1210 AD [95.4%] 1281 calAD; Table 4). Both the discovery and dating of the burial are of primary importance for the chronology of the rampart, since they indicate the 1260s as the beginning of the gradual cessation of the stronghold's use (see Wołoszyn *et al.* 2018). A detailed analysis of the burial with the participation of anthropologists will be presented separately.

Chronology of rampart II

Samples of wood from rampart II and charcoal from occupational layers underwent a series of analyses – dendrochronological (four samples) and radiocarbon (12 samples), performed in 2014-2016 (Krąpiec 2015a, 2015b, 2015c; Fig. 11; Table 4). It should be noted that if we take into account the dendrochronological dates obtained in the 1990s, along with the latest samples from the area outside the stronghold, the total number of dates will increase to 23 (Urbański 2000; Krąpiec 2015a, 2015b). Radiocarbon dates obtained from 13 samples of organic residues preserved on potsherds, acquired from the stronghold, suburb, and neighboring settlements, should also be taken into consideration (Auch 2017, 263-280; Fig. 10).

The dendrochronological analysis – the most precise dating method applied for archaeological data – included four samples taken from stakes associated with rampart II, along with five samples of archaeological wood obtained from the outer infrastructure. In the latter case, samples were taken from constructions located in the vicinity – from the wooden trackway (site 70, one sample), and from a site situated one kilometer to the west (four samples). The results enable the reconstruction of the entire process of building activity, both in the stronghold as well as beyond. Regrettably, sapwood was only preserved in two samples – one from the rampart and the other from the vicinity of the stronghold; thus, we are in possession of merely two precise dates. The latter dates, therefore, indicate but a *terminus post quem*.

Samples from the rampart were acquired from construction IIa, preliminarily defined as a "box" (Table 2):

– upper beam with a hole (s.u. 2000_{11}) – 1001 AD (-0/+8);
– beam with a hole (s.u. 2000_{15}) – after 983 AD;
– lower beam with a hole (s.u. 2000_{17}) – after 989 AD;
– wooden stake (s.u. 2000_{18}) – after 985 AD.

The sample from the trackway provided, in turn, a date after 999 AD (Wołoszyn *et al.* 2016a; 2016b). Dates for the wood from the vicinity of the stronghold are as follows: 1040 AD (-5/+8), after 976, after 979, and – the youngest one – after 1203 AD (Krąpiec 2015a; 2015b; Table 3).

Table 3. Results of dendrochronological datings of oak samples from the vicinity of the Czermno stronghold (excavations 2012; after Krąpiec 2015b); prepared by T. Dzieńkowski

Sample No.	Description	Number of rings	Sapwood	Dating of sequence	Date of felling
CZER42	oak beams	65	-	905-969	after 976
CZER43		140	-	1054-1193	after 1203
CZER44		65	-	905-972	after 979
CZER50		98	91-98	983-1035?	1040 (-5/+8)

The conclusions that can be drawn from these results shed some light on the chronology of the entire settlement complex. The date 1001 AD (-0/+8; 1008 AD), obtained for the upper beam from rampart IIa, is of key importance here. It indicates that rearrangement of the fortification could have been initiated in the first/second decade of the 11th century. It is worth noting that the results obtained in 1997 refer to the period after 1007 and 1027 AD, although – regrettably – both of the samples were deprived of the sapwood layer. The second precise date, albeit from outside of the stronghold, points to the 1040s (1040 AD, including sapwood). It is unfortunate that the sample was obtained thanks to an accidental discovery, thus it lacks precise location and stratigraphic context. Presumably, the result indicates a subsequent stage of building activity, corresponding with dates obtained for the rampart construction – after 1030, and after 1050 AD. Such a convergence may indicate the extension of construction works in the first half of the 11th century. Seemingly, the stronghold was first reassembled, while the subsequent works spread over the wider area, and included the entire infrastructure, i.e., the building of houses in the adjacent open settlements, along with roads and wooden trackways.

Setting aside dendrochronology, 12 samples of wood from the rampart constructions, charcoal from the occupational layers, and human remains from grave 1 underwent radiocarbon dating (Krąpiec 2015c; Wołoszyn *et al.* 2018). The analysis included samples from ramparts IIa and IIc. In the first case, a wood fragment from „box IIa" (s.u. 2000_{14}) provided a date of 902-1018 calAD, with a probability range of 68.2%, and 890-1025 calAD, with a probability range of 95.4%. Noticeably, the results are within the limits of the 10th and early 11th centuries. Bearing in mind that the dendrochronological analysis of the beam with the sapwood layer from the same construction (s.u. 2000_{11}) points to the first decade of the 11th century, there is no contradiction between the dendrochronology and the results of the radiocarbon analysis that determine *terminus ante quem* 1018 and 1025.

Analysis of wood remains from the breastwork construction (IIc; s.u. 1074) also brought interesting results (Fig. 9: H; Table 4). The samples provided a date of 779-983 calAD, with a probability range of 68.2%, and 772-1011 calAD, with a probability range of 95.4%. The structure is contemporaneous with, or stratigraphically younger than, the „box" of rampart IIa, which results in a similar statement as above – the extension of the

eastern part of the fortification (IIa), along with the erection of the breastwork (IIb), took place in the first/second decade of the 11th century at the latest (1011 calAD, though with a probability range of 0.6%). It must be kept in mind, regrettably, that we are at the disposal of merely one sample, despite the fact that the result corresponds with the dendrochronological date of 1001 AD (-0/+8).

Radiocarbon dates for the zone adjacent to the rampart derive from wooden constructions and charcoal remains from occupational layers. The former case includes samples taken from two of four posts (s.u. 2081 and 2083) discovered at a height of 194.30-194.50 m a.s.l. Their stratigraphic position remains slightly unclear. Most likely, the posts functioned in the 11th – 12th centuries, as indicated by the results of radiocarbon analyses: s.u. 2081-961 (93.0%) 1161 calAD; s.u. 2083-1021 (95.4%) 1161 calAD. Charcoals from the upper and younger stratigraphic level, related to the functioning of rampart II, provided the youngest chronological markers. Single ^{14}C samples were taken from s.u. 2035/2047 and s.u. 2088 and 2033.The results are between the 11th and the mid-12th centuries (s.u. 2035/2047-1013 [95.4%] 1158 calAD; in accordance with the results for samples from posts s.u. 2081 and 2083), and between the 12th and 13th centuries (s.u. 2033-1263 [56.9%] 1325 calAD; s.u. 2088-1155 [68.2%] 1297 calAD).

Clarification of the chronology of the youngest settlement level was obtained thanks to research carried out in 2016, particularly the discovery of the burial dug into the rampart layers described above and covered by debris from the fortifications. Radiocarbon dates of samples of human remains confirmed that the burial can be attributed to the time span between the 1230s-1240s and the 1260s. The results also confirm – though indirectly – that the gradual destruction of the fortifications began after the mid-13th century at the latest, indicating *terminus ante quem* for the formation process of the occupational layers (Wołoszyn *et al*. 2018).

The aforementioned dates are congruent with the results of the radiocarbon analyses of wood samples obtained by the team of Marek Poznański. They are between the late 10th and the mid-12th to the early 13th centuries (*cf*. Aniszewski *et al*. 2015; results with a probability range of 95.4%: MKL-1416, 975-1155 calAD; MKL-1629, 1021-1155 calAD; MKL-1841, 1038-1213 calAD; MKL-2373, 776-982 calAD). Building activities in the 12th and 13th centuries are, in turn, confirmed by the dendrochronological dates obtained in 1997 (*cf*. Table 1): 1186AD, 1202, 1203, 1203, and the youngest ones – 1240 and 1242 AD. The data listed above indicate sequential repairs of the trackways, conducted in the 1180s, the early 13th century, and the mid-13th century at the latest. Samples from the trackways that brought dates referring to the oldest settlement phase are sparse. Among them, a radiocarbon date of 776-982 calAD, with a probability range of 95.4% (sample MKL-2373), which indicates the 980s as the youngest date, as well as a dendrochronological date after 999 AD from a post of the trackway construction, are worth mentioning (Krapiec 2015c; Aniszewski *et al*. 2015; Wołoszyn *et al*. 2016a).

Table 4. Results of radiocarbon datings of wood samples acquired in the Czermno stronghold (excavations 2013-2016; after Krąpiec 2015c); prepared by T. Dzieńkowski

No.	Decription	Phase of rampart/constructions/ interior/graves	Sample No.	Conventional date [BP]	Calibrated dates	
					Sigma 1 68.2% calAD	Sigma 2 95.4% calAD
1	Czermno, site 1 Trench 1/2014; s.u. 1074	IIc	MKL-2660	1135±50	779 (4.3%) 790 830 (2.6%) 837 866 (61.3%) 983	772 (94.8%) 997 1001 (0.6%) 1011
2	Czermno, site 1 Trench 1/2014; s.u. 2000_{14}	IIa	MKL-2661	1070±40	902 (14.5%) 920 961 (53.7%) 1018	890 (95.4%) 1025
3	Czermno, site 1 Trench 1/2014; s.u. 1086_1	Ic	MKL-2662	1070±70	889 (68.2%) 1025	773 (89.1%) 1050 1083 (4.8%) 1127 1136 (1.5%) 1151
4	Czermno, site 1 Trench 1/2014; s.u. 1086_2	Ic	MKL-2663	1130±60	778 (4.5%) 790 828 (3.9%) 839 865 (55.9%) 987	732 (0.4%) 735 769 (95.0%) 1019
5	Czermno,site 1 Trench 1/2014; s.u. 2021_1	Ia	MKL-2664	1210±90	690 (19.0%) 791 760 (47.9%) 894 932 (1.2%) 937	659 (95.4%) 989
6	Czermno, site 1 Trench 1/2014; s.u. 2021_3	Ia	MKL-2665	840±70	1055 (7.9%) 1077 1154 (60.3%) 1265	1040 (95.4%) 1276
7	Czermno, site 1 Trench 1/2014; s.u. 2021_5	Ia	MKL-2666	1100±90	778 (3.6%) 791 805 (2.4%) 815 825 (3.9%) 841 862 (58.3%) 1022	690 (5.1%) 750 761 (84.8%) 1052 1081 (5.5%) 1152
8	Czermno, site 1 Trench 1/2014; s.u. 2021_7	Ia	MKL-2667	1130±90	777 (5.1%) 793 801 (63.1%) 989	674 (95.1%) 1040 1140 (0.3%) 1115
9	Czermno, site 1 Trench 2/2015; s.u. 2088	Ia/Ic/II?	MKL-2701	780±90	1155 (68.2%) 1297	1035 (89.3%) 1318 1352 (6.1%) 1390
10	Czermno, site 1 Trench 2/2015; s.u. 2033	interior, level 2/c	MKL-2702	680±40	1276 (42.2%) 1306 1363 (26.0%) 1385	1263 (59.9) 1325 1344 (38.5%) 1394
11	Czermno, site 1 Trench 1/2014; s.u. 2105d	Ia	MKL-2703	1310±80	642 (65.1%) 777 793 (2.0%) 801 848 (1.1%) 853	583 (95.2%) 894 933 (0.2%) 937

12	Czermno, site 1 Trench 1/2014; s.u. 2105b	Ia	MKL-2704	1370±90	584 (58.7%) 722 740 (9.5%) 767	433 (1.6%) 459 467 (1.5%) 489 533 (92.3%) 882
13	Czermno, site 1 Trench 2/2015; s.u. 2070	interior, level 1/a or 2/a	MKL-2705	950±90	1015 (68.2%) 1186	898 (2.5%) 924 945 (92.9%) 1260
14	Czermno, site 1 Trench 2/2015; s.u. 2066	interior, level 1/a	MKL-2706	890±70	1045 (24.8%) 1098 1119 (43.4%) 1215	1023 (95.4%) 1295
15	Czermno, site 1 Trench 2/2015; s.u. 2083	interior, constructions II?	MKL-2707	950±35	1029 (18.1%) 1051 1083 (37.2%) 1127 1135 (12.9%) 1151	1021 (95.4%) 1161
16	Czermno, site 1 Trench 2/2015; s.u. 2081	interior, constructions II?	MKL-2708	1000±50	986 (43.3%) 1049 1086 (19.2%) 1124 1137 (5.7%) 1150	901 (2.4%) 921 961 (93.0%) 1161
17	Czermno, site 1 Trench 2/2015; s.u. 2035/2047	interior, level 2a?	MKL-2709	970±35	1020 (26.4%) 1049 1085 (32.0%) 1125 1137 (9.8%) 1150	1013 (95.4%) 1158
18	Czermno, site 1 Trench 1/2014; s.u. 2105a	Ia	MKL-2710	1100±50	890 (68.2%) 993	777 (2.8%) 792 803 (6.0%) 845 857 (86.6%) 1023
19	Czermno, site 1 Trench 1/2014; s.u. 2105c	Ia	MKL-2711	1090±90	778 (3.1%) 791 807 (1.3%) 813 826 (3.4%) 841 863(60.3%) 1025	711 (2.9%) 745 764 (84.4%) 1059 1065 (8.1%) 1154
20	Czermno, site 1 Trench 2/2015; s.u. 2053	interior, level 2a/2b	MKL-2712	1160±60	776 (54.4%) 901 921 (13.8%) 953	694 (6.4%) 746 763 (88.9%) 994
21	Czermno, site 1 Trench 3/2016	II; grave No. 1; skeleton 1 (adult)	Poz-86457	805 ± 30	1217 (68.2%) 1261	1170 (1.2%) 1174 1181 (94.2%) 1273
22	Czermno, site 1 Trench 3/2016	II; grave No. 1; skeleton 2 (child)	Poz-86458	780 ± 30	1224 (68.2%) 1270	1210(95.4%)1281
23	Czermno, site 3	grave No. 14/1	Poz-86459	665 ± 30	1283 (36.2%) 1306 1364 (32.0%) 1385	1276(50.1%)1321 1349(45.3%)1392
24	Czermno, site 3	grave No. 14/2	Poz-86461	840 ± 30	1166 (63.5%) 1224 1235 (4.7%) 1241	1059 (0.4%) 1063 1154(95.0%)1264

IV.2.4.4. Rampart I and II. Chronology, construction, analogies

Stratigraphic data, in conjunction with with the absolute chronology, point to relatively high dynamics of building activities separated by subsequent stages, although performed in a fairly short period. Hence, tracking down the exact periods of activity with the use of archaeological sources appears to be nearly impossible. Clarification of the beginnings of the settlement complex still remains a key question; therefore, sets of radiocarbon dates from rampart I, rampart II, and the adjacent zone serve as indispensable sources of support. Given the results discussed above, we can assume that the rampart was erected in the second half of the 10th century, or – more confidently – at the end of the 10th century, and was completed in a relatively short period – by the early 11th century. Building activities began with the construction of rampart I (Ia, Ib, Id, and – after a short break – Ic). Extension of the rampart in the early 11th century followed a relatively short period of occupation of the stronghold. It seems fairly probable that the "explosion" of settlement, as registered in surveys and statistics of finds in the Archaeological Survey of Poland (Polish: Archeologiczne Zdjęcie Polski), was among the main factors (apart from the political ones) that forced the extension of rampart II, as well as the widening of the occupational area within the fortifications (see Dzieńkowski and Sadowski 2016). The outer structures of the rampart were built with the use of wood from trees cut in the early 11th century (dendrochronological dates: 1008 AD, after 1007 AD, after 1027 AD; ^{14}C – *t.a.q.* 1011 AD). Consequently, construction works could have begun in the second decade of the 11th century, at the earliest. Dendrochronological dates from constructions of rampart II (after 1030 AD, after 1050 AD), as well as a date from the vicinity of the stronghold (1040 AD), indicate an intermittent and staggered construction/remodeling process for the fortifications, lasting until the mid-11th century. Both archaeological finds and radiocarbon analyses of wood and human remains corroborate the relatively long functioning of the rampart, up to the 1260s, when the process of gradual destruction started (Wołoszyn *et al.* 2018).

The rampart of the Czermno stronghold stood out from the other fortifications due to its diverse and extensive structure and its remarkable height. Both ramparts I and II were built with the use of combined techniques and various constructional elements (Figs 8 and 9).

In terms of the construction and parameters, embankments I and II do not have direct analogies in the Polish-Ruthenian border zone. The majority of strongholds built in the 9th-11th centuries in the middle Bug River basin can be characterized by a relatively small area, ranging between 0.12 and 0.5 ha (Kulczyn, Busieniec, Sajczyce). The group of large, several-hectare fortified sites is scant (1.5 ha for Dorohucza, 5-7 ha for Guciów and Skibice; *cf.* Poleski 2004, 2013; Dzieńkowski and Wołoszyn 2018). The strongholds were defended by four- to eight-meter-wide ramparts (only sporadically reaching a height of up to eight meters). Among the construction types of the ramparts, the simplest and the most widespread was an earthen (*e.g.*, Tarnów, Sajczyce) or earthen/wooden embankment, with traces of wood used to stabilize both the surface and the earthwork (Busieniec, Kanie), or

with a breastwork in the form of a fence or palisade (Dorohucza). A few objects, however, can be singled out by a more solid rampart construction. Individual wooden boxes constituted a part of the rampart structure in Kulczyn, Majdan Nowy, and most likely in Klarów. More complex earthen/stone/wooden constructions were recognized only in Busówno (phase 1B). It should be, however, stressed that, notwithstanding constructional differences, the widths of ramparts described above were similar, within the range of 5-6 m.

The situation changed in the second half of the 10th century and in the 11th century, with the erection of strongholds in Sąsiadka, Gródek, and – slightly later – in Jurów and Horodysko. The aforementioned objects functioned until the 13th-14th centuries (Kalaga ed. 2013; Dzieńkowski and Kuśnierz 2018; Wołoszyn ed. 2018; Banasiewicz ed. 2019). The strongholds listed above are variable in terms of the space within the fortifications – from 0.12 up to 1 ha. Discernibly bigger ramparts, reaching widths between 10 and 15 m, were built predominantly with the use of a box construction, consisting of one or two rows of wooden crates (Poleski 2004, 2013). The following brief outline demonstrates differences between rampart construction patterns applied in Czermno and the other strongholds located in the interfluve of the Wieprz and Bug Rivers.

The situation on the eastern side of the Bug River, both in its upper course and by the Dniester, appears to be equally complicated, mainly due to the state of research of the early medieval strongholds in the western and southern territories of modern-day Ukraine. Among but a few monographs, the "classic" work of Pavel Rappoport (1967) and the catalogue of strongholds prepared by Andrey Kuza (1996) deserve mentioning, although we also have at our disposal new data for such centers as Volodymyr-Volynskyi, Lutsk, Zvyenyhorod, Belz, and Halych (Terskyy 2002; 2006; 2010; Liwoch 2003; Hupalo 2014; Petryk 2015). As the research increases, previous and current assessments undergo the verification process, hence the number of strongholds with combined earthen/wooden rampart constructions rises significantly. Notwithstanding the updates, strongholds surrounded by earthen embankments still predominate in the western and southern territories of Rus'. One can give a series of examples from both Volhynia and Halych land (*e.g.*, Ostrozhes 10th-11th c., Stupnica 10th-11th c., Rappoport 1967, 121; Kuza 1996, 159; Liwoch 2003, 269-270). Widths of the embankments vary between 8 and 16 m, while their heights are between 2 and 8 m. Parameters of ramparts with wooden structures are different as well. The most widespread are, however, earthen embankments with wooden boxes or, less frequently, with a fence on the top. The stronghold in Lutsk can serve as an example – the 10- to 12-meter-wide rampart included an embankment and breastwork that can be reconstructed in the form of wooden box. Given the chronology of pottery finds, the stronghold was built in the late 10th century to the 11th century, and functioned until the 13th century (Terskyy 2006, 42-43, Fig. 28). Our knowledge about the fortifications of Volodymyr-Volynskyi – a pivotal early medieval power center of the province – is considerably lower, primarily due to the much smaller extent of the excavations and trouble locating the so-called "dytynec". As evidenced by new data, it was probably situated in the western part of

the modern-day town, and was surrounded by an earthen/wooden rampart (embankment made of clayish soil with breastwork in the form of a wooden wall) dated between the 10th and 11th centuries (Terskyy 2002, 20; 2010, 67-79; Petryk 2015, 268-271).

Fortifications with inner wooden structures (boxes, barriers) or constructions in the type of a building/hutch enclosing the shaft from the inside constitute a relatively large group – the stronghold in Halych can serve as an example. New excavations of the developed, centuries-old fortification system of Halych-Krylos, carried on between 1992 and 1996, provided a new, significant set of information (Liwoch 2003, 247-249). The results point out that the building of the rampart surrounding the central stronghold (14 m wide) and the southern fortification line (7 m wide) began already in the 10th century. Each rampart consisted of an embankment provided with a fence/wooden wall (rampart 1, 2, 3). They were accompanied by another eleven-meter wide embankment with an outer fence, and wooden boxes, each four meters wide, and without a back wall (rampart 4). Fortifications of the central stronghold were constituted by two rows of 3- to 3.5-meter-wide wooden boxes set on a solid foundation built of clay. Boxes of the inner row were lacking the back wall; thus, they could have served residential and economic functions. The entire width of the oldest phase of fortifications reached 14 m. A similar, though wider, rampart (33 meters wide), consisting of several rows of wooden boxes, was discovered in the course of excavations held in 1981 and 2001 on the Maiden Nezalezhnosti in Kyiv (Sahaydak 2009, 259-277; Petryk 2015, 269). The rampart surrounded the so-called Yaroslav Town. Sherds of pottery found below its foundation can be dated to the 10th and 11th centuries. Constructional solutions applied in the rampart of Belgorod (Kyiv province, Ukraine) appear to be slightly different (Kuza 1996, 171; Kolchin 1985, 216, figs. 7, 8). The lower part of the defensive construction was stabilized by an embankment, while the upper one took the form of a building.

The above description of the fortifications of selected strongholds representing various geographical zones (interfluves of the Wieprz, Bug, Styr, and Dniester Rivers) explicitly demonstrates the significant congruencies of the constructional solutions applied, *i.e.*, embankments, fences/wall, boxes. Given that, one can point to certain details of the construction of the Czermno stronghold rampart, *e.g.*, the methods of elaborated stabilization of rampart Ia, that find analogies in the middle Bug area, and others, such as the open boxes (lacking a back wall), that resemble rampart structures of the Halych stronghold. Controversies arise when analyzing the entire construction, characterized by the application of combined techniques, although the majority of problems result from the scale of destruction of the rampart, as well as its incomplete recognition. Rampart I finds no direct analogy in the classification system elaborated by Jacek Poleski (2004). Its basic structure – a large embankment with inner stabilization – refers to the type WII, although both the inner and outer vertical constructions encasing the rampart are closer to type WIV, not to mention the difficult-to-reconstruct breastwork construction (box? defense building?). Given the current state of research, reconstruction of rampart II is hardly feasible. Undoubtedly, it

included a large embankment from the outside, strengthened with wooden constructions (boxes?) from the inside – with a wall provided with a breastwork in the form of a box (?). Such questions require, however, further investigation. Queries of formal analogies among archaeologically investigated types of ramparts in the strongholds of Greater and Lesser Poland, where grate and box constructions are predominant, pose similar difficulties (*cf.* Poleski 2004; Kara 2009; Dulinicz 2003).

Analysis of the Czermno stronghold rampart should also include data concerning its parameters, particularly the notable width of the construction, ranging between 13 and 25 m. Strongholds that emerged in the middle Bug River basin up to the 10th century were characterized by embankments that were 5-6 m wide. Conversely, certain strongholds of Lesser Poland, *e.g.*, Zawada (9th-10th c.), are surrounded with twenty-five-meter-wide ramparts (Zawada, rampart II, V, northern; Poleski 2004, 126, 332-333, type WIIC; 2013). In the course of the 10th and 11th centuries, the widths of the ramparts of middle-Bug strongholds increased, primarily as a result of the application of elaborate defensive constructions. Only the ramparts of large, significant centers of the early Piast state, such as Gniezno and Poznań, or – on the other hand – the aforementioned principal strongholds of Rus' in Halych and Kyiv, reached similar dimensions. The rampart of the stronghold in Ostrów Tumski in Poznań was up to 20 m wide and 8 m high. After the extension in the 970s-980s, its width reached 30-35 m (Kóčka-Krenz *et al.* 2004, 142, 148; Kóčka-Krenz 2005; Kara 2009, 240, 273, 290). The rampart surrounding the Gniezno stronghold attained a similar width (20-25 up to 30 m). The construction consisted of piles of beams strengthened with wooden hooks (Sawicki 2001, 92; Kara 2009). Fortifications of the stronghold in Tum, dated to the early 10th century (phase 1C) are of particular interest, primarily with regard to the environmental conditions of their location. A fifteen-meter-wide rampart was mounted on marshy ground, with the use of a wooden underlay. The overground part consisted of an earthen/wooden embankment, strengthened with a grate construction (Stasiak and Trojan 2014, 68-69). Equally impressive are the dimensions of ramparts surrounding the principal centers of the Rus' princedom, *e.g.*, Kyiv – 33 m, Halych – 14-20 m (Liwoch 2003, 246-247; Sahaydak 2009, 266).

Based on the present state of research, analyses of the construction, parameters, and chronology of Czermno stronghold fortifications indicate the following:

1) building techniques distinguish both rampart I and II from strongholds located in the middle Bug River basin, despite certain commonalities, such as stabilization of the embankment with layers of wood, typical for the majority of the fortifications;

2) quadrilateral structures in the form of a box lacking a back wall find analogies in rampart constructions of the Halych stronghold, although questions surrounding such constructions require further studies;

3) given the widths of both of the ramparts – 13 m (I) and 25 m (II), fortifications of the Czermno stronghold mirror the imposing ramparts of principal power centers, both in the Piast (Poznań, Gniezno, Tum) as well as the Rurikid (Kyiv, Halych) states;

4) absolute chronology analysis indicates that rampart I was erected in the second half to the late 10th century, and after a relatively short period was remodeled in the first or second decade of the 11th century. Given that, further excavations and an attempt to determine the chronology of the rampart in the suburb of Czermno (site 2) appear to be indispensable next steps.

V. CONCLUDING REMARKS

The pivotal research question we strive to answer in this article is: was the stronghold in Czermno erected as late as the 11th century? If so, it cannot be identified with Cherven' stronghold, mentioned in the *Tale of the Bygone Years* in the context of the expedition of Vladimir the Great in 981.

The answer is unequivocal – information about the late (eleventh century) chronology of the settlement complex in Czermno, introduced into the scientific circulation two decades ago, is but a misunderstanding. It stems from the deficiencies of excavations in the 1970s (trenches on the rampart were excavated up to 0.6-3 m; today, we know that the thickness of the layers reaches 6 m), perennial delays in the publishing of source materials, and a certain "overzealousness" of historians. They (at least some of them) succumbed to the magic of dendrochronology and did not want to (or were unable to) understand the meaning of Andrzej Urbański's remarks, when he clearly stated that: "Given the lack of a stratigraphic sequence in the place of the samples' acquisition, we are uncertain if the fragments of defensive constructions dated to the first half of the 11th century refer to the oldest fortifications of the stronghold [...]" (*cf.* Urbański 2000, 242).

Given the principles of cooperation between archaeologists and historians, the attempt to establish the chronology of the Czermno-Cherven' fortifications, undertaken in 1997, is a vivid example of what such a cooperation **should not look like**.

The oldest, central part of the Czermno fortifications was unearthed in 2014-2015. Seemingly, they were constructed in the second half / at the end of the 10th century. Such an assumption is supported by both absolute datings of wood residues discovered in the course of the excavations as well as the results of palaeobotanical research, proving extensive oak cutting in the given period (apparently for construction of the rampart). Worth noting is that the oldest pottery assemblages from Czermno refer to the aforementioned period as well. The first wooden trackways were also constructed also in the second half of the 10th century – this is another argument for the formation of the settlement complex at that time, hence it is difficult to imagine that these constructions, requiring a considerable amount of work, served the transportation needs of small, "rural" settlements only. Last but not least – the silver hoards from Perespa, hidden in the mid-10th century (?), indicate the presence of social elites, interested in such sophisticated jewellery.

Regrettably, the determination of the moment of erection of the oldest fortifications is supported only by radiocarbon dating and not dendrochronology. By their very nature, the ^{14}C dates give a fairly broad time frame, hence the question remains whether they date the erection of the fortifications strictly to the period before 981. It should be, however, borne in mind that the reliability of referring Vladimir's expedition to 981 can be regarded as limited, as stated above (see III.1.). Although this does not release our team from attempts to determine the most accurate date of construction of the rampart on site 1 in Czermno, it is, however worth recalling that the date recorded in the *Tale of the Bygone Years* should not be "fetishized".

It must be emphasized in turn that the results of palaeobotanical analyses indicate that the cutting of trees (oak) took place in the mid-9th century as well. The research indicates the presence of a moat (?) already in the 7th or 8th century. It must be clearly acknowledged that, at present, this data cannot be confirmed by archaeological research. This does not mean that they are false; the state of recognition of the settlement complex in Czermno is still incomplete, thus we can assume to a high degree of probability that site 2 was also fortified. We cannot exclude that in the course of further investigations these fortifications will turn out to be older than the stronghold at site 1.

The rampart of phase II was erected at the beginning of the 11th century. It was a large, complex structure, evidently larger than the fortifications of the other strongholds known from the Bug River basin. Perhaps such a great investment indicates the growing significance of Czermno as a border stronghold, for which the expanding monarchies of the Piasts and Rurikids began to compete.

Either way, the "watery" location of the stronghold increased its defensive qualities.

As already mentioned (see III.1.), Cherven' appears for the last time in written sources around 1289 [6797]. Dendrochronological dates prove that the repairs of the trackways also occurred after 1240, *i.e.*, after the Mongol invasion, which also affected the region in question. In 1259 (6769), in turn, Burundai ordered the destruction of fortifications in western Rus'.

These events can probably be associated with the grave of a decapitated man and a child dug into the inner embankment of the rampart (grave No. 1/2016). Both traditional and radiocarbon analyses allow the burial to be dated to the mid-13th century / 1240s-1260s (see IV.2.4.3). It seems hardly possible that the rampart simultaneously served as both a fortification and a necropolis. Thus, we can consider burial No. 1/2016 as an archaeological argument for the decline of the stronghold in the second half of the 13th century. We cannot exclude that the aforementioned decision of Burundai contributed to the destruction of the fortifications in Czermno.

The stratigraphic context of the hoards discovered in Czermno in 2011 remains unclear (see IV.2.3). We can, however, assume to a certain degree of probability that their deposition in the interior of the stronghold took place when the glory years of Cherven' were behind it. Was a skeletal cemetery situated there at that time? Given the number of human

skeletons discovered in the interior of the stronghold, as well as on the site 3 (where human remains are visible even on the surface), it can be acknowledged that the stronghold was transformed into a necropolis (such as, *e.g.*, Ostrów Lednicki). The limited number of radiocarbon dates for the skeletons from Czermno hinders the verification of that preliminary hypothesis.

To return to the question of cooperation between archaeologists and historians raised at the beginning of this study (see II), it is worth emphasizing that all the above-mentioned conclusions are of a preliminary nature. It is worth warning historians in advance, since, as Poznań medievalist Dariusz A. Sikorski concludes: "Quickly, as per the historian's experience, the obsolescence of archaeological 'knowledge' leads to understandable discouragement [...] and to increasing distrust of archaeologists who 'change their minds too quickly'. What is obvious for archaeologists to understand, since they confront it on a daily basis, when the results of one season of excavation can significantly change previously accepted conclusions, the historian considers as chaos in archeology and a lack of solid foundations. The growing expectation that archaeologists will develop a final conclusion on a given issue appears to be completely unattainable given the constantly developing methodology of archeological science" (Sikorski 2012, 64).

The question of the relatively poor state of research on the Czermno stronghold, recurring several times in our considerations, is not just a ritual complaint. One can look at it "point-wise" and combine several research seasons in Czermno with excavations, *e.g.* in Giecz, uninterrupted since 1949, or in Gniezno, where almost 60 excavation seasons have been carried on since 1936. This issue deserves, however, a slightly broader perspective that focuses on the problem of the state of recognition of early medieval Poland. In fact, it is a derivative of the so-called Millennium research program, implemented in the time of the Polish People's Republic. Many reasons, both strictly scientific and political, resulted in the fact that – despite preliminary declarations – the scope of archaeological research was incomparably higher in Silesia, Greater Poland, and Pomerania than in the lands east of the Vistula river. The differences in the financing of scientific research are today even easier to grasp – thanks to the transparency in public spending.

Considerations of the sources of differentiation of the European East and West and the ways to overcome it are not our primary goal. We are just attempting to make the reader aware of the practical consequences of differences in the funding of scientific research in Poland. Maps of the early Piast state, frequently published since the "dendrochronological revolution" took place, "end" on the line of the Vistula river (*cf. e.g.* Kurnatowska 2002, Fig. 2; Buko 2008, Figs. 85, 90; Kara 2015; Urbańczyk 2016, Fig. 1; Trzeciecki 2016, Fig. 22). None of our team believes that Mieszko I was born in eastern Poland, but one cannot help noticing that the eastern reach of the strongholds dated by the methods of the natural sciences coincides with the map of the distribution of funds for financing scientific research in Poland (*cf.* Wołoszyn 2020, 224-230). The reform of science, currently implemented in Poland, will clearly strengthen the – already enormous – divergences between

the main centers and the civilization peripheries. This will inevitably affect our knowledge of both early medieval Eastern and Western Poland – it is worth remembering!

In closing the article, we would like to clearly declare that the resumption of excavations in Czermno remains an absolute priority in our further activities. Our investigations will focus on the comprehensive recognition of the rampart excavated in 2014-2016 (including the moat), followed by research on the trackways, and a monograph of the silver hoards and finds from the metal detecting prospections held in 2010-2011. The cemetery at site 3, along with its heritage conservation, constitutes a separate set of problems.

Acknowledgments

This article was written as part of the project *The Golden Apple of Polish archaeology. Stronghold complexes at Czermno and Gródek (Cherven' Towns) – chronology and function in the light of past and current research*, part 2 (Ministry of Science and Higher Education, Warsaw, NPRH, Project No. 11H 18 0344 86).

This article focuses on archaeological issues. In considering source material, studies in English were preferred. Written sources are also cited in English translations; their comprehensive analysis (along with references to editions in the original language) can be found in the erudite publications of Andrzej Janeczek and Adrian Jusupović, cited in our text.

Rus' chroniclers counted years from Creation and not from Incarnation (*cf.* Franklin and Shepard 1996, XI-XII). In the following lines, the year according to the Latin time calculation comes first, followed by the year according to the chronology of medieval Rus' chroniclers, presented in square brackets; *e.g.*, 981 [6489].

Description of Polish-Rus' conflict in 1018 [6526] and 1031 [6539] includes the term "Cherven' Towns" instead "Cherven'" (PVL, 132, 136). This is most likely a copyist's mistake (more on the subject: Poppe 1964, 168; Jusupović 2017, 58). The issue of the meaning of the term "Cherven' Towns" will not be considered thoroughly in this article.

The participants of *The Golden Apple of Polish archeology...* project focus on the results of research not only in Czermno, but also in Gródek. Results from the latter were not discussed in the text; about the project itself see https://grodyczerwienskie.pl/en/.

English translation: Maciej Trzeciecki (Warsaw). Information about research in Giecz: Teresa Krzysztofiak (Ostrów Lednicki), Gniezno: Tomasz Sawicki (Gniezno). We would like to express our gratitude to the numerous visitors of the excavations in Czermno that shared with us their knowledge in attempts to interpret uncovered layers – in particular: Andrzej Buko (Warsaw), Yura Lukomski (Lviv), Vasyl Petryk (Lviv), Jacek Poleski (Cracow).

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