

## SUMMARY

The excavated site is located in the northern part of the village of Kruszyn, nearby the road to Włocławek. It is situated on the edge of the terrace of the Vistula river Urstromtal and a slope of a small unnamed watercourse. The excavations were carried out by the Konrad Jażdżewski Foundation for Archaeological Research in Łódź, contracted by the General Directorate for National Roads and Motorways. The excavations encompassed the area of 276 ares in total. As a result 1515 archaeological settlement features were unearthed with various functions and chronology, including one skeleton unequipped grave. The site yielded a relatively small number of movable artefacts in the form of pottery vessel fragments, flint objects, animal bones and several metal, glass, clay and over a dozen stone artefacts. Site 10 at Kruszyn is of multicultural character. The settlements unearthed during the excavations included a Linear Pottery culture settlement from the early Neolithic along with the traces of inhabitation from the Lengyel culture, Mierzanowice culture, early Bronze Age, Lusatian culture from the Hallstatt period, bell-grave culture from the early La Tène period and a Przeworsk culture settlement from the younger and late Roman period.

### Location and natural condition of the site (*Piotr Kittel*)

The Kruszyn site is situated in the eastern part of the Kuyavian (Kujawy) Lakeland in the close vicinity of the border of the Plock Basin. The Plock Basin is a part of the Toruń-Eberswald ice-marginal streamway (pradolina). A distinct morphological edge of the ice-marginal streamway reaches about 10 m in height. The site area is located within the recently glaciated area of the recent Scandinavian Glaciation, the Last Glacial Maximum (LGM). A presence of the only horizon of basal till of the Weichselian glaciation has been recorded in the Kuyavian Lakeland with a thickness of 2–5 m. The surficial substratum of the site is a glacial till of the morainic plateau of the Weichselian Glaciation. The elevation of the morainic upland rises up to 85,0 m a.s.l. at the site area. The archaeological site at Kruszyn is situated on the not very distinct local culmination of the morainic plateau and on the upper part of the edge of the Plock Basin. The small kettle holes cause diversity in the terrain relief of the morainic upland area. The denudational valleys and erosional cuts were developed on the Plock Basin edge. One of the small denudational valleys is present at the site area and cause a delimitation of a NE part of the occupied zone. The multicultural settlement at Kruszyn site was established in the area characterized by a high geo- and biodiversity, which was very suitable for development of multi-directional prehistoric economy.

### The Linear Pottery Culture (*D. K. Płaza*)

#### IMMOVABLE FEATURES

Site 10 in Kruszyn has yielded over one hundred immovable features. Their fills contained pottery fragments, flint artefacts and less numerous bone, antler and stone objects. The immovable features can be

divided into three categories: pits (fig. 8–22), clay pits (fig. 24–31), and post holes, which together with clay pits form characteristic long houses of post construction (fig. 32–36). There are also numerous holes void of artefacts, which are traces of construction elements of over a dozen houses and auxiliary structures found on the site (fig. 32, 178).

### CLAY PITS

Site 10 at Kruszyn consists of typical regular clay pits, the so called *elongated* and *oval*. The most common were oval construction pits, separated from each other, or short elongated ones with single hollows (26: 1, 3; 23: 2; 29: 1 – 3; 30: 2; 31: 1 – 2) as well as single isolated ones (fig. 8: 2). Also, large extensive multiple niche clay pits have been identified, covering the area of several dozen square metres and situated at an end or a side of a house (fig. 25; 26: 2; 27; 28: 1; 29: 1).

### PITS

Forty-five features can be regarded as typical isolated pits of economic character or dump pits (fig. 8–20) – a ubiquitous element of the Linear Pottery culture. The pits at Kruszyn are usually oval, not very deep, and hollow in cross-section (fig. 8: 1 – 2; 11: 2 – 4; 12: 1 – 3; 13: 1 – 3; 14: 3 – 4; ). Occasionally they are accompanied by single post holes (fig. 16: 1–2). These are clusters of pits with single niches, similar to clay pits (fig. 15: 2, 17 – 19) or circle-like ones with a deeper, more laminated, hollow, triangular, baggy-shaped or rectangular cross-section (fig. 8: 3; 9: 3; 10: 1; 11: 1; 13: 4; 15: 1, 3 – 4;). There were rare cases of differently shaped pits, such as square-like or undetermined in shape (fig. 14: 1 – 2, 18: 1 – 2). Hearths or graves, which are rarely present on the sites of the Linear Pottery culture, have not been found. Only one feature has been attributed with a special function, i.e. a well. This is pit 474 from section D35 with measurements 175 × 160 cm and depth 170 cm.

### CONSTRUCTION

The construction of settlements with so called “long houses” is a characteristic feature of the Linear Pottery culture. According to R. Grygiel, we can observe a division into long houses of the western type and short houses of the east-Linear type in Kuyavia (c.f. R. Grygiel. 2004, pp.632–633). In this context, the explored site at Kruszyn, with its almost complete settlement clusters (fig. 178) confirms the hypothesis, as it consists of small-sized houses with a courtyard. Moreover, except for single cases of houses V and XI (fig. 32) neither a stratigraphic relationship between the features, nor an overlap of house plans has been recorded, which frequently happens on the sites in Lesser Poland. This may confirm the suggestions about the underdeveloped settlement processes of the southern or Rhine type (R. Grygiel 2004 p. 642).

### POST HOLES

In eight post holes from the sections of the following areas: E 29, F 22, F 33, D 91, C 98 and C 80, single fragments of the Linear Pottery culture ceramics have been found. This allows a definite dating of the features to the early Neolithic. The features constitute ground construction elements of post houses. They form regular layouts, typical of the Linear Pottery culture houses in the whole of central Europe. A problematic issue of site Kruszyn 10 is the application of a similar post technique of house construction in the early Neolithic and the Roman period. Nevertheless, the characteristic orientation of Neolithic houses allows an unambiguous interpretation of the construction method in over a dozen cases (fig. 32). On top of eight post holes with ceramic material, over 200 holes from over a dozen homesteads must be regarded as Neolithic.

### DWELLING FEATURES

A settlement of the Linear Pottery culture with so called long houses has been recorded on site Kruszyn 10. Despite the already mentioned problem with identifying post holes, it is possible to designate at least thirteen post houses (fig. 32) on the basis of the characteristic layout of clay pits and holes in the southern zone. The dwelling features can be divided into short houses (fig. 32: I–V, 33–36) and medium-sized ones.

The former are square-like (between 7 and 10 metres long in three cases (fig. 32: 1 3–5), and between 11–12 metres long – probably extended by arcades) and rectangular (fig. 32: 2). The latter are between 13 and 20 metres long (fig. 32: VI-VIII; fig. 36). The width of both types of houses ranges between 5 and 7 metres.

Post houses are generally oriented north-south (fig. 32), except for one section -B34,B43/44 in the northern part of the site (fig. 178).

### DETACHED DWELLINGS

In several other places of the site, post holes have also been found. Although they can be associated with the Linear Pottery culture, they are not remains of the typical long houses. An example of this kind is a find from the northern part of the excavated area – sections B34, B43/44, where a cluster of three pits of the Linear Pottery culture was recorded, together with nine post holes, which form the layout of a small detached post house, with features of possible economic function (fig. 178). The building is trapezoidal in shape and covers an area of several dozen square metres (Table 1: 14). Additionally, one of the pits in the cluster is surrounded by three post holes, forming a shelter or a frame of a roof of an *auxiliary construction* (A. Czekaj-Zastawny 2008, p.61). In two other places, in sections B86/96 and B88/89, in the vicinity of the pits of economic character, there were three post holes on each side, which delimited a small area of several square metres. These are traces of detached, light, roofed constructions used as a canopy or small workshop buildings.

### AUXILIARY CONSTRUCTIONS

The sites of the Linear Pottery culture also yield traces of repairs of buildings in the form of double, tightly fitted posts (A. Czekaj-Zastawny 2008, p. 49). Most houses at Kruszyn bear traces of construction repairs, e.g. no III (fig. 32: 3), no IV (fig. 32: 4), no X (fig. 32: 3) and no XI (fig. 32: XI).

### POTTERY

Most potsherds on the site in question have been obtained from the features. Pits, clay pits and post holes have yielded over 7000 fragments, including 500 edges, 4400 belly sherds, c.a. 2100 fragments of decorated bellies, several dozen handles and over 200 bottom sherds. In the layer beyond the features, 239 pottery fragments have been found, including one edge, 195 belly sherds, 32 fragments of decorated bellies, 4 handles and 7 bottom sherds.

### TECHNOLOGY

From the point of view of morphology and technology, the Linear Pottery culture pottery can be divided into two categories: fine pottery (tableware), engraved and rarely decorated with knobs or handles and coarse pottery (kitchenware) with finger or more rarely fingernail imprints, sporadically engraved (only in the early phase, I, the Gniechowice – Zofipole phase, R. Grygiel 2004, p. 141) In the case of the material from the site in question, it was made with admixture of: sand<sup>1</sup>, crushed vessel fragments, plants, grit, or rarely crushed stones and accidentally flints. On the basis of a specific admixture, it has been possible to distinguish a separate category of storage vessels, typical of Kruszyn. The pottery was weakly fired with a large amount of grit, small pebbles and flints. For the sake of this work the *pottery* or *technology* has been given the name “*rubble*”. Fine pottery is often void of admixture, sand or heavily crushed stone. We can observe a different degree of preservation of external walls and their colour. Due to the applied method of grouping small sherds into separate vessels, the micro-technology of single fragments has not been determined.

### MORPHOLOGY

The main vessel form of both technological categories is a spherical segment, so called cup. The vessels are diversified in shape and size. They are divided into classical forms with a sloping edge, i.e. 2/3 of the spherical segment (fig. 37: 2; 39: 4–5) and forms with almost straight walls, similar to bowls (fig. 37: 9). Amphorae were much less numerous and so were classical bowls (fig. 74: 1). Fragments of sieve vessels (fig.

46: 7) used for milk processing and cheese making (R. Grygiel 2004, p. 143) were absolutely unique. Other untypical vessels include: a bowl on four feet (fig. 52: 6), tulip-shaped vessel (fig. 42: 8) and several pouch-shaped or boat-like vessels (fig. 58: 1), as well as some examples of figural decoration (fig. 67: 17–18).

## DECORATION

Decoration on vessels from the Linear Pottery culture at Kruszyn can be divided into three main groups: engraving, different types of finger-tipped decorations, such as imprinting or pinching, as well as utility and plastic elements, such as knobs, plastic moulds and handles – mostly on coarse pottery. Engraved decoration on thin-walled pottery is particularly relevant and sensitive chronology-wise. It can be divided into two main types: *rounded*, *curved* or the so called *linear* decoration (e.g. fig. 39: 4; 46: 1) and *nook* decoration (e.g. fig. 46: 8; 51: 4). Some thin-walled pottery on the site at Kruszyn is additionally decorated with characteristic small, round, oval, or sporadically, densely arranged triangular (fig. 69: 4) imprints, the so called *music-note motifs*, usually located on the joints of the engraved lines (fig. 57: 9) and at their endings (fig. 62: 7). In a number of cases engraved lines are missing (fig. 46: 1), or there is only one line (fig. 42: 9). Sporadically, there are more lines under the rim of a vessel, which are then developed into other decoration motifs (fig. 61: 1). Very rarely can you find visible elements supplementing the decoration, placed between the rounded lines, in the form of short, diverse engraved lines, the so called *supplementary patterns* (fig. 42: 8, 9) (c.f. J. Pyzel 2006). In several cases there was a visible linear decoration in the form of two parallel, engraved lines, made by piercing and imprinting (fig. 50: 9). It should be added that in many cases the decoration on the thin-walled pottery covers almost the whole surface of the vessels down to the bottom section (fig. 50: 7). On the other hand, the decoration rarely reaches beyond the greatest width of the belly (fig. 54: 6). The thick-walled pottery usually bears traces of finger-tip decoration, the so called “pinched” decoration (fig. 43: 2), imprinted or fingernail decoration (fig. 44: 7). Additionally, there are rare cases of plastic moulds (fig. 53: 10) and knobs (fig. 44: 8), either isolated or in various kinds of layouts or combinations with fingertip (fig. 48: 12) or pinched decoration.

Further part of the work contains a detailed study of the particular clusters of the Linear Pottery culture, along with the division into features and ceramic material from the individual pits, clay pits and niches.

## NORTHERN CLUSTER (HECTARE B 33–35, 43–45, 54–55)

The features recorded in the northern part of hectare B form a small cluster: a homestead consisting of a post building, trapezoidal in shape and three pits of economic character. Features 983 (fig. 16: 2), 1453 and 1515 (fig. 15: 4) are oval in shape and hollow in cross-section. They are 58 cm, 18 cm and 94 cm deep respectively. Feature 983 is additionally surrounded by post holes, which most probably formed a roof construction. The homestead yielded only 79 potsherds – 52, 22, and 5 artefacts respectively, including 38 decorated and undecorated bellies each.

## CHRONOLOGY OF THE CLUSTER

The artefacts from the examined section of the site is not very numerous, but several distinct features allow quite precise dating of the homestead. The most important factors are densely imprinted triangles in the form of music notes of the Šárka type recorded on several fragments of pottery (fig. 69: 4; 77: 11), and a vessel bearing fingernail imprints and decorated with the motif of the so called “filled-in ribbons”. Analogies of such material can be found in Brześć Kujawski, site 4, among the pottery obtained from the houses (R. Grygiel 2005, pp. 119–228) or the vicinity of pits 442–444 (R. Grygiel 2005 p. 230). Similar material can be also found at Smólsk, site 4, clay pit 3 (R. Grygiel 2005, p. 315: 4) and Ludwinowo, site 7, such features as B9 (J. Pyzel 2006, p. 267: 7). According to R. Grygiel decorations on the so called “filled-in ribbons” occur in the classic and younger phases of the Linear Pottery culture (R. Grygiel 2005, p. 626). The material from all the previously mentioned sites was dated to the turn of the classical and late phase or to the late phase. Due to the fact that two Šárka style elements occurred in two pits, the northern cluster has to be dated to the late phase.

**WESTERN CLUSTER (HECTARE C 28–30, 38–40, D 31)**

Pits that have been found in the western cluster in hectares C 28–30, 38–40, D 31 (fig. 178) form a concentration of features, with a layout similar to typical construction pits, the so called clay pits. Quite surprisingly, there are no post holes which should occur between such clay pits. Other features are diversified in layout and cross-section. Thirteen features contained material, but only one, i.e. feature 494, yielded four flint artefacts. 723 pottery fragments have been obtained, including 59 vessel mouths, 408 undecorated bellies, 234 decorated bellies and 22 vessel bottoms.

**CHRONOLOGY OF THE CLUSTER**

The material from the excavated section of the site is not very numerous, but it has distinct traits which allow determining the chronology of the presented cluster of features. The most relevant factors include well-developed engraved, nook and curved decoration, combined with diversified music-note motifs and less chronology-sensitive decoration on thick-walled vessels. The closest analogies can be found at sites such as: Miechowice, site 4 – the younger part of the site, Wolica Nowa, Zagajewice, as well as some part of site 4 at Brześć Kujawski (R. Grygiel 2005). It is particularly important to observe the presence of engraved lines, which highlight the mouth of a vessel and point to the classical phase. Several elements, such as the character of the music-note motifs and vessel necks make the cluster's material similar to the late phase, which can also be implied by the dating of this part of the site to the classical phase, c.a. 5000–4900 cal BC (R. Grygiel 2005, p. 641).

**NORTH-EASTERN CLUSTER (HECTARE B 67, 76–79, 85–87, 90, 97, 99; D 8, 10)**

The features recorded in the southern part of hectare B and northern part of hectare D form an extensive cluster, consisting of twenty-two pits of economic character and several post holes, next to the pits. It seems that the features form separate “nests”, which consist of at least three pits, adjacent to the aforementioned holes (fig. 178). The cluster has yielded 1467 potsherds and 712 flint artefacts. The following have been identified on the site: 24 vessel mouths, 1046 bellies, 518 decorated bellies, 9 handles and 35 vessel bottoms.

**CHRONOLOGY OF THE CLUSTER**

The artefacts are numerous and they are characterised by distinct features, which allow the dating of the section of the site in question. The most important determinants are various types of music-note motifs, which can be found on the pottery, also from the late period. Additionally, a method of making fine-necked vessels has been identified among some pottery classified as the late phase. A special “baroque” character of the engraved lines (fig. 60: 5, 8; 61: 7) on some vessels also points to a younger phase of the Linear Pottery culture, although some artefacts are still connected with the classical or “music-note motif” phase (fig. 65: 16). Generally speaking, the north-eastern zone can be dated to the end of the classical phase (IIb) and the beginning of the late phase (III).

**SOUTHERN CLUSTER**

The features recorded in the southern part of the site in hectares C, D, E and F form a characteristic cluster of pits, clay pits and postholes (fig. 178). They may be described as houses with a courtyard (R. Grygiel 1986). The fills of the features have yielded 4744 pottery fragments and 380 flint artefacts. Moreover, some features contained animal bone fragments and single stone objects, such as axes, grinders and all types of stone slabs. The features will be presented with reference to particular hectares in the further part of the work.

**CHRONOLOGY OF THE CLUSTER**

Artefacts obtained from this part of the site are the most numerous and they can be clearly divided into two periods within the classical phase. It is possible to distinguish artefacts and features linked with the early and the late period of the classical phase.

The oldest features connected with the north-eastern zone of the cluster are situated in hectare "D" – sectors 73–75, 84–85, 94–98, hectare "F" – sectors 4–7 and in hectare "C" – sectors 99–100. Thus, together with the houses reconstructed on the basis of the posts, between the clay pits, they cover an area of c.a. 18 ares divided into two zones – a larger one with three homesteads, the so called eastern zone and the western one, consisting of one house. The pottery found in all the features bears traits of the classical phase and has connections with the early elements, such as Gniechowice (A. Kulczycka-Leciejewiczowa 2008) and Zofipole ones (A. Kulczycka-Leciejewiczowa 1983), particularly a bowl with an empty foot from feature 151 (fig. 49: 7–8), a decoration method with wide linear engraved lines, e.g. from feature 151 (fig. 46: 1) or clay pit 374 (fig. 55: 7, 11). It is also important to observe the decoration of incised or engraved, vertical lines on the belly of medium and thick-walled pottery, found in pit 371 (fig. 56: 1), or pit 151 (fig. 49: 3). Bulky vessels with asymmetrically fitted handles are of the same early age. They come from feature 240 (fig. 52: 2) and feature 1354 (fig. 76: 1–2). We can also observe a wide diversity of vessel forms, such as cups, bowls, amphorae, and special-purpose vessels. The map analyses indicate that the longest houses VI, VII, X, XII, measuring between 16 and 20 m, come from this settlement phase. Some researchers reckon that the smaller size of houses in the Linear Pottery culture is chronologically justified (J. Pyzel 2006, p. 189), which is indirectly attested by the finds at Kruszyn. The discussed artefacts and features can be described as phase I on the site at Kruszyn 10.

The second, younger phase is mainly present in the north-eastern, western and southern clusters. The pottery bears traces of, the so called, "decorative baroque", in which the whole surface of a vessel is used for decoration. Some traits, such as imprints underneath the vessel mouth, diversity in the way of impressing music notes with the application of triangular notes or their dense arrangement, and the tendency to make a vessel with a neck indicate connections with the late phase. These elements, however, are in minority. What is more, if we compare artefacts of phase II at Kruszyn with the material from the late sites, such as Smólsk or Brześć Kujawski, site 4, it can be inferred that they are widely different. This phase is marked by a significant uniformity of vessel forms, frequently limited to cups. In the features connected with phase II at Kruszyn we can find miniature vessels, which replicate thick-walled ones. There is also a tendency to make thin-walled clay vessels with admixtures, typical of "rubble pottery".

## SUMMARY. CHRONOLOGICAL-SPATIAL ASSESSMENT OF THE SITE

The above mentioned artefacts from the Linear Pottery culture, site 10 at Kruszyn have provided very interesting data. Unearthing over several dozen features with pottery and flint material has created an opportunity to make a chronological and spatial division of the settlement. On the basis of the presentation and analysis of the pottery, flints, stone artefacts, and the features, we can distinguish three settlement levels on the site. Two of them are connected with the classical, music-note motif, or phase II, whereas the third one is linked with the beginning of the late phase.

## CHRONOLOGY

The presented analysis of the artefacts indicates that the first settlers on the site were connected with the classical phase of the Linear Pottery culture (R. Grygiel 2004, p. 641) which has traits of the early period and connections with Lesser Poland (Gniechowice and Zofipole style). Four houses were built on the site: VI, VII and X in one cluster, and XII – 35 m away from it. These were medium-sized buildings, between 16 m and 20 m long and 5 m–7 m wide. Fourteen dug-out features have been unearthed. Some of them, like feature 150, had additional niches – hence a larger number of features in the descriptive part. Twelve of them are typical clay pits, situated by the walls of the above described post houses, whereas two are pits of economic character or dump pits – features 151 and 371. It is interesting to observe a similar layout of both pits, i.e. their large size and a considerable depth. They have also yielded a big number of artefacts.

A large number of stone artefacts in this section of the site is quite relevant to observe. We can come across stone slabs, querns, the so called flat stones and all kinds of polishing tools, grinders, which must have had economic functions. Surprisingly, other sections of the Linear Pottery culture on the site are void of such artefacts. What is more, important chronological data are provided by bones of wild animals, such as deer, roe-deer and aurochs, which can be found only in phase I, i.e. features 150, 151, 240

and 383. This indicates intensive hunting at the beginning of the stay at the site. Importantly, most authors agree that wild species played a bigger role in the initial period of inhabitation of the Linear Pottery culture on the site (R. Grygiel 2004, p. 576). Analogies of this material can be found on a number of sites in Kuyavia and the Chełmno Land, including the already mentioned Miechowice, site 4, Boguszewo, site 43, Grabie, site 4, Annowo, site 7, Stolno, site 2/2, Wolica Nowa, site 1 (L. Czerniak 1994, P. Gurtowski, R. Kirkowski 1994, R. Grygiel 2004). These sites are dated to the period between 5500 BC to 5200 BC. It seems that phase I at Kruszyn can be dated to the end of that period, c.a. 5300–5200 BC.

The second chronological horizon which is prevalent on the site, also connected with the classical phase, refers to artefacts with late-classical and late traits. This type of material can be found in the whole north-eastern and western cluster, as well as the remaining features of the southern cluster. The decoration and morphology of the pottery is widely different from the artefacts from the early phase. In phase II we can observe a considerable increase in the decorated artefacts, including those decorated on the whole surface of the vessels, the so called “decorative baroque” (fig. 53; 54: 14–15; 56–58; 62). This period is also marked by a considerable uniformity of vessel forms, frequently limited to cups. Apart from the engraved lines, the cups are very often decorated with music-note motifs, diversified in shape, including triangular ones. There is an observed tendency to make a fine neck on the most popular form, i.e. cup, the so called “2/3 of the spherical sector” (fig. 60: 5). Phase II at Kruszyn also includes miniature vessels – replicas of thick-walled ones (fig. 74: 4). There is also an observable tendency to make thin-walled clay vessels with admixtures typical of rubble pottery (fig. 74: 1, 2). Moreover, elements of clay portable art in the form of elements of figurines are almost exclusively found in that phase. Such artefacts have been unearthed in feature 484 (fig. 62: 17–18) or feature 1300 (fig. 75: 30). Analogies of this type of material are mainly known from the region of Brześć Kujawski and Osłonki, e.g. Miechowice, site 4, features 7, 19, 19a, Zagajewice, site 1, Smólsk, site 4 and Brześć Kujawski, sites 3 and 4. They are dated to the late phase c.a. 5000–4800 BC. Due to the fact that elements of late chronology are present but not prevalent in the explored material, it should be dated to c.a. 5000 BC.

The last phase, apparently the youngest one, can be linked with the artefacts from the northern cluster. It has yielded not very numerous but significant material, including decorative motifs, such as imprinted, triangular music-note motifs, which have also been found on several vessel fragments in two, out of three features (fig. 69: 4, 75: 11), as well as a vessel decorated with fingernail imprints and the so called “filled ribbon”. Analogies of such material can be found at Brześć Kujawski, site 4, among the pottery from the houses found there (R. Grygiel 2004 pp. 119–228) or the vicinity of pits 442–444 (R. Grygiel 2004 p. 230). Similar material has been found at Smólsk, site 4, clay pit 3 (R. Grygiel 2004 p. 315: 4) and Ludwinów, site 7, e.g. feature B9 (J. Pyzel 2006 p. 267: 7). According to R. Grygiel decoration in the form of a “filled ribbon” occurs in the classical and younger phases of the Linear Pottery culture (R. Grygiel 2004, p. 626). It seems that the untypical shape of the house may also point to a late character of the cluster. Thus, this part of the site should be dated to the period c.a. 4900/4800 BC.

## SPATIAL ORGANISATION OF THE SETTLEMENT

### HOMESTEAD – A HOUSE WITH A COURTYARD

The analysis of the distribution of immovable features and artefacts allows the recognition of three isolated zones, mostly used for dwelling purposes, but also as features of economic character. Most probably they had a mixed, economic – dwelling function, of the *siedlung* or *siedlung-kammer* type (R. Grygiel 1994, p. 58; 2005 p. 615).

Four houses gave foundations to the first phase of the site. It is difficult to draw conclusions on whether the buildings co-occurred as part of one settlement, designed for several families, or whether they were independently used by one family on a *rota* basis. The link between two houses: VI and X is attested by the refitting of pottery fragments, which may prove the co-occurrence of both foundations. It seems that pit 371 was a dump pit of economic character used by both houses. The question arises whether building VII with pit 151 was used at the same time or not. Some elements may imply the material of the Gniechowice type, e.g. a bowl on an empty foot may suggest a slightly older dating of the house. The fourth foundation is difficult to determine, due to a lack of a dump pit, which may be situated beyond the excavation area. Some distance between the house and the main part of the site may indicate

that it was built in a different period of time. Therefore, it might be reasonable to distinguish three stages of the exploitation of the oldest part of the settlement. The first one was house VII with pit 151 and clay pits – features 150, 967, 167. Then two other houses were set up – X and VI, possibly at the time when house VII was still in use, which may be proved by a logical layout of holes, especially in the vicinity of feature 967, in are D 85, which forms a link, or a fence combining houses VII and X. This shows that initially the place was inhabited by one family and then joined by the next three families, which could have co-existed. It is difficult to determine whether the four families lived at the same time, because the connections between house XII and other houses is hard to establish. It seems that these were small compact foundations spatially limited. If we assume a hypothesis that the three houses co-occurred, they would be covering an area of 15 ares. House XII would take up an additional three-are space. As a result, the whole area directly connected with the house, clay pits and the courtyards would cover an area of c.a. 25 ares.

Phase II of the settlement looks more problematic. The southern part of the site consists of nine post buildings with clay pits and dump pits, which are associated with that period. The western section includes a cluster of clay pits with no traces of posts, which are difficult to interpret. It may be inferred that the construction did not make use of posts, instead it was an above-ground log structure. Seemingly, a similar situation occurs in Smólsk, site 4 (R. Grygiel 2004, p. 260). In the northern part, except for the youngest, small cluster with a trapezoidal house, there is an isolated cluster of several dozen pits and single holes. No traces of long houses or classical clay pits have been recorded in this region. It seems that this part played an economic role, which is proved by a large number of flint artefacts and a characteristic organised layout of pits. However, at this stage of research ruling out a dwelling or mixed function is impossible.

It appears that in phase II we can distinguish a dwelling section in the southern part of the site, consisting of nine houses and two clusters of economic function. The houses from the southern part are grouped around three or four zones. The northern part of the area consists of four houses of analogous construction. These were short structures, built on a plan resembling a quadrangle, erected next to one another. They were 9–10 m long and 7–8 m wide. Basing on the assumption that they had arcades, then the ones in houses I and IV were oriented north, the one in house II faced south, and the one in house III – south-east. Among the holes we can discern double ones, which may indicate that the houses were reconstructed. On the eastern side of each arcade there were features of the type of clay pits. It seems that the features lying north of the houses, i.e. from are D 52, pits 4, 6–8 must be considered as auxiliary pits. Moreover, feature 59 might have been designed for a particular function.

The next cluster is situated on the western border of the excavated area, including houses V and XI. House V is particularly interesting, as it contains a specific, linear layout of holes in the northern part of the house. This may be a direct indication of some links with the late type of building development, best recognised at Brześć Kujawski, site 4, house III (R. Grygiel 2004, p. 184). In the house there are visible traces of double posts, which may attest that the house was rebuilt. Unfortunately, due to the fact that the cluster was located on the border of the future motorway, its complete image has not been captured, and as a result it has not yielded too much data.

The next single house no VIII is situated in the southern part of the site. This construction seems to be the longest. It is situated by the most extensive and longest clay pit. In the northern part of the house there are visible double posts, which may indicate that the construction was rebuilt. In this case, like in the previously discussed structures, no dump pits or pits of economic character have been found in its close vicinity. It seems likely that this function was performed by pit 1075, although it may have been a clay pit belonging to the next house.

Two last constructions are located in the south-eastern part of the Linear Pottery culture settlement. These are medium-sized houses. One of them – house no IX has clay pits on the west, whereas house no XIII – on the east. Perhaps the cluster of pits from sector F24 consists of dump pits and pits of economic character for those houses. It is difficult to determine whether the houses depended on one another. Its close proximity indicates that they occurred one after the other, although their co-occurrence cannot be ruled out.

Western and north-eastern clusters are much more difficult to interpret. The lack of holes in the western cluster and the presence of over a dozen holes in the north-western part may be interpreted in several ways, e.g. by their natural degradation on a sloping surface, such as erosion or mass movement,



also known as mass wasting or slope movement. It may also be assumed that ground constructions were located here, which has already been suggested with reference to the western cluster. Another explanation is the specific function of the place, e.g.: specialised workshops or places where specific activities were performed away from the settlement. In the case of the western cluster there was no shield observed, whereas in the north-western cluster there were shack-like constructions or wind deflectors. This may be connected with different seasons and whether conditions. All the described features are connected with the late-classic phase or the late phase, the so called phase II on the site. It is likely that the north-eastern section was the location of workshops or a place of processing specific raw materials, owing to the fact that it yielded a considerable number of flint stones. An osteological analysis of artefacts from the features situated in the north-eastern part of the site indicates the prevalence of cattle bones. It is likely that the research has captured traces of local slaughter and cutting of animal carcass, which may also be supported by a traseological analysis of flint artefacts.

### **<sup>14</sup>C DATING**

Two pits from features 6 and 721 yielded charcoals, which underwent <sup>14</sup>C analysis at the Laboratory of the Museum of Archaeology and Ethnography in Łódź. The obtained dates were as follows: Lod 1462: 5660±60 BP and Lod 1463: 5640±60 BP, which with 68.2% probability gives the range 4530–4430 BC. These dates do not correspond to the horizon of the Linear Pottery culture. The dating of bones from feature 151 carried out at the Poznań Radiocarbon Laboratory has given the following result: 6050±50 BP (Poz-83420), which corresponds with the younger phase of the Linear Pottery culture. The above marking matches the unearthed artefacts in the discussed feature.

At this stage of research it is difficult to determine whether we can talk about a settlement continuity on the site. It would appear that three possible scenarios can be taken into account.

In the first case it is presumed that all the three settlement phases occurred independently on the site with the division into separate homesteads which co-existed in the particular time periods. This would imply a multiple, autonomous inhabitation of the site in question. In such a case the lack of stratigraphy may be explained by the fact that the buildings were erected next to the remains of the earlier settlement and the previously inhabited zones were left unused.

In the second case we may surmise that there was a consistent, continuous inhabitation of the site at Kruszyn, which began in the first phase and was the most intensively used throughout the classical phase and at the end of it, when the economic zone in the northern part of the site was exploited. The final stage of the settlement would occur at the beginning of the late phase.

The third possibility assumes an independent occurrence of the settlement in the first phase, followed by a second independent settlement phase connected with a well-developed classical phase and the beginnings of the late phase.

### **SUMMARY**

The analysis of artefacts and features of the Linear Pottery culture from site 10 at Kruszyn, presented above has yielded very interesting information. The unearthing of several dozen features, containing pottery and flint material has made it possible to attempt the chronological and spatial division of the settlement on the site. On the basis of the results of the analyses and interpretation of the pottery material, flints, stone artefacts and features three settlement levels can be distinguished on the site. Two of them are connected with the classical phase, “music-note motif” phase or phase II, whereas the last one with the beginning of the late phase. It appears that a good state of preservation of the features and a thorough exploration of several isolated zones on the site makes it possible to draw far-reaching conclusions, particularly connected with spatial development, construction, economy and chronology. It can also be attested that the artefacts from the site of the Linear Pottery culture at Kruszyn considerably supplements our knowledge about the first agricultural communities in Kuyavia and in the whole Middle European Plain.

### The Brześć Kujawski group of the Lengyel culture (*D. K. Płaza*)

Feature 11 – are C 59 and feature 168 – are D 76 (fig. 19: 1) have yielded seventy-five potsherds. Twenty-five fragments of one vessel have been obtained from feature 11. The artefact was decorated with finger-nail imprints. Feature 168 has yielded fifty-five fragments of three vessels, including one with a slightly notched rims and the second one exclusively with knobs (fig. 19: 2, 4). The third vessel was undecorated. In technological terms, the artefacts correspond with the Brześć Kujawski group of the Lengyel culture, with the admixture of sand and mica.

### The Funnel Beaker culture (*D. K. Płaza*)

Feature 732 in hectare B is a multi-layer pit- 355 × 390 cm big and 80 cm deep (fig. 18; 80: 12). It has yielded the assemblage of over 200 pottery fragments, which can be linked with the Funnel Beaker culture. These are characteristic cup mouths, with impressed decoration (fig. 80: 3–4) and a finger-tipped plastic mould (fig. 80: 5). Several vessels were undecorated (fig. 80: 1–2, 6–7). The unearthened finds include a horizontally perforated handle, probably of a bulky amphora (fig. 80: 8), and the remains of a clay spoon (fig. 80: 9). The most noteworthy is the unearthing of the remains of at least three plates (fig. 79: 1–3) – form which is associated with the earliest phases of the Funnel Beaker culture (S. Rzepecki 2003; P. Papiernik 2012). It seems that this category of pottery points to early chronology of the assemblage of the Funnel Beaker culture from Kruszyn. The secondary deposit of the above mentioned pit has also yielded several vessels from the Linear Pottery culture, decorated with, inter alia, engraved lines (fig. 80: 10–11).

### Flint artefacts (*P. Papiernik*)

Site 10 at Kruszyn yielded 1102 flint artefacts following rescue excavations. The main group consisted of 1047 specimens connected with the Linear Pottery culture (plate 2, 23). They were unearthened in thoroughly explored features (fig. 81, plate 1) mostly connected with phase II of the Linear Pottery culture in Kuyavia (after R. Grygiel 2004). The assemblage comprised a small sub-group linked with the earlier phase (southern cluster, early features – plate 11) and a much larger group found in various places of the site, connected with the earlier phase of the site inhabitation (plate 9). No artefacts can be assigned to the settlement of the youngest phase III of the Linear Pottery culture in Kuyavia. Moreover, on the basis of analytical examination, two subgroups have been distinguished, which comprise assemblages from the features in the southern cluster (plate 10) and the north-eastern one (plate 13).

Flint artefacts of the Linear Pottery culture have been examined with the method applied to Danube cultures from the area of Brześć Kujawski and Osłonki (P. Papiernik 2008). The method is primarily based on an attempt to reconstruct the dynamics of flint processing through recording and multifaceted analysis of measurable and descriptive traits of flints. Typological and technological division was of less importance. On the basis of the observation, a description of the assemblage in question has been made. It took into account raw material economy, the applied methods of processing and morphological diversity of the main groups of artefacts. A relevant element of the whole study is the analysis of work traces on all specimens of the Linear Pottery culture (c.f. M. Winiarska-Kabacińska, current volume), which allows the description of a tool set, together with a range of activities performed on the site.

The structure of the assemblage of the Linear Pottery culture is dominated by two types of raw material: local erratic stone, so called Baltic, and imported chocolate stone (plate 3). It can be observed that regardless of the distinguished groups of artefacts (plate 9–13), the imported raw material is more numerous than the local one (fig. 83). However, the quantitative ratio of the two types of stone found in the features is more varied. A good illustration of this are the most numerous assemblages, which comprise groups of artefacts dominated either by chocolate flint or Baltic flint or made of either of those in equal measure (fig. 84). Specimens from different morphological groups are made of this kind of raw material, which attests that they were processed on the site. Other types, such as Jurassic, Świeciechów, or Pomeranian flint have scarce representation on the site (c.f. plate 3). The two former types of imported raw material have been used to make blades or tools, which may prove that they were mainly imported in

the form of flint semi-product. The third one – pebble type of the local erratic flint appeared in the form of a lump, three crumbs and splintered pieces, which most probably resulted from the fact that it was only occasionally used (plate 3). The types of flint in question are chronologically different. Specimens made of Pomeranian flint are only found in the oldest features (fig. 83; plate 11), whereas the ones made of Świeciechów flint are present in the assemblages connected with the younger phase of the site inhabitation (fig. 83; plate 9). Jurassic flint has been found in assemblages of different chronology, although it seems that it was of greater importance in the early stages of the site inhabitation (fig. 83). It should also be added that due to a considerable burning of the assemblage, its large part (9.17%) was not classified in terms of the raw material used.

The assemblage of the Linear Pottery culture treated as a whole or as separate groups is dominated by core exploitation (plate 3, 9–13), which proves the main role of this process in tool making. Moreover, the prevalent semi-product used to make different morphological types of tools is the blade. There are also clear traces of flakes and a minimal number of splintered pieces (plate 8). This observation confirms the results of the conducted analysis of traces of wear, thanks to which we can distinguish a group of functional tools made of natural blades and flakes, as well as splintered pieces (c.f. M. Winiarska-Kabacińska, current volume).

The greatest role in the production of tools was played by chocolate flint (plate 8). On the basis of the analysis of all types of artefacts in the assemblage, it can be assumed that the raw material was processed on the site. A small number of flakes with natural surfaces (plate 6) and technological forms connected with initial core preparation (plate 3), and the lack of natural butt of striking platform of blades and flakes imply that chocolate flint was mainly imported in the transformed form. The presence of technological specimens mainly connected with the repair of cores – mostly core rejuvenation tablets and core platform rejuvenation tablets (plate 3) and more rarely pre-flaking surface and secondary sub-crested blades may indicate that initial cores were imported and further exploited, usually as single-platform forms. In the initial stage there were also specimens with changed orientation and flakes. Technological forms are so few in comparison with a large number of blades, exclusively with negative scars and with not many natural surfaces (plate 5) that the opinion that ready-made blades were also imported seems justified. Other imported types of flint (Jurassic and Świeciechów) are difficult to interpret unambiguously, due to a small number of specimens (plate 3). In this case blades prevail in the assemblage, but other groups are also present, which mainly refers to Jurassic flint. Thus, it seems likely that the raw material was brought to the site in the form of semi-product, mostly blade (Świeciechów flint) and incidentally flake or core type (Jurassic flint).

The second most important type of raw material in the assemblage of the Linear Pottery culture is Baltic flint (plate 3). In this case the presence of completely natural flakes and a considerable number of forms with natural butts of striking platform allows the assumption that the cores were prepared on the site. Initial core preparation must have been limited to a general formation of the core and preparing the platform, as there was an observable lack of primary crested blade (plate 3). Very few technological specimens include exclusive abrading and rejuvenation of core platforms (plate 3). Nevertheless, obtaining blades from single-platform cores, performed as a meticulous but serial exploitation must have been widespread, as we can observe a number of proper blades, entirely with negative scars (plate 5).

Among natural blades made of this type of raw material, we can distinguish a small number (4 specimens) with parameters and morphology typical of Mesolithic artefacts (fig. 96: 5; 103: 3), which may have reached the site in the ready-made form. The assemblage does not contain any other forms connected with the exploitation of microlithic cores for blades.

Regardless of the type of flint raw material, the blades used for the production of morphological tools had similar parameters. The most characteristic measurements were as follows: length 30–50 mm (exceptionally up to 70 mm), width 13–20 mm, thickness 3–8 mm. No clear preference in the choice of a given semi-product was observed, as regards the production of particular tools. It seems, however, that end-scrapers were mainly made from the widest and thickest blades, whereas retouched blades from the most irregular ones.

The assemblage of the Linear Pottery culture is evidently dominated by end-scrapers (plate 3), in most cases connected with hide processing (c.f. M. Winiarska-Kabacińska, current volume). Their prevalence is also visible in the distinguished groups of assemblages from different sections of the site

and different chronological groups, as well as in all more numerous assemblages from single features (c.f. plate 9–22). Other types of morphological tools are definitely less numerous. They mainly include truncated pieces made on blades and retouched blades. These forms were mainly made from proper semi-product, with features characteristic of the Linear Pottery culture. Other categories of morphological tools are quite diverse – they are void of characteristic features and are frequently found on different sites of the Linear Pottery culture. It is worth emphasising a large typological diversity of sickle inserts, which comprised: truncated pieces, retouched blades, blades with usage retouch, end-scrapers and even flakes (c.f. M. Winiarska-Kabacińska, current volume). This observation stands in contrast to the description of assemblages of the Brześć Kujawski group of the Lengyel culture from the region of Brześć Kujawski and Osłonki, in which the dominant element of sickles are typological truncated pieces (c.f. P. Papiernik 2008).

Morphological tools which require a separate study includes specimens with features typical of the Mesolithic. We should enumerate a series of side-scrapers made on flakes (fig. 95: 7; 96: 2; 98: 1; 109: 2, 3), flakes from splintered pieces (fig. 96: 1, 4), a micro-truncated piece on blade (fig. 110: 1), microlithic perforator (fig. 113: 1) and a form resembling a backed flakelet (fig. 115: 1). This group also includes a single microburin (116: 3). It is interesting to note that these forms were made of Baltic and chocolate flint. Either one or two specimens at a time were unearthed in different sections of the trench, in the features primarily connected with the younger phase of the site inhabitation. It is also relevant to observe the functional application of some side-scrapers and a backed flakelet (c.f. M. Winiarska-Kabacińska, current volume).

Twenty per cent of forms in the discussed assemblage have been classified as splintered piece group (plate 3). This technology was applied in the case of Baltic flint (c.a. 30% of artefacts are made from this type of raw material – plate 3). It has been indicated that various forms, such as cores, lumps of raw material, flakes, splintered-piece flakes and morphological tools were used for their making. The technology was short-lived. One splintered piece was used to obtain several, or more rarely over a dozen small flakes from splintered pieces. Only in very few cases were splintered-piece forms used as semi-product to make morphological tools (plate 3). A small group of specimens also bore traces of so called usage retouch (plate 3) or traces of wear, which confirm their functional application (c.f. M. Winiarska-Kabacińska, current volume). A similar description of the splintered-piece group, with two important reservations, can also refer to the artefacts made of chocolate flint. The discussed group is less numerous in the whole structure of the assemblage (c.a. 17% of specimens made of the raw material). The splintered piece technology was only applied to make tools from core exploitation group of artefacts (flakes, blades and tools, possibly cores and their fragments) with less intensity than in the case of Baltic flint. The use of this technology also applies to the Pomeranian flint (pebble), as the only clear form is a splintered piece made of a lump of this raw material (fig. 101: 7).

The site in question also yielded a small group of artefacts of undetermined chronology and cultural classification. It consists of 58 flint artefacts, obtained from humus layers (21 specimens – plate 23) and younger features (feature 338, 1315 – 8 specimens – c.f. plate 22) and those of undetermined chronology (feature 573, 732, 984 – 27 specimens – c.f. plate 22). The typological and raw material description – very similar to assemblages of the Linear Pottery culture- indicates that most forms are of linear type (c.f. plate 3 and 23). However, the site has also yielded artefacts from other phases of the Neolithic settlement (Brześć Kujawski group of the Lengyel culture and the Funnel Beaker culture), as well as the early stage of the Bronze Age. This means that specimens younger than the Linear Pottery culture can also be found among the artefacts from this site. This can be attested by the fact that the following forms have been found outside the features: end-scraper made of striped flint, fragment of blade with continuous retouch and strongly retouched edges (chocolate flint) and a dihedral burin (Baltic flint), which have no analogies in the assemblage of the Linear Pottery culture. Artefacts found in feature 732 require a separate study. Apart from very few fragments of the Linear Pottery culture, a numerous assemblage of vessel sherds from the Sarnowo phase of the Funnel Beaker culture. The flint assemblage, consisting of 24 specimens, is almost entirely made of chocolate flint. It contains two morphological tools in the form of retouched blades, which correspond to the stylistics of “early funnel-beaker” forms.

To sum up, it should be concluded that the flint assemblage unearthed on site 10 at Kruszyn is very relevant in finding out about flint industry of the Linear Pottery culture. The significance of the dis-

cussed artefacts is not only connected with their great number (the most numerous finds are in the Polish Lowland), but also the fact that they come from a well recognised settlement, whose chronology dates back to phase II (classical) of the Linear Pottery culture in Kuyavia. Additionally, as the first “Kuyavian” assemblage, it underwent a complex functional analysis. The description of the output confirms the homogenous character of the Linear Pottery culture flint raw material, as well as the similarity in its processing and the way of exploitation. The diagnostic research was based on the exploitation of regular single-platform cores for blades, which were used to obtain standard semi-product and a group of tools consisting of end-scrapers with a considerable number of truncated pieces and simple retouched forms. (inter alia M. Kaczanowska 1971, 1985; A. Dzieduszycka-Machnikowa, J. Lech 1976; J. Lech 1979, 1982; 1997; M. Kaczanowska, J. Lech 1977; B. Balcer 1983; 1986; J. Małecka-Kukawka 1992; 2001; A. Kulczycka-Leciejewiczowa 1979; J. Kabaciński 2010). Moreover, the artefacts from Kruszyn are a valuable asset to expand our knowledge about flint processing from phase II of the Linear Pottery culture in Kuyavia, which has so far been only based on very few finds, mostly from the region of Brześć Kujawski and Osłonki (R. Grygiel 2004; c.f. L. Domańska 1988; 1995; J. Kabaciński 2010). On the basis of the discussed assemblage we should confirm the relevance of chocolate flint, with a continuously important role of local erratic raw material and the import of Świeciechów and Jurassic flint (c.f. J. Kabaciński 2010). The composition and relevance of the particular types of imported types of raw material indicates the links of the settlement of the Linear Pottery culture with the region of Sandomierz, where Świeciechów flint is considered to be of great importance (J. Michalak-Ścibor, H. Taras 1995; M. Szeliga 2014).

It is crucial to observe that the assemblage from Kruszyn consists of diverse forms resembling Mesolithic industries. This group includes over a dozen artefacts, such as blades, microliths and side-scrapers. It is difficult to provide an unambiguous interpretation of the presence of the above artefacts on the site. It may have resulted from the fact that older material, abandoned on the surface of the site by the community of the Mesolithic, was mixed with the younger one. However, it should also be considered that the presence of the discussed forms is the effect of contacts of the community of the Linear Pottery culture with Mesolithic settlement. This interpretation can be attested by the fact that none of the features at Kruszyn contained a big amount of artefacts with Mesolithic features. On the contrary, only one or two specimens at a time were unearthed in different parts of the trench – only in the pits of the Linear Pottery culture. Moreover, the group in question contains forms made of chocolate flint, which is the type of raw material typical of the Linear Pottery culture, very rare in the late Mesolithic assemblages in Kuyavia (R. Schild, M. Marczak, H. Królik 1975; L. Domańska 1995; D.K. Płaza 2015). It is also important to observe the location of site 10 at Kruszyn on the rim of upland, on clayey soil in the close vicinity of the extensive valley of the Vistula river, where the hunters-gatherers communities (e.g. Wistka Szlachecka VI) survived until the beginning of the 5<sup>th</sup> millennium B.C. according to S. K. Kozłowski (1989). It seems that several “Mesolithic” artefacts in the Linear Pottery assemblages were also unearthed on site 4 at Smólsk (c.f. R. Grygiel 2004, p. 338; fig. 210: 8; 214: 5), which is also located in the rim area of the Vistula river valley, c.a. 3 km away from Kruszyn. Resolving the problems presented above requires further research and the study of other numerous assemblages of the Linear Pottery culture, as well as a more detail insight into the chronology and range of the late Mesolithic settlement in the region of Kuyavia (c.f. D. K. Płaza 2015).

### Functional analysis of flint artefacts of the Linear Pottery culture (*M. Winiarska-Kabacińska*)

All the artefacts yielded from the excavations have undergone traseological analysis. Macro- and microscopic observations have been carried out with the use of a stereoscopic and metallographic microscope. The magnification was 10×, 25×, 100× and 200×. The artefacts were obtained from 46 features. The number of flints in particular features is strongly diversified and not all of them bear traces of use (plate 25). Plate 24 contains a description of all artefacts with use traces in particular features. Functional analysis has been carried out on the basis of the findings by D. K. Płaza (current volume), according to which dwelling and features have been distinguished (fig. 124): phase I of the Linear Pottery culture – *southern cluster* (house 1 – clay extraction pits no 150 and 967 and pit no 151; house 2 – pits no 340 and 363 and

pit no 371; house 3 – pits no 383 and 400; house 4 – pit no 139), phase II of the Linear Pottery culture – *southern cluster* (house 4 – pits no 634 and 1174; house 5 – pits no 1118 and 1119, hole no 508; house 6 – clay pits no 77, 197 and 790 and pit no 59), *economic or dwelling zone, western cluster* (features no 478, 495 and 1506; features no 4, 6 and 7), *north-eastern cluster* (features 481, 484, 485, 487, 489, 721, 728, 729, 738, 743, 995, 1004). Artefacts located in the features, but not belonging to the above mentioned zones have also undergone functional analysis (numbers 240, 341, 479, 494, 560, 717, 718, 731, 925, 1165, 1215).

#### Activities performed on the site

Works connected with skin tanning were intensively performed on the site (fig. 128: 1; fig. 131: 1–2). It was a complex process and different communities may have performed them differently (S. Beyries 2008, S. Beyries, V. Rots 2008, A. L. van Gijn 2010, p. 78–84). In this case the hide was cleaned from the remains of meat and fat on the site with the use of scrapers with a straight working edge, mostly set in handles. For some works, such as scraping and softening scrapers with or without handles were used. These activities were mainly performed with retouched scraping edge and sometimes with side edges. Only in several cases were the tools, other than end-scrapers used, such as (truncated piece, side-scrapers, retouched and unretouched flake). The hide was cut with blade, truncated piece, flake and side edges of end-scrapers. A large number of scrapers was broken. Taking into consideration the presence of refitting in the assemblage, which bears traces of retouching (splinting) on the crosswise, broken edge, it seems likely that the blades were intentionally broken.

Intensive works connected with hide processing have also been attested on other sites of the Linear Pottery culture, which have undergone functional analysis. Such is the case of the Bożejewice 22/23 (M. Winiarska-Kabacińska 1990) site, assemblages of the Linear Pottery culture, examined by J. Małecko-Kukawka (2001), additionally commented on by G. Osipowicz (2010), Mogiły 62, site at Małe Radowiska and Trzciano 10 (G. Osipowicz et al. 2012, 2015), sites of the Linear Pottery culture in Belgium (J. P. Caspar 1989), as well as assemblage from Beek-Molensteeg, Holland (A. L. van Gijn 1990), Langweiler 8 and Laurenzberg 7 from Germany (P. Vaughan 1985), or Darion-Colia from Belgium (P. Jardón Giner, I. Jadin 2008).

The works at Kruszyn were mostly conducted in its economic zone, in the north-eastern section of the site, a place situated at some distance from the distinguished features, which belong to houses. Single artefacts were also found in features nearby the houses, but in the majority of cases the activities were done at a considerable distance from the dwelling features. The fact that places for hide processing occupied secluded areas can be explained by the unpleasant smell that accompanies such activities, which is ethnographically attested. In the case of Bożejewice, the tools used for hide processing were situated in the features outside post houses. The same is true of Beek-Molensteeg (A. L. van Gijn 1990) and Darion-Colia (P. Jardón Giner, I. Jadin 2008). A large number of tools used for hide processing, including end-scrapers, and the intensity of use traces attested on the working edges indicates that the works were of great importance to the inhabitants of Kruszyn. We can also agree with A. L. van Gijn (2010: 83), who explains that the presence of a large number of scrapers with traces of use, found on the sites of the Linear Pottery culture in Holland indicates the technological complexity of the works rather than the amount of the raw material, i.e. hide.

Scrapers used for hide processing constitute the most numerous group of tools, which bear traces of characteristic changes indicating the presence of hafts (although such traces are rather difficult to record). The changes will depend upon the type of hafting, i.e. in some cases the tools were wrapped up with material protecting the hand of a user, whereas in some others the haft was made of wood, bone or antler. In the first case it mostly takes the form of polishing and its definite location, while in the other apart from extensive or spot polishing, these are damages in the form of differently shaped crumbling, also recorded in a given place and indicating the possible use of a haft. Polishing is also formed at the moment, when the tool is kept in the hand (V. Rots 2004, 2010). In the case of the end-scrapers from the analysed assemblage, hafting traces were most probably made of wood.

The assemblage in question contains tools connected with scraping and cutting bone, or bone with meat. In several cases the recorded traces did not allow a clear answer, whether the activities were connected with bone or antler processing. It seems probable that the former were more widespread. The works were performed with scaled pieces (fig. 128: 2), end-scrapers, retouched blades and, as well

as blades and flakes with or without use retouch. Single artefacts are found in features connected with particular houses. Feature linked with house 4 from phase II deserves more attention, containing five specimens, four of which were used for bone processing. Additionally, the north-eastern cluster of the economic part, particularly feature no 743 contains tools used for the processing of bones, bones with meat and dividing carcass. Considering a large number of tools used for the processing of hide, including its cleansing, this indicates specialisation and a particular economic function of the feature.

Works connected with wood processing were also quite common. This is hardly surprising in the case of the communities of the Linear Pottery culture, who relied on obtaining wood and making objects for their daily life. The fact that they have not been preserved in the archaeological material has often led to general conclusions and considerations. Recent discoveries on the Neolithic site La Draga in Spain (Palomo, Gibaj A. Palomo, F. J. Gibaja et al., 2011, R. Pique et al, 2015) fill this information gap. Dated to 5–6 thousand cal. BC, the site is connected with the circle of Cardial Ware and contains excellently preserved wooden artefacts, including tools used for harvesting. The artefacts include agricultural tools, such as sickles, sticks for softening soil and digging, construction tools, e.g. axe handles and wedges, hunting equipment, e.g.: bows, arrows and javelins, as well as every-day objects, such as wooden bowls, combs, plant-made baskets, wooden hooks, containers and tool settings. Most of the great number of objects were most certainly made on the site. The majority of the tools found at Kruszyn was used for scraping (fig. 129: 3). Only single specimens were used for cutting or sawing. Scraping was done with the help of blades and flakes with or without retouch and with end-scrapers. Other activities were performed with truncated piece and with end-scrapers. The tools did not have a setting and occurred in features belonging to houses and the zones outside them – western and north-eastern clusters. A large number of the analysed artefacts was used for the obtaining and processing of plant, non-tree raw material, in order to make objects. The tools were very intensively used. On the basis of the finds from the above mentioned site in Spain, it can be inferred that obtaining plants for making objects, such as containers, baskets or strings was quite common. We should also remember that gathering plants, herbs and fruit is still very important in these communities. Their processing may have been recorded on tools, and is interpreted as the remains of contact with soft material. However, as it is indicated by A. L. van Gijn (2010, p. 63–65), gathering wild plants may not have required the use of specialist tools, as it was easier done by hand. Cutting plants with blades, retouched blades, as well as blades and flakes with the usage retouch, probably set aslant (judging by the type of polishing) has been attested on the site at Kruszyn. Other tools – end-scrapers, truncated piece, blades and retouched blades- have been used for cutting and scraping plants (fig. 130: 3). Either side edges or all edges were used for these activities. Artefacts bearing characteristic traces of cutting crops are mainly found in the form of complete and broken blades with the use retouch and retouched blades (fig. 129: 1–2; fig. 130: 1–2). Truncated pieces, end-scrapers and combined tool (end-scrapers + truncation), not previously used for other activities, also served as inserts. The distribution of traces indicates that they were set aslant. In three cases polishing is limited to the edge itself.

The presence of hafting traces on harvest tools, although not in all cases very well-visible and unambiguous, raises a question about the type of haft used for sickles. The works connected with soil cultivation required various activities (I. Clemente, J. F. Gibaja 1998), one of which was cutting crops. The tools used for that included wooden and bone tools, as well as sickles with flint inserts. As we can see from the results of the research, both the sickles and the techniques of cutting crops may have differed even within the boundaries of one site (J. J. Ibanez et al 2008, A. Palomo et al 2011). In the case of Kruszyn, we probably deal with only one type of sickle, in which flint inserts are set aslant. Different shape of setting may have been used, as it can be seen from the finds at La Draga in Catalonia. We cannot rule out the possibility that the most characteristic sickle of Karanowo type was also in use at Kruszyn.

The tools connected with plant material processing are present in the features connected with houses and designated clusters of economic character. Only pits belonging to house 1 contained more specimens with traces of plant processing, so it can be inferred that this house dealt with works of specialised character.

It has been mentioned above that assemblage dated to phase I and II contains tools with so called polishing 23, which has been recorded and discussed in the literature on the subject for some time now (e.g. A. L. van Gijn 1990: 85, 2010: 88; H. Juel Jensen 1994: 61; G. Osipowicz 2010: 90; B. Kufel et al 2010: 230). These traces have been recorded on tools from the late Mesolithic and early Neolithic. They

are characterised by the fact that on one surface of the edge used, the character of polishing indicates the processing of antler or plants other than corn, whereas on the other surface of the same edge, the polishing resembles the traces of hide processing. The undertaken experiments did not lead to an unambiguous interpretation of the traces and determining which activities they were caused by. Theories have been made that such tools were used for removing hair from hide, or for the processing of flax, wicker or other plants or even for making ceramic pots. However, most researchers agree that the traces were made as a result of tools coming into contact with plant fibres. In the case of Kruszyn, it seems that they may be linked with the plant material processing (fig. 126: 2; fig. 128: 3).

Works connected with the processing of soft non-organic raw material (sandstone?) were also undertaken on the site in question. The activities included grinding, scraping and drilling performed within the boundaries of the houses, especially house 1, and in the section of economic character. The latter comprises feature cluster 4 (fig. 125: 1–2), 6 (fig. 126: 2; fig. 127) and 7 in the western site zone.

In the case of over a dozen specimens, the identification of traces was difficult. These were tools for the processing of soft, hard and undetermined raw material.

As it has been already mentioned, it seems relevant that the presence of tool settings has been attested in the case of specialised tools, such as end-scrapers and the tools for cutting plants and crops, as well as single knives for dividing animal carcass.

#### Summary

The functional analysis of flint artefacts from the site at Kruszyn, made within the distinguished chronological phases, has not revealed any relevant differences in the function of the tools used in particular periods of time. Most probably, this can be explained by the fact that the works undertaken by the communities of the Linear Pottery culture resulted from a similar or identical model of economy.

Some differences can be observed if we look at particular houses and the features of economic character. The first house contains a larger number of tools used for the processing of plant raw material, including corn in comparison with the other ones. House 4 has a distinct character and according to D. Płaza it functioned in both phases distinguished on the site. In the first phase the tools bear traces of different activities of economic character, whereas the tools from the second phase constitute a compact assemblage connected with the processing of bones or antler. The tools found in the other houses bear traces of different activities of economic character. A greater diversity can be observed in the distinguished economic zones. The western cluster with features 4 and 6 can be interpreted as a workshop for making objects from non-organic material (soft sandstone?). The busiest was the north-eastern zone of the site, located in the proximity of the houses, where the inhabitants divided the animal carcass, cleansed and tanned the hide. The functional analysis of the sites of the Linear Pottery culture was made for such sites as Bożejewice, Beek-Molensteeg (Belgium) and Darion-Colia (Belgium), where it was possible to distinguish zones of dwelling and economic character. Hide processing has been recorded on the site alongside with the processing of wood and plants, including corn. On each of the sites, including Kruszyn, the tools with the recorded traces of usage have been found in pits outside the dwelling features. The above mentioned assemblages of the Linear Pottery culture from Poland, Germany or Belgium, which underwent functional analysis indicate the prevalence of tools used for hide processing, followed by wood and plant processing. The works connected with the processing of bone/antler and organic material, as well as dividing animal carcass is not as well represented.

Artefacts from Kruszyn are mostly made of chocolate and Baltic flint and to a lesser extent from Jurassic or Świeciechów flint. No preference in the choice of the raw material used has been recorded as regards making tools of a particular function. The results of the functional analysis duplicate the structure of typologically selected flint artefacts.

It is worth considering the form of some specimens used to perform a particular activity. In the assemblage in question, end-scrapers were used for most works connected with hide processing, with a working edge and side edges used for processing. Blades, retouched blade and two end-scrapers, not previously used for other activities had the function of sickle inserts. Single perforators were used for drilling, whereas truncated piece had the function of knives, sickle inserts and end-scrapers. Use traces were also recorded on the edges of scaled pieces. They were segments of natural edges each time retouched, which now bear traces of usage retouch. No traces of use (apart from the technological ones)



have been recorded on the edges transformed as a result of splinting. It is quite clear that scaled pieces were chosen due to their excellent edges. A large number of tools in the discussed assemblage included blades, flakes and retouched blades used for various activities.

In the light of the traseological analysis, the community which inhabited the site at Kruszyn subscribes to the economic model of the Linear Pottery culture in its whole range and confirms the compact and stable character of this cultural system.

### The Lusatian culture (*W. Siciński*)

Settlement of the Lusatian culture has meagre representation on site 10 at Kruszyn. Artefacts from this culture have been found only in nine archaeological features. Five of them have been regarded as settlement pits (fig. 132: 1, 2) and two as post holes. The remaining two features have been classified as clay pits (fig. 178). They did not form a large cluster, but were loosely scattered on a considerably large area. There were very few potsherds from the Lusatian culture, unearthened in the fills of the features. Ninety, strongly fragmented pottery fragments have been found, but their state of preservation does not permit an even partial reconstruction of the vessel form. A totally different find – fragment of a clay rattle – has been unearthened in feature 626 – a large settlement pit of storage character (fig. 132: 4). It is a small object, in the upper section partly damaged, c.a. 4 cm high. It may be classified as pear-shaped. This type of objects occurs in the Bronze Age. Since period V of the Bronze Age and during the Hallstatt period this type of artefacts prevails. The artefacts should be dated to the late Bronze Age and possibly early Hallstatt period.

### The bell-grave culture (*W. Siciński*)

Bell-grave culture settlement has its meagre representation on site 10 at Kruszyn. Artefacts from that culture have been found in only eight archaeological features, six of which have been classified as settlement pits (fig. 133, 134) and two as post holes. The whole assemblage consists of 429 potsherds. They are heavily fragmented and only in few cases permit a morphological analysis of pottery forms. Feature no 9 is the oldest. It contains a large number of artefacts, which should be dated to the beginning of the bell-grave culture in the late Hallstatt period D. The other pottery artefacts do not allow a more precise dating, and therefore should be broadly dated to the bell-grave culture in the late Hallstatt period D – early/middle La Tène period.

### The Przeworsk culture (*W. Siciński*)

Settlement features of the Przeworsk culture are mainly found in the southern belt of the excavated site, nearby a small watercourse, where their greatest cluster was located. Further north of the motorway course, the Przeworsk culture features were more rare. Only single ones were unearthened in that section. Eighty-four different archaeological features were found on the excavated area of site 10 at Kruszyn. Their fills contained artefacts from the Roman period. These are mainly pottery vessels, made by hand or wheel thrown, which should be dated to the younger and late Roman period. Moreover, several features contained single metal, clay, glass, horn and stone objects. The features included: 34 settlement pits, 33 post holes, 11 wells, 3 hearths, 1 lime kiln and 2 furnaces. Although some of the features are void of artefacts subjected to dating, they can still be classified to the Przeworsk culture, due to a similar function and type of fill. The next problem refers to a large number of post holes (their number occasionally exceeds 50 features in one are), some of which are also connected with the Linear Pottery culture. The overlap of the Przeworsk culture settlement over the older cultural background has made the distinguishing of post houses and their precise dating impossible, due to the fact that the former also makes use of a similar post construction. Nevertheless, among the large number of post holes well discernible on a clayey surface, it was possible to distinguish 11 houses of post construction, possibly performing various functions (buildings XV – XXV). It seems that the Roman period is connected with 4 animal burials, grouped close to one another in the area of feature 39 – a settlement pit. Such layouts of features are interpreted

as a kind of a “sanctuary”. Moreover, quite a large number of other features (no exact number is given) is likely to be classified to this period, although they are void of artefacts subjected to dating. This increases the number of features, which can be directly linked with the Przeworsk culture.

Settlement pits are the largest group on the excavated site. These are mostly oval or oval-like features, more rarely circular, and sporadically rectangular. They are baggy-shaped, or more rarely bathtub-shaped in cross-section. They can be sporadically funnel-shaped. They are between 110 × 64 cm and 570 × 330 cm big and between 41 cm and even 185 cm deep. Their fills consist of brown-dark grey humus and clay with an admixture of dark grey humus, occasionally with small lumps of daub and charcoals. They either contained a small number of artefacts in the form of potsherds, or were completely void of them. It is difficult to determine the primary function of particular features described as pits, due to a great transformation following their use-life. Only large pits can be possibly attributed with a dwelling or economic function. They can be interpreted as embedded parts of above-ground buildings (possibly cellars which performed storage function) of log construction, which is indicated by a lack of post holes in their vicinity.

Only several features can be interpreted as dugout constructions. They were rectangle-like in shape and considerably deep. They were also quite abundant in potsherds and animal bones, so they could perform a storage function. These include feature 164 (fig. 137: 1), 473 (fig. 137: 2), 608 (fig. 137: 3), 619, 626, 636 (fig. 139: 1), 637, 820, 1093 (fig. 141: 1), 1204 (fig. 141: 2), 1225, 1282, 1336 (fig. 142), 1400 (fig. 144: 2), 1433, 1456, 1466 (fig. 143), 1472 (fig. 144: 3), 1491, 1501 (fig. 144: 4) and 1503.

After pits, post holes constitute the second most numerous group of features unearthed during the excavations at Kruszyn. There were thirty-three features of this type, whose fills contained pottery artefacts of the Przeworsk culture. They helped distinguish layouts of eleven post buildings (no XV-XXV), which, with great probability, can be associated with the settlement of the Przeworsk culture. They are located in the southern settlement zone, where the Przeworsk culture features dominate (fig. 145–149).

Separate buildings differ in size, function and construction. As regards the size, the buildings can be divided into large ones – covering the area of over 100 square metres (features XV and XVII), medium-sized ones – with the area between 18.4 and 56 square metres (features XVIII-XX, XXII-XXV) and small buildings – with the area ranging from 7.5 to 12 square metres (features XVI and XXI).

Feature XV is an interesting building in the category of large structures. It is rectangular, delimited by forty-two holes with the following numbers: 12–15, 17–37, 816–818 and 861–873. Its layout covers an area of 14 × 8 m (112 square metre surface). Gable walls are supported by three walls, whereas the longer walls have a larger number of posts. Building XVII was only slightly smaller. It was rectangular and covered an area of 103 square metres. The construction of the walls was most probably of post-and-plank type or wattle type and the roof was supported on stairs. Like the longer walls, the gable walls had four or five posts. Inside were five, not symmetrically arranged posts, which delimited a two-aisle structure. The recorded remains of the buildings permit the hypothesis that the buildings were either of post-and-plank or wattle type, large and medium-sized. They could have had a dwelling function. The above-ground constructions (traces of inside structures, such as hearths), as well as the cultural layer were completely destroyed as a result of natural slope processes and the agricultural land exploitation in later times. This mainly refers to buildings: XVII, XVIII, XIX, XX, XXII, XXIII, XXIV and XXV which are found in the vicinity of storage pits, dugouts, furnaces, hearths and wells. They could have been part of a homestead, also multi-phase one, in which they performed a dwelling function. It is likely that at least some of the buildings were of economic character, e.g. a barn or a granary for storing grain.

Thirteen features with the ascribed well function have been unearthed on site 10 at Kruszyn (fig. 150–152). One of them (feature 474) contained exclusively artefacts of the Linear Pottery culture, whereas feature 1483 was void of artefacts. The features differed in the size of the layout, which ranged from 117 × 110 cm to 495 × 380 cm and depth which was between 170 and 330 cm. A common trait of all the features was the lack of construction elements in the form of a timber or stone casing.

The only lime kiln was unearthed in the north-western part of the Przeworsk culture settlement. It was oval, between 280 × 240 cm big and 34 cm deep (fig. 154: 2). Only the bottom section of the feature has been explored. The feature must have been slightly embedded in the surface and better developed above ground. The lime kiln was made up of large stones, placed on its perimeter. The stones also filled the kiln's bottom. As a result of high temperature all of the kilns were cracked and crumbled. The traces of

high temperature can be seen under the layer of stones in the form of orange-red clay. The lime kiln was filled with a thin layer of lime and crumbled daub of a furnace dome. The chemical analysis of an input content indicated the presence of lime, ranging between 69.4 – 77%.

In the region of feature 39 (pit), on its western side, was a cluster of four animal burials which may be classified as the Przeworsk culture, on the basis of numerous analogies from other sites. These are features: 241–242 and 810–811 (fig. 155: 3–5). They are oval, and their respective sizes are as follows: 59 × 54 cm, 54 × 46 cm, 59 × 50 cm and 67 × 56 cm. Their depths are: 16 cm, 20 cm, 5 cm and 10 cm respectively. In three cases we can ascertain that complete skeletons of animals were lying on the side, whereas the last one (feature 810) is impossible to determine due to a poor state of bone preservation. This type of animal burials has a lot of analogies on the Kuyavian sites of the Przeworsk culture. They are also encountered in the neighbouring territories. The analysis of animal bones has indicated that features 241, 242 and 811 contained only sheep burials, and in two cases (features 241 and 242) the burials were double. Feature 812 yielded the bones of cattle, sheep and undetermined mammal fragments. Moreover, in feature 241, the charring of bones has been attested.

The presence of four animal burials in the context of pit feature of the Przeworsk culture permits the association with clusters known as sacral – “sanctuaries”, many of which have been found on the area of Kuyavia. Their ubiquitous element are animal burials and features known as “temples”. In our case the function of a “temple” was performed by the previously mentioned pit. The whole foundation was situated beyond the compact zone of the Przeworsk culture settlement, far from other features of that culture. It resembles a sanctuary unearthed on site 95 at Inowrocław, where the function of a “temple” is ascribed to a feature of pit type, which is surrounded by animal burials in the north. Artefacts from pit 39 indicate that it belongs to the oldest horizon of the Przeworsk culture on the site, linked with phase B2/C1 of the Roman period.

The excavations of the of the Przeworsk culture settlement from the Roman period have yielded a small number of artefacts. These are mainly potsherds, daub with imprints of logs, mainly from furnaces and animal bones. Moreover, a number of other objects have been obtained from the fills of the features, such as: a bronze clasp, glass beads, bronze tools, iron key, clay whorls, a clay weaving weight, whetstones from sandstone and an antler hoe.

Pottery is the most numerous group of artefacts on the site. It consists of 2136 vessel sherds, out of which 1980 fragments come from hand-made pottery and 156 fragments have been wheel thrown. From the point of view of technology, the assemblage can be divided three main groups. Group I comprises carefully made, thin-walled tableware, with a smoothed surface, either black, brown or in similar colour. On the other hand, group II consists of large, thick-walled vessels with slightly coarsened or coarse surfaces, described as kitchenware. Group III is made up of wheel thrown vessels.

From the morphological point of view, the whole pottery assemblage can be divided into four groups of vessels (groups A, B, C and D), according to their function. Additionally, they have been subdivided into types. A separate group E has also been distinguished, consisting of special forms. Group A is made up of pots. Group B comprises rather small vessels, described as tableware, characterised by smooth surfaces and black or brown colour. These are cups or bowls. Another category of vessels consists of goblets, which belong to group C. Group D consists of small cups, whereas group E comprises clay, untypical objects. It includes a fragment of a clay convex cover, most probably recessed.

Site 10 at Kruszyn has yielded a small group of 156 sherds of wheel thrown vessels. 139 fragments have been found in the fills of 28 features. The other ones were loosely scattered on the area of the area. They are all strongly fragmented. Some features consist of belly sherds exclusively. In some other only a partial reconstruction of morphological vessel forms is possible. From the technological point of view, the pottery is well-fired with a smooth surface, grey, or grey-like in colour. The artefacts have been divide into three vessel groups. Group I consists of pots, group II – bowl-like vessels, whereas group III comprises flask-shaped vessels.

Feature 608 – a storage pit contains a damaged bronze pin V (fig. 161: 1), apart from sherds of hand-made vessels. Typologically, it is V group O. Almgren, type 96. Clasps of this kind are considered as characteristic (guide) forms for phase B2/C1 of the Roman period. They are prevalent on the area of the Wielbark culture and more rarely found on the territory of the Przeworsk culture.

There were two beads found on the site. One of them was unearthened in hearth 1034. It should be classified as group II, type 36 which comprises green, medium-sized, flat-circular beads, typical of the younger stage of the Roman period. The other bead is very poorly preserved. They are both amber crumbs, unearthened in feature 1411.

A key, found in feature 650 – a post hole, is representative of a very usual, Przeworsk culture type, characterised by a shank culminating with a bow (fig. 162: 6). A brass pin has been unearthened in feature 338 – a dugout. It is a small form (c.a. 40 mm long), whose one end is sharpened, and the other one hooked (fig. 160: 8). The upper part of the pin shank is twisted. Nowadays, this type of objects is treated as a part of a spindle. Only one whorl has been found in feature 979 (fig. 166: 9). This form – bipolar with concave poles – is typical of the Roman period. Another artefact – a weaving weight – is associated with textile activity. It is part of a loom used to ballast a warp thread (fig. 160: 2). The site has also yielded three whetstones (fig. 162: 4; 167: 3; 173: 3). All of them are tetrahedral, made of sandstone. They bear traces of a long use-life, in the form of strongly worn-out surfaces, and occasional deep grooves which must have occurred during the process of sharpening needles and awls. A horn hoe is characterised by quite a long handle, culminated with a chopping part, which in this case is made of natural, appropriately processed, sharpened antler (fig. 169: 9). The tool was used in farming, most likely for softening the soil.

The distribution of archaeological features clearly indicates that the settlement of the Przeworsk culture was mainly located in the southern and central part of the site, on the slope of a small valley formed by a small watercourse. The settlement from this period of time occupies a belt 120 m wide and 130 m long – intersected by the future motorway. Consequently it can be assumed that the excavated settlement fragment equals c.a. 1.5 ha. The southern and south-western zones are particularly abundant in storage pits. In their vicinity was the largest number of post buildings of various size, construction and possibly function.

The attempt of reconstructing the above-ground post buildings presented above, permits the assumption that the settlement had a homestead spatial organisation. The first one comprised building no XVII, together with the associated features, such as pits and wells, located south of the building. The next homestead consisted of buildings XXII-XXV along with the associated features, such as storage pits, dugouts and a hearth. The third homestead was made up of post buildings XVIII – XXI along with storage pits and a hearth in the south. The fourth homestead has been designated in the north-eastern zone of the settlement. It comprises pit 1400 and the associated post holes abundant in artefacts, a well – feature 1398 and a hearth – feature 1395. Beyond the homestead and economic zone in the northern part of the settlement, at a large distance from it, was a large hall building which most probably performed some special, social and possibly cult functions. Nearby was a “sanctuary” with animal burials. These are clearly separate features which delimit the Roman settlement from this side.

The analysis of the artefacts allows the inference that the excavated fragment of the Przeworsk culture settlement comes from phase B2/C1, which functioned up to phase D of the Migration Period, especially its older section. Two radiocarbon dates that have been obtained gave the following results: Lod 1461–1910 ± 50 BP. After calibration the probability range of 94,3% equals 2BC–232AD and Lod 1464–1810 ± 50 BP. After calibration the probability range of 95,4% equals 84–335AD.

## CONCLUDING REMARKS

Rescue excavations on the course of the planned motorway A-1 on site 10 at Kruszyn conducted by the Konrad Jażdżewski Foundation for Archaeological Research in Łódź have permitted the exploration of chronologically diversified site of settlement character.

The oldest artefacts unearthened here correspond with the early Neolithic and are connected with the Linear Pottery culture. The settlement from this culture found on the site is characterised by compact building development, in the form of 14 large houses of post construction, accompanied by clay pits. The artefacts allow dating of the settlement to classical and late phase of the Linear Pottery culture.

Less numerous artefacts come from the next settlement phase on the site connected with the he Brześć Kujawski group of the Lengyel culture. Only two features indicate existence of a long-term settlement in this area.

The youngest neolithic material are connected with Funnel Beaker Culture. Single pit and grave were excavated which confirms, similarly to discoveries from Smólsk, occupation of that area by Funnel Beakers societies in the middle neolithic around 3900 -3800 BC.

From the beginning of bronze age come from single features where one vessel connected with Mierzanowice Culture was obtained.

The next settlement incident is connected with the late phase of the Lusatian culture of the Hallstatt period D. The population of this culture has left meagre traces of their activity in the form of very scanty material, such as features or movable artefacts.

Slightly more numerous artefacts come from the next settlement phase on the site connected with the bell-grave culture of the early La Tène period.

The growth of interest in the area of the site in question occurs in the Roman period and is connected with its younger and late phases. A long-term agricultural settlement is set up there. It is characterised by above-ground buildings of post construction of walls, designed for dwelling and economic functions. Additionally, there are quite deep pits of storage character and small above-ground farm buildings – granaries, wells and hearths. Animal breeding is very important for the settlement dwellers, which is attested by a considerable number of bone remains in the fills of the features. This activity is connected with the only feature of production character, i.e. lime kiln. Spatial organisation of the features indicates a homestead type of settlement. It is interesting to note the presence of a “sanctuary” and a large hall house which probably performed social and cult functions, and was located in an isolated part of the settlement.

Rescue excavations at Kruszyn, site 10 have brought about a lot of new very interesting discoveries, which will considerably enrich our knowledge about pre-historic settlement in Kuyavia. It is essential to note that a large fragment of the settlement of the Linear Pottery culture and the Przeworsk culture from the Roman period has been excavated. This is the most valuable asset of the research.

