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Results of archaeological supervision over work on 3 Maja and Kolejowa Street in Biecz, Gorlice district in 2017

ABSTRACT

In 2017 the sewers and water mains in Biecz at the crossroads of 3 Maja and Kolejowa Street underwent modernisation and the work was subject to archaeological supervision. This led to the discovery of several burials, concentrations of human bones, and parts of buildings. Analysis of the findings plus examination of historical records points to these belonging to the graveyard of the now defunct St. James' Church and a police station from the late 19th century. The results of the supervision were expanded upon by anthropological examination of the human remains and radiocarbon dating, both of which broadened the scope for interpreting the finds. The former helped identify the sex and age of the deceased as well as any pathological changes they may have undergone. Carbon dating confirmed that the burials took place in the 17–18th centuries. The above findings represent a major step in identifying where St. James' Church in Biecz was located.

KEYWORDS

cemetery, graveyard, Biecz, the Church of St. James, Order of Friars Minor, physical anthropology



I. INTRODUCTION

Biecz is a small town of barely five thousand inhabitants tucked away in the south-eastern corner of the Małopolskie Voievodship, in the Gorlice District, on the River Ropa. From a taxonomic perspective it is located in the Gorlice Depression, in the Central Beskidian Piedmont (Kondracki 1998, 341–342). Historically, the town lay on the Polish-Hungarian borderland and formed part of the Cracow Land (Ziemia Krakowska) in Małopolska. Its strategic location on the frontier, near the crossroads of trade routes between Cracow, Hungary and Ruthenia, made Biecz one of the province's most important towns in the Middle and early Modern Ages. Today, owing to the numerous preserved monuments and long history it is known as the *Perła Podkarpacia* or *Mały Kraków* (Pearl of the Subcarpathia or Little Cracow).

Basic data on the town's history had been collated and discussed by T. Ślowski (2012), F. Kiryk (1968, 98–119; 1985, 33–45) and F. Sikora (1980, 72–90). The history of archaeological and architectural research was prepared by P. Kocańda (2018, 1–22). This paper presents the results of archaeological supervision of work carried out in 2017 at 3 Maja and Kolejowa Street in the so-called Przedmieście Dolne (Lower Forburg) part of Biecz. The results of exploration were expanded upon by examination of the written record, anthropological analysis of human remains and by radiocarbon dating. The broad spectrum of research methods allowed for a full identification of the finds and their placement in a specific historical context.

Archaeological supervision was performed during maintenance work on sewage and water networks in July and August 2017, covering the area of 3 Maja and Kolejowa Street, some 1.4 km to the east of the town centre. This is a neighbourhood of stand-alone houses, some industry (e.g. a lumber mill), plus a railroad station with associated rail infrastructure. The landscape is dominated by a Friars Minor convent on a hilltop (Fig. 1).

The supervision was carried out inside the roadway running between the JasłoGorlice rail track in the south, and the residential neighbourhood of stand-alone houses and industrial facilities from the north. Two trenches were dug: no.1 for sewage and no.2 for water mains. Both were some 200 to 250 cm wide, of varying depths. On Kolejowa Street the depth ran between 100 and 150 cm, whereas on 3 Maja Street it ranged from 150 and 200 cm in the eastern and western sections, and 200–300 cm in the middle. The trenches' combined total length was 774 m. Please note that all the archaeological discoveries were made along 3 Maja Street, with no signs of human activity being unearthed along Kolejowa Street.

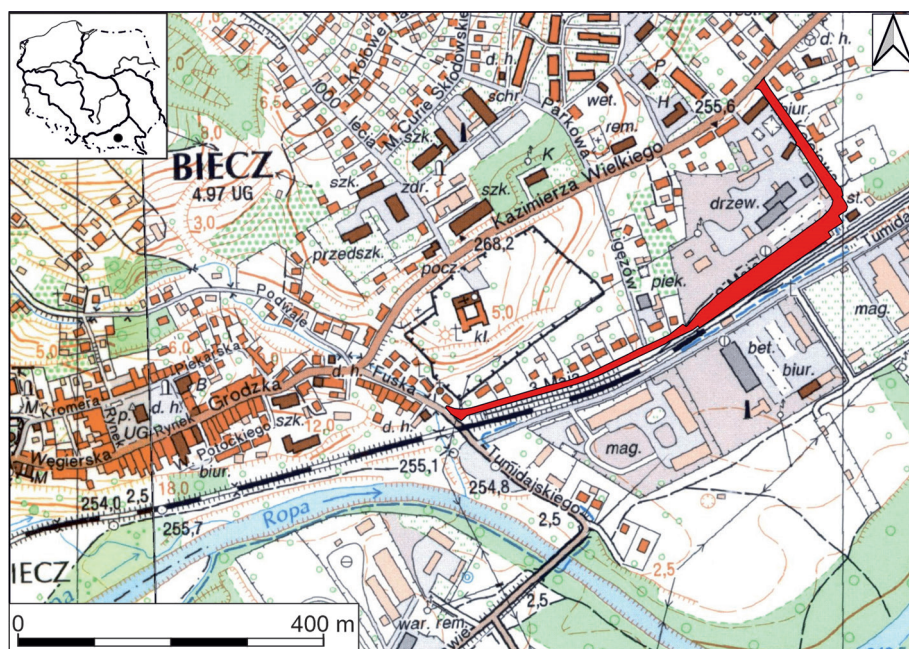


FIG. 1. Locations where supervision was performed

Archaeological supervision led to the discovery of several graves and human bone concentrations, a building's foundations as well as numerous material culture artefacts. Yet one should bear in mind that this supervision was tied to a complicated engineering project, in a heavily urbanised and human-transformed area, within the limits of a roadway. Along most of the trench's length stratigraphy was disturbed by all sorts of intrusions and installations, some reaching up to even 220–250 cm beneath the present ground level. Where the stratigraphy was intact, its cross-section had a 50–70 cm thick “utility” layer (street surface, sidewalk, shoulders) consisting of soil, asphalt, gravel, sand and earth used for contemporary construction work (layer no.0), underlain by light-brown earth of a viscous and compact consistency, with numerous natural stones. This layer was marked as no.1, sometimes even 100 cm thick in places. It yielded fragments of animal bones plus stove tile and pottery shards (described later in the text). Below it lies a layer of highly compacted, humid dark-brown earth (layer no.2) which may be interpreted as once being the floodplain of the Ropa River. It was up to 120 cm thick. In several places beneath layer no.2, patches of loose, coarse gravel (layer no.3)

were found, these also related to the Ropa's fluvial activity (Fig. 2). It should be mentioned that layers nos.0 and 1 were recorded on both 3 Maja and Kolejowa Street, while nos.2 and 3 only on the former. This was related to the different depths of trenches on the two streets.

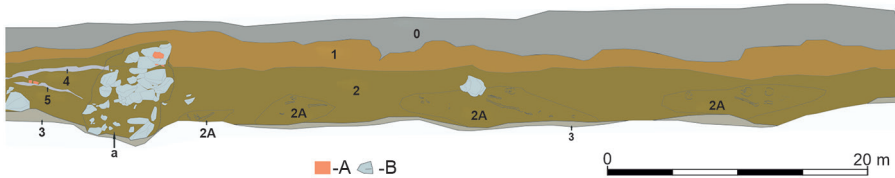


FIG. 2. Trench no.2, south profile (drawn by P. Kocańda). 1, 2, 2A, 3, 4, 5 - number of layer; a - remains of graveyard wall; A - bricks, B - stones

II. REMAINS OF A GRAVEYARD

Archaeological involvement in the project initially consisted purely of supervision over the work, where heavy machinery (excavators) was used to dig the two trenches. The archaeologist's role was limited to observation and making basic documentation. This changed when the burials were discovered, at which point mechanical digging stopped and rescue excavations began. Human remains were discovered in the middle sections of both trenches, half way down 3 Maja Street, alongside lot no.14 (Fig. 3). The first bone concentration, greatly disturbed and heavily damaged was found at 160 cm below present ground level. Further concentrations were uncovered at greater depths – 160–180 and 180–200 cm. All were heavily disturbed and the bones poorly preserved. In the uncovered material, besides numerous long bones, it was possible to discern skulls, vertebrae, and other elements of the human skeleton. The first reasonably complete and well preserved skeleton (no.1) was discovered in trench no.2, at 220 cm. It was arranged in the supine position, aligned west–east, with the arms alongside the body (Fig. 4). It was partly embedded in the eastern profile, this precluding further exploration. Further works revealed three more burials. Skeleton no.2 was discovered in trench no.1 at a depth of 240–250/260 cm. Only the upper half was preserved, this sufficing to identify the burial's position – i.e., supine, along the W-E axis, with the arms alongside the body and the head at the eastern end. Skeletons nos.3 and 4 were uncovered in trench no.2, some 200 and 300 cm to the west of



FIG. 3. Fragment of site showing where burials and architectural relicts were found (by P. Kocańda). a - skeletons, b - skulls, c - relict of graveyard wall, d - relicts of Police Station, e - trenches (I - trench no.1, II - trench no.2)



FIG. 4. Skeleton no.1 in trench no.2, south profile (photo P. Kocańda)

skeleton no.2 and at the same depth. Both these skeletons were fragmentarily preserved, their lower portions specifically. Hence it may be surmised that the deceased had been buried in the supine position, arranged E-W, with the heads at the western end. A skull unrelated to those burials was found underneath the leg bones of skeleton no.3.

Exploration did not uncover any remnants of coffins or other vestiges of organic materials (e.g. shrouds). The burial pits were barely discernible, their colour almost undistinguishable from the surrounding earth. This could indicate that the bodies were buried directly in the ground, without coffins or shrouds, naked or wrapped in some light and non-lasting material. No dating artefacts were found in any of the burials. All skeletons were embedded in light-brown, highly humid clay which – due to presence of water – was brown-grey in places. This layer was defined as no.2A and should be interpreted as representing an area often inundated by the Ropa River, the flooding raising its level with fluvial deposits. The waterlogged soil led to the rapid decomposition of human remains.

On the eastern side, some 150 cm from the burials, the eastern trench revealed a poorly preserved wall, constructed from broken limestone and fragments of bricks bound with lime mortar (Fig. 5). The wall was dug into layer 2A, with its foot lying directly upon loose, coarse gravel (layer no.3). Two thin



FIG. 5. Relict of graveyard wall discovered in trench no.2 (photo P. Kocańda)

layers of mortar – mixed with earth and small stone and brick fragments – were visible in the profile on the external side of the wall. The first, lower layer, descending in a gentle arc towards the wall should be identified as a construction layer (layer no.4). The other, which reached the wall and descended towards the east, may be linked to the dismantling of a stone-brick structure. One should note that the remains of the wall mark the eastern extent of the presence of human bones (see Fig. 2–3).

The supervision yielded close to 200 finds, the most numerous of which were pottery shards, metals and stove tiles. Most of these artefacts were excavated from layer no.1 which was overlaid with modern deposits, and located about the remnants of the wall and the burials. Somewhat smaller groups of finds came from layers no.2 and 2A, i.e. those containing human remains. The most numerous category, pottery shards, are highly fragmented, represent a broad Modern Age horizon, and mostly come from the uncharacteristic middle sections of vessels, this making identification of their type difficult.

Morphological features helped identify three pottery shard groups. The first was grayware, consisting of two fragments of reduction fired vessels and with an ash-grey coloured surface. Both shards are middle sections of vessels, thrown on a fast spinning wheel, with visible wheel throwing marks (Fig. 6: 7). Their surface is smooth, with an admixture of fine grained aggregate visible at the break lines. Besides its aesthetical value, grayware also has important utilitarian features, being less permeable and more heat resistant. This made it popular in the High Middle Ages and is commonly encountered in many sites from that period. It gradually fades from the record in the 15th (from its middle) and 16th centuries. Its disappearance is explained by J. Kruppé as being replaced with glazed oxidation fired vessels (Kruppé 1961, 149–154). It should be pointed out, however, that in Cracow – and possibly in the entire Małopolska region – reduction firing never predominated over oxidation firing (Wałowy 1979, 64–65). The shards discovered during supervision came from layer no.1, highly disturbed and containing very broadly dated material, hence the problems with establishing details of chronology.

The second group consists of oxidation fired redware. The bulk of finds from the supervision at 3 Maja and Kolejowa Street falls into this category – over 80%, this category also being the most varied in typological and morphological terms. It may be subdivided in two smaller groupings, one consisting of reduction fired vessels with an orange or brick red surface (Fig. 6: 1–6, 8–10). The other groups vessels also possessing the aforementioned features, yet additionally glazed. Vessels from both subgroups were made from iron rich clay,

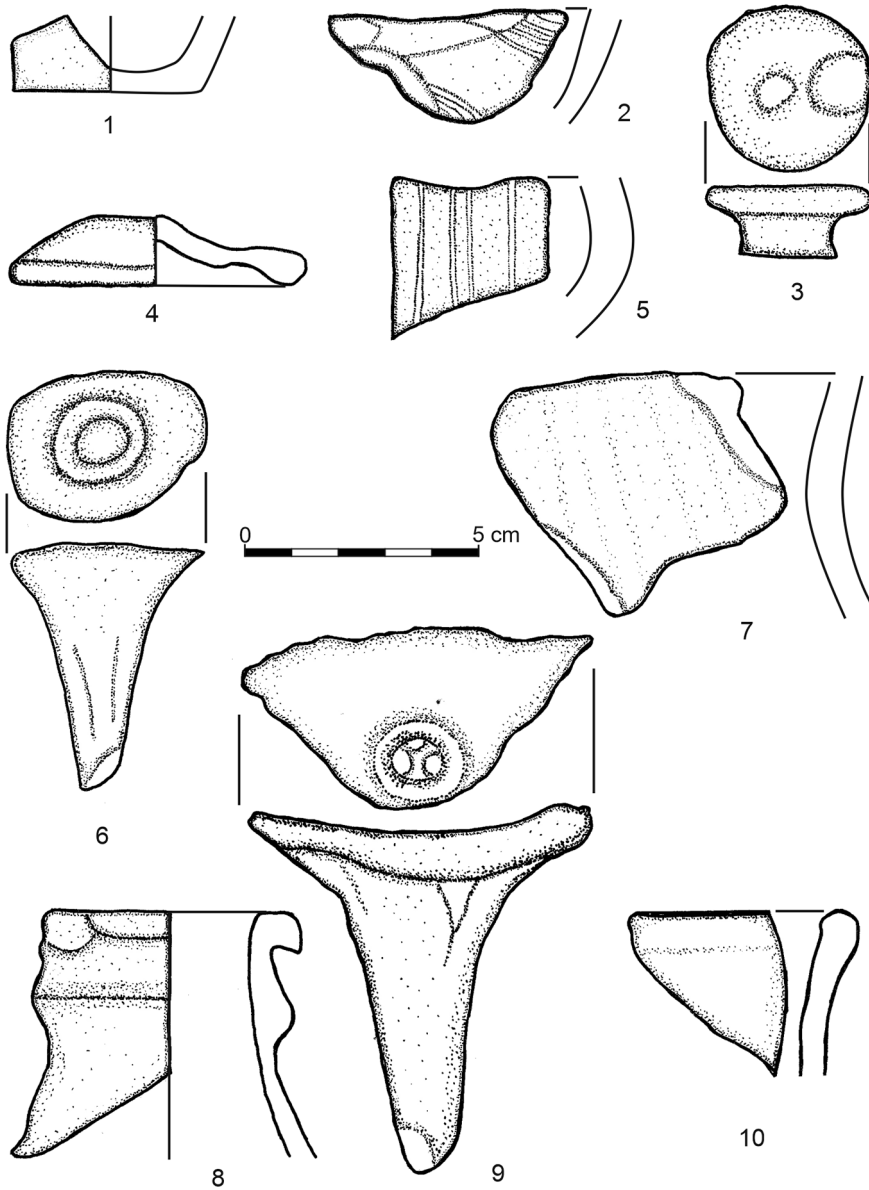


FIG. 6. A selection of fragments of ceramic vessels unearthed during the supervision (drawn by P. Gorazd-Dziuban)

thoroughly cleaned and drained. Most possess a very smooth surface, only minimally coarse. The breaks are uniform in colour, with an aggregate admixture visible only in a few fragments, particularly in those with a coarse surface. Glazed vessels come in all possible variants: ornamented in full, both external and inner facings, single sided or partially – e.g., the upper part of the vessel only (Fig. 6: 1, 5). The colour palette includes olive green, dark green, light green, brown, cream, and navy blue. There are fragments with double glazing – e.g., with brown and olive green glaze. One shard has the exterior coated with dark green glazing with horizontal white lines applied upon it (Fig. 6: 2).

Inside the second group of shards, besides the most numerous and uncharacteristic small fragments of vessels' middle sections, it is possible to distinguish some simple bottoms, grips, and rims – simple or curving outwards, as well as a grip from a pot top (Fig. 6: 1, 3, 5, 8, 10). Two skillet stems were identified (Fig. 6: 6, 9), an element which spread in Poland in the 16th century and is a good indicator of age of deposits from that period (Czopek, Lubelczyk 1993, 44; Lelek 2004, 74–77; Wałowy 1979, 86–87). The gathered record also includes two fragments of table plates, one with a rounded, rising rim and green glazing of the interior, another unglazed, brick red in colour and with visible admixture of aggregate with a delicately profiled, horizontally cut rim (Fig. 6: 4, cf.: Czopek, Lubelczyk 1993, 41–42; Lelek 2004, 78–79). Both should be associated with the Modern Age, most probably with the 16th or 17th centuries (see Ślawscy 1994, 219–220). Shards of vessels from the second group were numerous in layers nos.1, 2 and 2A, thus dating those deposits to the Post-medieval period (16–18th century) and the 19th century.

The third group was composed of vessels made from white clay that seem to have been well fired, usually by oxidation, and featuring a white, cream or pink coloured surface. The excavation yielded about a dozen shards, mostly of middle sections, as well as four fragments of bottoms. Surfaces were coated with light brown, brown, yellow, olive green and cream coloured glazing, in several instances with two colours. All such fragments were discovered in the upper fragments of trench no.1, layer 1.

The excavation also yielded over a dozen fragments of stove pot and plate tiles. The shards from the former come from their middle sections and rims, all made from iron-rich clay, oxidation fired, with orange or brick red surface. Interior sides and areas near the edges bear burn marks. The rims are profiled, cut horizontally and reaching beyond the external edge. On their inner side they possess a characteristic overhang. According to typology developed

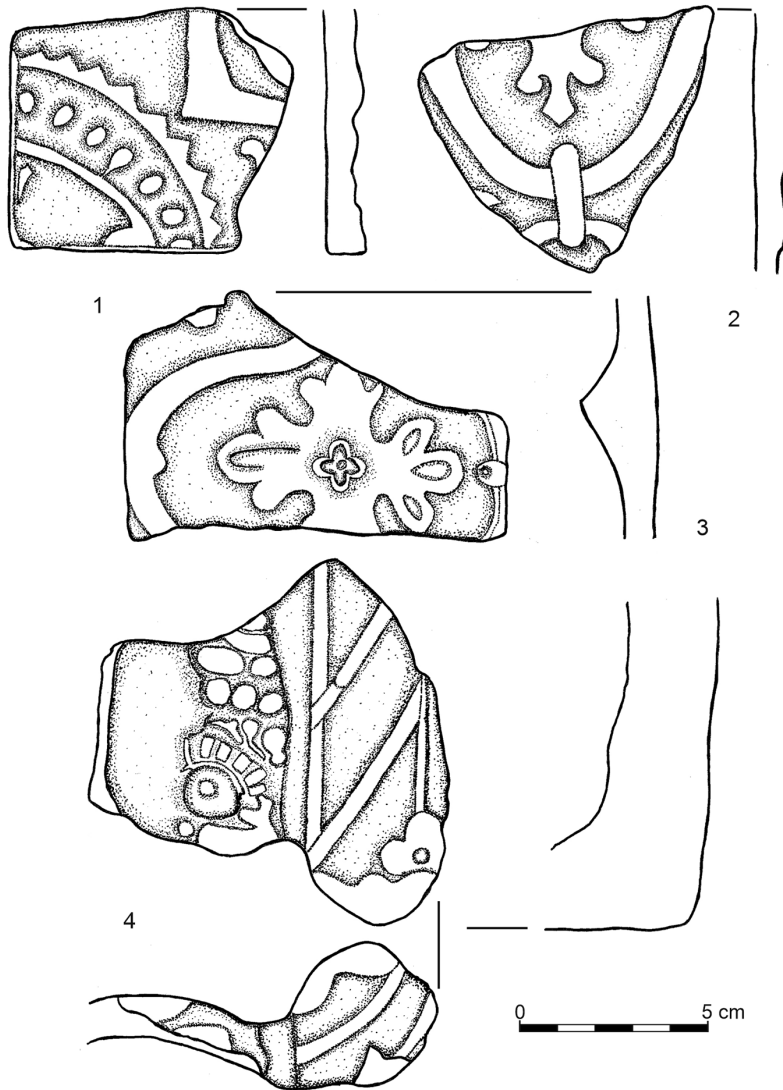


FIG. 7. A selection of stove tiles from trench no.2 (drawn by P. Gorazd-Dziuban)

by M. Dąbrowska (1987, 65–67) these belong to Type II. The corpus of stove tiles consist of 13 fragments, all decorated with floral ornament with leaf like motif, shaped like a Greek cross, surrounding by wavy lines. Ten tiles are covered with uniform green glazing, while three are unglazed (Fig. 7: 1–4; 8).

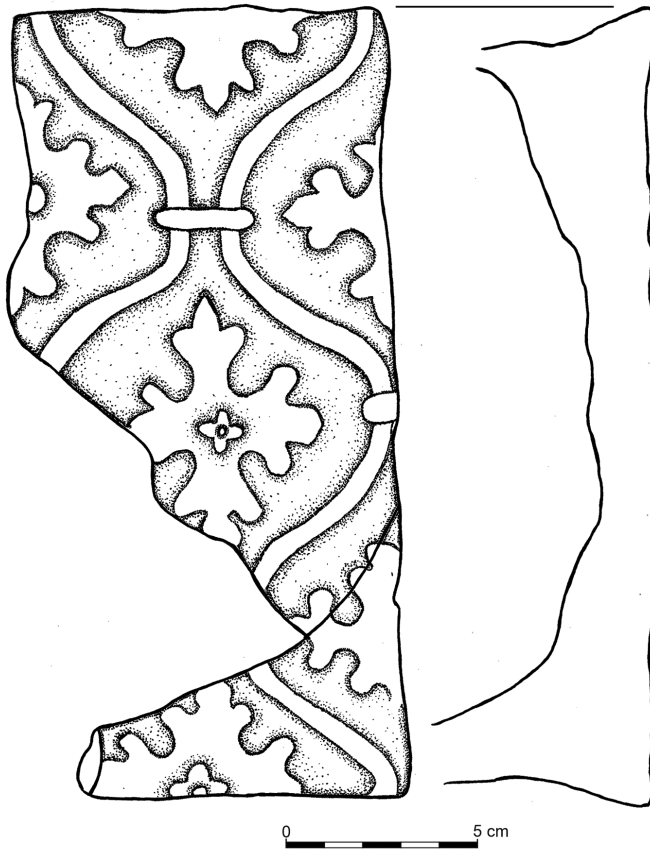


FIG. 8. A stove tile form trench no.1 (drawn by P. Gorazd-Dziuban)

Interior sides bear burn marks. Comparing with analogous finds elsewhere in Biecz this collection should be dated to the 16th and 17th centuries (Ślawscy 1994, 224–230; also see Dąbrowska 1987, 126–136). The entire corpus of stove tiles was found in trench no.1, from the graveyard area. The shards were excavated from layers nos.1 and 2, from between 100 and 250 cm.

The corpus of metal artefacts consists mostly of heavily corroded and thus difficult to identify objects. Archaeological exploration produced over a dozen nails, which sadly are very poorly dating artefacts. Two halves of a horseshoes plus two complete examples were found, all of which, according to J. Kaźmierczyk (1978, 68–82), should be classified as Type IV, appearing in Silesia at the break of the 12th and 13th centuries and is used to this date. These

specimens possess three nail holes in the shanks and end with hooks. Three were found just under the surface and most probable were deposited in the 19th or 20th centuries, and only one on layer no.2, 240 cm deep. The latter may be associated with the Modern Age (16–17th century).

The corpus of finds includes some glass objects, such as fragments of windowpanes, shards of bottles or drinking glasses. Most were found in the upper reaches (layers nos.0 and 1) and may be associated with the 19th and 20th centuries.

III. MAJOR FINDINGS OF ANTHROPOLOGICAL ANALYSIS

The results of anthropological analysis of bones presented here are a summary of a larger paper, the detailed breadth of which goes beyond the scope of this publication (detailed descriptions of bones, measurements). Specific information may be found in the report from anthropological analysis (Rogóż 2021).

Research objectives and methods

Analysis of bone/skeletal remains followed standards and terminology used in physical anthropology (e.g. Buikstra, Ubelaker 1994; Malinowski, Bożiłow 1997; Piontek 1999; Steckel *et al.* 2006). The main objective was the identification of (minimal) number of individuals, their age and sex. The heavily soiled bones were first cleaned and then examined (package by package), inventoried and described. The key parameters were: degree/stage of bone development, their size, massiveness, presence – or lack – of pathological changes. The above allow for the sorting and assignment of the mixed up bones and their fragments to specific individuals, in parallel identifying age and possibly sex. The segregation stage must also include determination of age (e.g. children versus adults, among adult – *adultus* versus *senilis*) and sex (e.g. female versus male pelvic bones). The next step was identification of the minimal number of individuals with numbers of specific bones as guide.

The age of children was determined by bone size measurements (Buikstra, Ubelaker 1994; Schaefer *at al.* 2008; Scheuer, Black 2004), plus analysis of bones (Bochenek, Reicher 1952; Buikstra, Ubelaker 1994; Piontek 1999; Schaefer *at al.* 2008; Scheuer, Black 2004) and teeth development stages (AlQahtani *et al.* 2010; Buikstra, Ubelaker 1994; Piontek 1999). Sex was not determined. The age of adults was determined by examination of cranial sutures, state of teeth

and other age related changes to the skeleton (e.g. Buikstra, Ubelaker 1994; Piontek 1999). Sex was established from examination of distinctive features of skulls, pelvic bones or general massiveness and prominence of muscle attachments (e.g. Buikstra, Ubelaker 1994; Piontek 1999).

The bones were additionally subject to macroscopic examination searching for any pathological changes (e.g. Ortner 2003) or resulting from physiological stress (Piontek 1992). Non-metric traits were recorded, of skulls in particular (Buikstra, Ubelaker 1994; Piontek 1999). The possible measurements of skulls and postcranial elements were taken (Buikstra, Ubelaker 1994; Malinowski, Bożyłow 1997; Piontek 1999). Measurements of adult individuals could provide information on their body height (calculated, as is customary, with various methods based upon femur length) (Bass 2005; Breitingner 1937; Piontek 1999; Trotter, Gleser 1952; 1958; Vančata 2000). Measurements of children's bones were used to estimate their age at death. Also various skull indicators and indicators for certain bones were calculated (Bass 2005; Krogman 1962; Malinowski, Bożyłow 1997; Piontek 1999).

State of preservation, number of individuals, age and sex structure

The excavations led to the discovery of four skeletons and nearby loose bones. Skeleton no.1 was located in trench no.2 and sadly had to be left *in situ* (Fig. 3). The other three skeletons (nos.2, 3 and 4) were unearthed in trench no.1, with no.4 also being left *in situ*. The remaining discovered bones were extremely mixed.

Skulls or their fragments, sometimes even single bones or teeth, were identified and described for 38 adult individuals and 27 children or juveniles. The better preserved skulls with short descriptions are listed in Table 1. As these were excavated and taken out of the site for analysis skeletons nos.2 and 3 are worth a brief description.

Skeleton no.2 of an adult female? was accompanied by the remains of a one year old child (individual II) and loose bones of at least two adults (*maturus?* male and an adult of undetermined sex). See Table 1 for description of skull 1. Postcranial elements, in various degrees of completeness and state of preservation: incomplete thoracic spine, two fragments of lumbar vertebrae, ribs (six from each side partly preserved, including the first rib, additionally three fragments of shafts from left and five from right side), both scapulae and clavicles, both humeri (right side longer, both sides supratrochlear foramen), ulnas, right radius, right first bone of metacarpus, lower part of right tibia



FIG. 9. Right tibia, inflammatory changes – *periostitis*; skeleton no.2, adult, female? (photo J. Rogóż)

with visible *periostitis* (Fig. 9), from the left foot the medial cuneiform bone, navicular and cuboid bone, complete metatarsal bones, from right foot – from the first to the third metatarsal bones.

Not far from skeleton no.3 – a mature male – a lumbar vertebra and a second right metacarpus were found. Skull and teeth missing. The thoracic vertebrae were preserved (Th7-Th12) plus a full set of lumbar vertebrae, all with osteophytes; left side scoliosis was noted. Left ribs – three spinal ends of ribs and nine larger fragments of shafts, right side – respectively five and ten. Two fragments of scapulae. A fragment of left humeri shaft, terminals of left ulna, bottom half of radius, full set of the left metacarpus plus the first and third of right metacarpus, hand phalanges: four proximal, one medial. Both pelvic bones present and heavily damaged. Both femurs, distal epiphyses with slight bone rims and patellas. Both tibiae – the left visibly longer, with a larger sagittal diameter of the shaft; the lateral surface of the left tibia with mild *periostitis*, that surface in the middle of the shaft with slight, long indentation – possibly a healed lesion, but without signs of trauma. Both fibulae damaged, with distinct muscle attachments. From the tarsal bones missing both intermediate cuneiform and right lateral cuneiform; set of metatarsal bones; phalanges: the first, second and fourth left side, from the first to the fourth right side, both sides one middle phalanx and one distal left side. Additionally many small fragments. The body height, calculated by various methods, is given in Table 2.

The minimal number of individuals was estimate from the numbers of specific left and right side bones. The results are given in Table 3. Please note that most of these bones were damaged or only partly preserved. Nevertheless the number of individuals in question must had been much larger than resulting from calculations, which makes unequivocal determination of age and sex structure difficult.

The following Latin terms for age groups were used – *fetal* (foetus), *infans* I (0 months to 6–7 years), *infans* II (6–7 to 12–14 years), *iuvenis* (12–14 to 20–22 years), *adultus* (20–22 to 30–35 years), *maturus* (30–35 to 50–55 years), *senilis* (over 55 years of age) (Malinowski, Bożilów 1997). No bones of foetuses were identified, but some *infants* were. All other age categories were represented. Owing to limitations of methodology it is practically impossible to identify the upper age limit. On the other hand this was possible for children, in some cases the age range being narrowed down to a year.

Pathological changes, markers of physiological stress, selected non-metric traits and other specific features

After examination the preserved teeth and bones revealed several noteworthy changes or morphological variations. These will be summarised in the following order: condition of teeth, characteristic cranial features, changes to the spinal column, other pathological changes or morphological variants and information on the state of preservation of bones, such as preserved mineralised cartilage or postmortem discolouring.

Some teeth were preserved for 12 children/juveniles and 18 adults, in varying states, some “loose” and some in maxilla or mandible. Some teeth had been lost postmortem, some during life, with the alveoli in varying states of obliteration (noted for eight individuals, *maturus* or *senilis* and, unusually, in one child). In several cases (five adults, one *iuvenis*) only the root or its remnants were present, probably due to advanced caries. These were the two following teeth¹: left maxilla – P₁, M₁; left mandible – P₁; right mandible – two M₁, M₃. There were four instances of males (three *maturus* and one *senilis*) with exposed dental necks. Yet another six individuals – mostly males, of different ages – had preserved plaque deposits. A younger male had linear enamel hypoplasia (a marker of physiological stress) on left maxilla C. An older male had a rotated right M₂.

Caries of various degrees of severity were noted. In two instances (*maturus*, male and *adultus*, female?/*adultus* male?) teeth displayed carious

1 Teeth designations: I – incisor, C – canine, P – premolar, M – molar; capital – permanent tooth, lowercase – milk tooth; lower index – mandible tooth, upper index – maxilla tooth.

stains, while five had carious cavities (*senilis*, male; *maturus*, male, *iuvenis*, male?; *iuvenis*, sex?; *infans* II–*iuvenis*, sex?). Carious stains were recorded on the following teeth: left maxilla C; left mandible – C, P₁; right mandible – M₂, M₃. Carious cavities in turn were recorded for: left maxilla – I¹, C, P¹; right maxilla – M², M³; left mandible – m₂, M₁, M₃; right mandible – M₁.

Formed periapical fistulas were noted for five individuals, of which two were *maturus* and one *senilis* male (Fig. 10), plus two *iuvenis*, one of which was probably male. The teeth where was observed: left maxilla – I¹, C, P²; right maxilla – P¹; left mandible – M₁; right mandible – M₁, M₂. In case of two young individuals of unidentified sex, i.e. *iuvenis* and *infans* II–*iuvenis* (Fig. 11) – the dental condition could have been an indirect cause of death, due to infection from the mouth spreading and affecting the rest of the body.

Some skeleton degenerative pathological changes were noted, mostly in the spinal column. These included osteophytes of the bodies (four individuals) traces of Schmorl nodules on the bodies (four individuals), porosity of the bodies (osteochondrosis; five cases), porosity of the articular surfaces (osteoarthritis; three cases), ossification of the ligament of apex dentis (mature male), left sided scoliosis, accompanied by osteophytes (mature male). Such changes were observed for *maturus* or *maturus*–*senilis* individuals, mostly males. Pathological degenerative changes of postcranial skeleton noted on various bones came in various forms and on various bones: porous structure – nine individuals, enlarged articular surface – one individual, *periostitis* – two individuals, left tibia (here another healed lesion; asymmetry of tibiae – left is longer, with greater sagittal diameter of shaft) and right, *osteomyelitis* (inflammation of bone and marrow) – left or right femur, major changes. Bone spurs were noted for four individuals, plus two cases of bone infiltration at the soleus muscle of the tibia attachment. The above-mentioned changes were observed for *maturus* or *senilis* individuals.

Other noteworthy cases were: porosity of cranium bone (parietal) with no trace of diploe growth (*maturus*?, male), thickened cranium, with strong impression of the vessel on the inner side (older male), porous parietal bone? (*maturus*, male?).

Ossicles of the cranial sutures (non-metric trait) were noted in two individuals: a *senilis* male (one ossicle at right sagittal suture) and a *maturus*/*senilis* male (*os bregmaticum*).

One case of preservation of a hyoid bone and mineralised thyroid cartilage was discovered in an adult male, with another male only with preserved mineralised thyroid cartilage.



FIG. 10. Condition of teeth – heavily worn, obliteration of alveoli, fistulas (detailed description in Tables 1, 3); *senilis*, male, trench no.2, bones brought up by excavator, including a skull, 31.07.2017 (photo J. Rogóż)



FIG. 11. Condition of teeth – stages of development, caries (detailed description in Tables 1, 3); *infans* II–*iuvenis*, sex?, individual III, trench no.2, human bones 21.07.2017 (photo J. Rogóż)

Several cases of prominent bone asymmetry were noted. Notable examples are the humeri of a mature female? (right longer), as well as femurs (right longer) and tibiae (left longer) of a mature male. In this second case the sagittal diameter of the tibia's shaft was larger as well. It should be noted that such bone changes result from *periostitis*, possibly from trauma? Another adult male had a more massive left tibia. Asymmetry of mastoid processes of the temporal bones was recorded for two males: a *maturus* (right more massive and broader/wider, left markedly slimmer) and *senilis* (right longer).

The supratrochlear foramen of the humerus (a non-metric trait) was found in three individuals, in three left side bones and one right side bone. Prominent muscle attachments were visible on the left fibula of an adult male and on the right humerus, also on a mature male.

It should be mentioned that several bones, from four individuals, had taken on a greenish tinge in places (postmortem).

The above summary lists specific features and pathologies. Table 4 presents the reverse – it lists specific individuals and their ailments.

Body height, bone indicators

The body height, in light of state of preservation of femurs, could be calculated for only one individual (*matures*, male, skeleton no.3, trench no.1), from the maximum length of the femur (M1 measurement). See results in Table 2.

Using the measurements of skulls and long bones of upper and lower limbs selected indicators were calculated, although only for those individuals where the necessary measurements could be made. Cranial indicators calculations were made for only four cases and are given, together with interpretation, in Table 5, while the ranges of mean indicators for long bones are given in Table 6.

IV. INTERPRETATION OF FINDINGS

The discovery of human remains in positions typical of Late Medieval Ages and Modern Age Christian burial sites generated the need for their closer identification. Two possibilities were considered, the first being a graveyard attached to a no longer extant church, the other being a special burial event resulting from some tragic circumstances (e.g. a plague or war). Anthropological analysis of bones and the context of the find, plus examination of written records ruled out the second hypothesis. This led to the search of a specific church with which the remains of the graveyard could be associated.

In Biecz, four Roman Catholic churches have been preserved to this day. The first and foremost is the Corpus Christi Collegiate Church in the western part of town, just next to the road leading to Gorlice, and in the close vicinity of the neo-Gothic St. Barbara Church (original building constructed in the 2nd half of the 15th century and used as cemetery chapel). The third is the St. Anna Church, on a hill to the east of the city, belonging to the Friars Minor, and finally the small St. Peter's Church, again on a hillock, to the west of the city, in the forburg of old. Besides these there had once been several other churches in the town and its nearest environs, as known from written record and maps. Until the middle of the 18th century, the Holy Spirit hospital had been accompanied by a church under the same name, the relicts of which were uncovered by archaeologists in 1957–1958 and 1963 (Kunysz 1963, 68-70; Kunysz, Kwolek 1963, 45-49). Written materials point to the existence of four more churches in the Przedmieście Dolne part of town, the following being mentioned in a 1450 document – St. James, Holy Cross and St. Nicholas (Bujak 1914, no.47), with the Virgin Mary (AKB, vol. II, k. 232) added to the list in 1656 AD. The

three latter buildings were made of wood, torn down by Polish military units as part of preparations for the defence of Biecz against Transylvanian forces led by George Rakocsi in 1656 against Poland as part of his alliance with Sweden (AKB, vol. II, k. 232; Ślowski 2002, 264). The locations of all three remain unknown. For the St. James' Church we possess a much greater wealth of information that helps narrow down the area where it had been located. It appears in records for the first time in a document by Cardinal-Bishop Zbigniew Oleśnicki drawn up in Radłowo on 15.VII.1450. The Cardinal ruled on the dispute between the Parson Szczepan and the Biecz Magistrate, ordering the former to return – by 15.VIII.1450 – valuables (nine grzywnas, 16 groshen and a chalice) taken from the St. James' Church, described as “located outside the city walls” (*extra muros biecienses*), depositing them in a casket at the Corpus Christi Collegiate Church. The Parson was to do likewise with money taken from the Holy Cross and St. Nicholas Churches and from graves (Bujak 1914, no.47). The next mention of the St. James' Church comes from 1518 when the Biecz burgher Maciej Graber donated two grzywnas to it (Bujak 1914, no.138). The document from the canonical visitation of Biecz churches by Tarnów Provost Krzysztof Kazimierski in 1595 states that the St. James' Church located outside town was a stone construction, yet not consecrated. Nevertheless on some days Mass was celebrated there (Bujak 1914, no.352). Subsequent visitations from 1602 and 1608 no longer mention this church (Bujak 1914, nos.368, 409).

A new chapter in the history of the St. James' Church begins in the second decade of the 17th century. In 1623 the Friars Minor, at their first Custodial Chapter held at the Zakliczyn convent, decided to open a new friar house in Biecz. Soon afterwards they sought support for this endeavour from the Biecz Magistrate and the then Bishop of Cracow, Marcin Szyszkowski. It was decided that the Order would not build a new church, but be assigned one of the extant churches in the Przedmieście Dolne. There were three wooden churches to choose from – Holy Cross, St. Nicolas and Virgin Mary, plus one of stone – St. James the Apostle Church. It was the last listed which was selected, being the largest and located in a low-lying, sparsely built-up area alongside the road to Jasło (Pasicznik 1984, 17–18). On 3.VII.1624 a document granting that church to the Order, as well as 500 Florins for the future friary and for the needs of the church building, was drafted. A few days later the Biecz Magistrate donated a small holding to the Friars, next to the church's graveyard, along its northern side. This land was to be used for the erection of a monastery, but with two reservations. One forbade the Friars from building over the roads running next to the St. James' Church and leading from the

town to the Przedmieście Dolne and towards the north. The second forbade the Friars from enlarging their holdings by purchasing neighbouring lots and gardens (Bujak 1914, nos. 486, 487, 488; Nowak, Pietrzyk 1993, 274–275). In late July 1624 the church was officially transferred to the Order, accompanied by a ceremony whereby the Friars were inducted into the church, and a cross erected at the location where the friary was to be built. Unfortunately the ceremony was interrupted by a sudden flooding of the Ropa River (AKB, vol. II, k. 230; Pasiiecznik 1984, 21). It is possible that at that point it had already become apparent to some that the river would be an actual threat to the functioning of the church, graveyard and friar house.

The further fate of the friary is inexorably linked with constant floods which, on an annual basis, destroyed the convent's buildings, eroded the foundations of the church and washed away the graveyard, and negatively impacted the Friars themselves. Additionally the waterlogged and swampy terrain was an impediment to agriculture or construction. One may read in the convent's chronicles the friars' complaints about the place being unhealthy, the damp being detrimental to their health, the low lying and permanently waterlogged terrain affecting the convent's buildings and the church itself. The prevailing damp meant that vestments and icons were covered with mould. The records also pointed out that the remote location and surrounding swamps severely limited visits by the faithful. The friars were also inconvenienced by the roads running through their land and related horse-drawn transport which was often bogged down in the wetlands. The chronicles also mention that the friars were aware of the unfavourable terrain which – being open and difficult to fortify – exposed them to bandits or Tartar raids. According to the records, a public road ran through the graveyard and saw traffic day and night. Further complaints concerned the state of the foundations which, due to damp, required frequent and costly repairs. There also were problems with access to clean water and the removal of waste. Nobody wished to be buried in the graveyard as it was constantly waterlogged, with the exception of the most destitute. Nevertheless in spite of these difficulties the friars managed to build some temporary buildings which – besides the refectory and infirmary – were partly made of brick. The St. James' Church was expanded, with a sacristy added (AKB, vol. II, k. 230; Pasiiecznik 1984, 22–28).

In the longer perspective maintaining the friary and St. James' Church would prove very costly, and so the Friars took steps to be transferred elsewhere. After over a decade of negotiations they managed to obtain the lands of the former Biecz Castle along with St. Anna chapel which had served it, located

on a nearby hillock where they built the friary which still stands there today (Bujak 1914, nos.517, 521, 522, 523; Nowak, Pietrzyk 1993, 275–278; Pasiecznik 1984, 23–28). For some time, St. James' Church remained in use as an additional chapel where occasionally Mass was held. The church survived the Swedish invasion and attack by George Rakocsi's Transylvanians. It was burned down in 1709 during the Swedish invasion under King Karl XII (Fusek 1998, 81; Ślowski 2002, 264). The ruins were demolished at some point before the middle of the 19th century. This is evidenced by land survey maps, the church being marked on the map by Miega from 1779–1783 and located to the south-east of the convent, on the road leading towards Jasło and Krosno. It was surrounded by a few dwellings and farming buildings (Bukowski, Dybaś, Noga 2015, vol. 3, part A, section 68; Fig. 12). It is not shown on the land survey map from 1850.

In light of the above information, particularly those from the chronicles of the Friars Minor convent in Biecz which contained a wealth of information about locations of churches in the Przedmieście Dolne, plus cartographical records – particularly the Miega map from 1779–1783 – the conclusion is that the human remains discovered in 2017 had been buried in the St. James' Church graveyard. This church was probably built in the 15th century (its first mention is from 1450) and served the faithful from Biecz's outskirts. It is possible that initially it was wooden, only acquiring a brick structure in the 16th century. This is suggested by the canonical visitation from 1595 (Bujak 1914, no.352) and the information given by J. Pasiecznik (1984, 13) who stated that the church had been built in the mid-15th century by the Zim burgher family. In 1624 the church was donated to the Friars Minor freshly established at Biecz.

The written record provides interesting information about the graveyard itself, supported by the results of archaeological and anthropological research. The large-scale fragmentation and level of damage to human remains, numerous bone concentrations, and especially being embedded in wet clay point to frequent River Ropa inundations. Soil conditions were adverse to the preservation of remains and other organic elements (coffins, shrouds, etc.). The setting of the graveyard, the public road running through it and mentioned in the chronicles, plus frequent flooding led to burials being principally of people from the lowest social strata, individuals who could not afford a better burial. This factor may be another explanation for the lack of vestiges of coffins or funerary equipment.

Looking at the excavated movable artefacts, particularly those from layer 2A, the chronology of burials may be set inside a rather broad horizon, from the 16th to end of the 17th century, or possibly even the 18th century. The dates were to some degree narrowed down by AMS (Accelerator Mass



FIG. 12. Fragment of Miega map showing St. James Church (section 68)

Spectrometry) radiocarbon dating of collagen samples taken from selected bones. Three samples were analysed:

- sample no.1 (no.MKL-A5433) from skeleton no.3, found 240-250/260 cm deep in trench no.1;
- sample no.2 (no.MKL-A5434) from bones from bottom of trench no.2, found 240-250/260 cm deep, a concentration of several loose bones;
- sample no.3 (no.MKL-A5435) from the central part of the southern profile, trench no.1, found 160 cm deep, two bones from same individual C₁₄ dating provided the following conventional dating (BP): sample no.1 - 232±22, sample no.2 - 228±22, and sample no.3 - 164±22. The first two samples generated similar datings, while the third appears to be somewhat younger. The absolute datings of samples, after calibration in the most probable range? (95,4%) is as follows (Fig. 13):
- sample no.1 - 1637-1800 AD;
- sample no.2 - 1640-1940 AD;
- sample no.3 - 1665-1911 AD.

The time range for all samples is quite broad, yet nevertheless consistent with data from the written record and the dating of movable finds. And additionally these datings confirm that the cemetery had been used after the destruction of St. James' Church in the early 18th century.²

2 Radiocarbon dating by AMS was carried out by DSc Marek Krąpiec from the Laboratorium Datowań Bezwzględnych in Cracow.

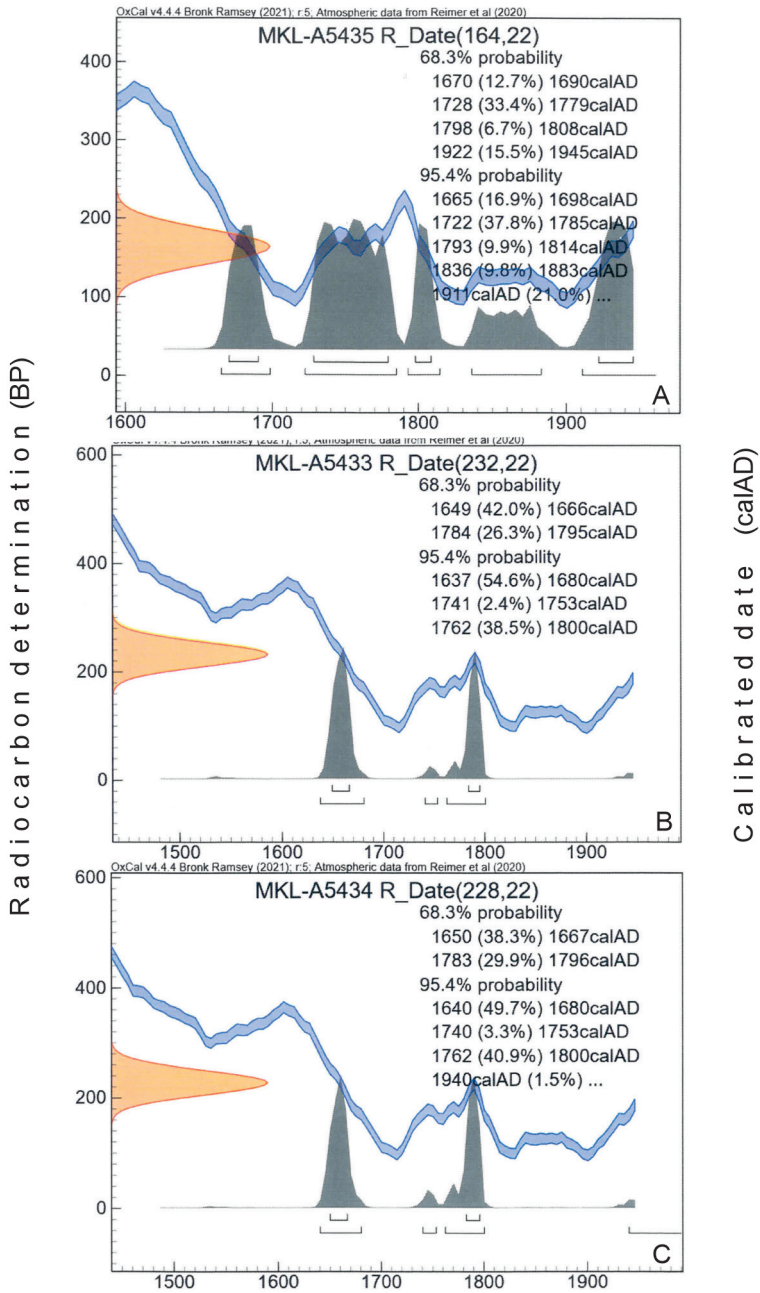


FIG. 13. Results of radiocarbon dating: A – sample no.3; B – sample no.1; C - sample no.2 (by M. Krąpiec, Laboratorium Datowań Bezwzględnych in Cracow)

V. POLICE STATION

Another interesting discovery was made some 15 m to the east of the remnants of the graveyard. Some 40–50 cm beneath the present ground level large fragments of a building's foundations were found. These were made from stone blocks and bricks with cement based mortar. Further exploration revealed additional wall sections. This was a large building, with three rooms (Fig. 14). The building was aligned E-W, with a delicate tilt to the north, this being suggested by the excavated N-E corner. The southern and northern external walls were built from large granite blocks, while the dividing walls were made of factory made brick. The two wall types were connected, thus indicating that they were built at the same time. The dimensions of the first discovered room, the westernmost, were 250 x 240 cm. It was partially destroyed by the trench dug for sewer mains which passed through the western wall. No northern dividing wall was noted. The second room, centrally located, 410 x 240 cm, had a window lined with bricks in its southern wall, with remains of a chimney on the wall directly opposite to it. The floor was from poured concrete. From this room there was a passage to yet another chamber, marked as no.3. Only its length was established – 4 m, while the width was undeterminable due to the crumbling profile. Additional walls were found on the southern edge of room no.2. Unfortunately these were heavily damaged and the nature of the engineering work performed at that location precluded their full exploration. Nevertheless those remains suggested those walls serving as foundation for some sort of porch or veranda. The overall dimensions of the building were 16 x 7 m.

Examination of records and cartographic analysis helped determine that those relicts were part of a *k.k. Gendarmerie* (Austrian Police) station built near the end of the 19th century. In 1919 it was taken over by the Polish State Police (*Policja Państwowa*), and during World War II it was used by German Railway Guards (*Bahnschutzpolizei*). The building was destroyed at the end of war during bombing. The station is visible in aerial photographs made in 1914–1915, as well as photos from the first half of the 20th century (Fig. 15).³

3 The history of this building has not been written yet. Information about the station was collected by Damian Nowak, Assistant Professor at the Museum of Ziemia Biecka. The authors wish to express their gratitude for consultations and access to materials.



FIG. 14. Relicts of walls and rooms of Police Station from end of 19th century (photo P. Kocańda)

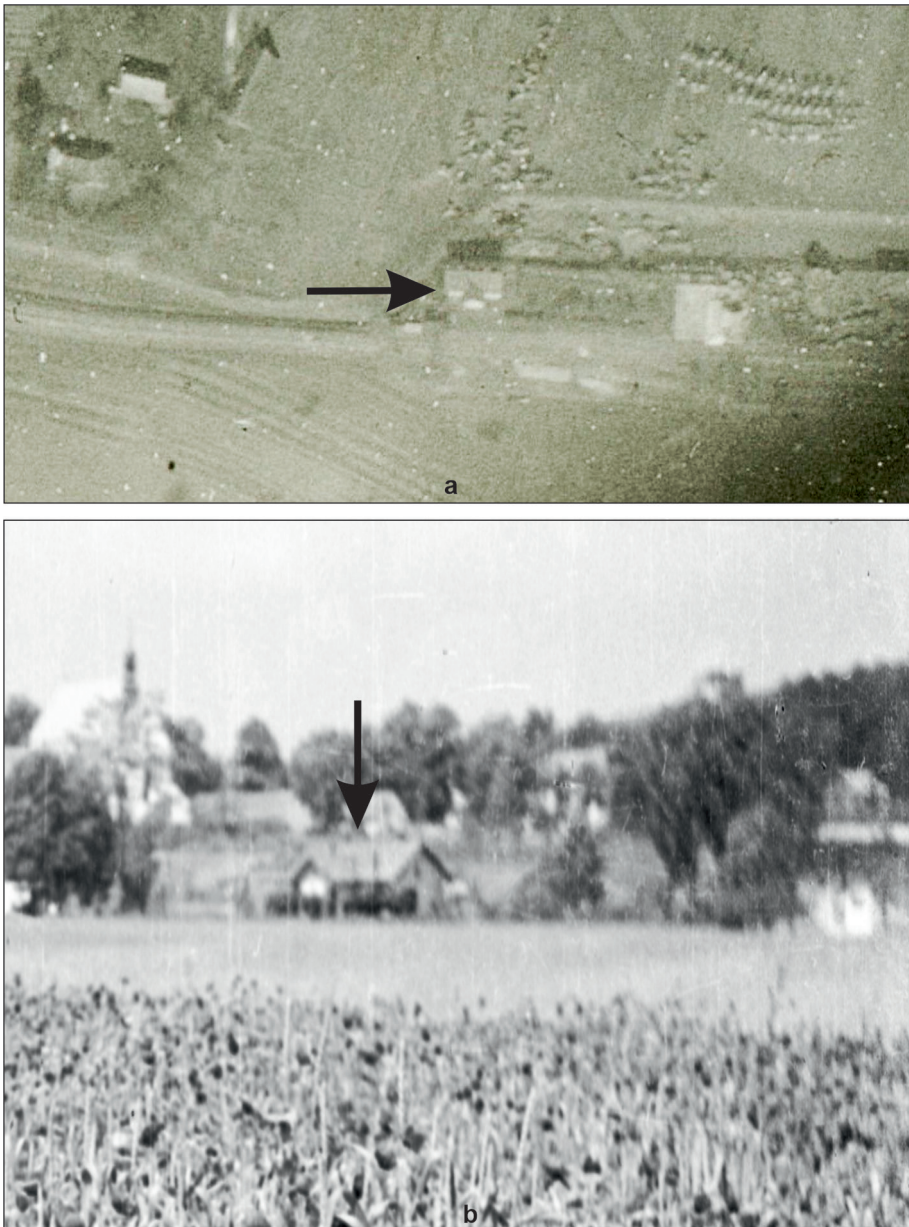


FIG. 15. Fragment of air photograph from 1914-1915 (D. Nowak collection) and a photography from first half of 20th century showing the Police Station (photo archive of Museum of Ziemia Biecka, signature 13MZB_AF_o4_N_B_237)

VI. SUMMARY

The archaeological supervision from 2017 over the civil engineering works along 3 Maja and Kolejowa Street in Biecz provided much valuable information about Modern Age history of the Przedmieście Dolne part of the town. A fragment of St. James' Church's graveyard was identified, an important clue as to the church building's exact location. In the future, an attempt to locate the foundations of the church should be made. To this end – besides the findings presented in this paper – cartographic sources should be used, particularly the Miega map which quite precisely shows the church's location.⁴ It cannot be ruled out that the remains of the church already had been encountered in 1967-1968 when, according to Jan Pasiecznik (1984, 235, footnote 4), the excavation of a trench for electric cables ran into stone foundations some 50–70 m from Kolejowa Street. Sadly those works were not subject to archaeological supervision and thus cannot be verified either way.

The discovered burials come from the final phase of the graveyard's use, in the period after the St. James' Church was abandoned by the Friars Minor. It was not possible to determine when exactly was the graveyard established; it may be surmised, however, that it came into being in the Late Medieval Age at the same time as the church itself. The buried individuals came from the lowest social classes, this being partly corroborated by the lack of funerary equipment and coffins. Additionally the very location of the graveyard – in the Ropa River floodplain and bisected by a public road – did not make it an attractive burial ground. Anthropological analysis indicates that the buried individuals were of both sexes and represented a broad range of ages – from infants to the elderly. All remains were embedded in highly humid clay, thus supporting the convent's chronicles that mentioned flooding and washed out human remains.

Of additional interest was the excavation of the relicts of a Police Station from the late 19th century, destroyed near the end of World War II. To date this building was known solely from photographs and military aerial photography. Until a short time ago such buildings had not attracted archaeological

4 When synchronising modern topographical or orthographical maps with the Miega map one must keep in mind the difference in scales used. This results in certain shifts of placement of some buildings, from a few through tens to even hundreds of metres (see Konias 2015, XX-XXII).

interest, although this began to change due to numerous similar discoveries plus the discussion on the emergence and scope of so-called archaeology of the present (see Kruppé 1989-1990, 2-22; Zalewska 2016, 21-37). The remains of the Biecz Police Station offer a new argument in the above-mentioned, ongoing discussion and point to the need for archaeology and its methods to be included in studies of 20th century architecture.

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Described bone concentration, inventory data. Number of individual, age and sex	Description of osteological material																															
Trench 2, bones from profile S (concentration no.47), section 5; 22.07.2017 ind. IV, <i>iuvēnis</i> , male?	<p>Fragments of neurocranium and splanchnocranium, mandible and teeth.</p> <p>Left temporal bone (missing squama, short mastoid process, degn.), fragment of right temporal bone (part of squama and mandibular fossa), three shards of sphenoid bone, two shards of neurocranium. Right zygomatic bone, shard of posterior part of right maxillar alveolar process (two neighbouring teeth in alveoli, probably M² and M³).</p> <p>Mandible: right part preserved, missing condylar process (quite massive body, angle slightly everted with visible muscle attachment), with teeth in alveoli; separately a shard of left ramus and frontal part with delicately defined mental protuberance; alveolar part largely destroyed, only alveoli of left I₁, I₂ preserved.</p> <p>Permanent teeth (po – lost postmortem; pr – lost perimortem; r – only root remains):</p> <table border="1" data-bbox="446 425 486 1227"> <tr> <td>8</td><td>7</td><td>po</td><td>5</td><td>po</td><td>po</td><td>1</td><td>2</td><td>3</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td> </tr> <tr> <td></td><td></td><td>r</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>pr</td><td>ob</td><td>7</td><td>8</td> </tr> </table> <p>Dental crowns poorly worn, the most – left I¹.</p> <p>Left I¹ with minor mesial carious cavity, next to the neck. Right M² with major carious cavity, affecting mesial and distal parts of crown; right M³ with mesial carious cavity. Major plaque deposit on buccal sections of both tooth. Only root of right M₁ remains, a periapical fistula present.</p>	8	7	po	5	po	po	1	2	3	po	po	po	po	po			r	5	4	3	2	1	1	2	3	4	pr	ob	7	8	
8	7	po	5	po	po	1	2	3	po	po	po	po	po																			
		r	5	4	3	2	1	1	2	3	4	pr	ob	7	8																	
Trench 2, profile S, trench for sewage/water mains next to lot no.14, fragments of skeleton from concentration no.4, 24.07.2017 ind. IV, <i>iuvēnis</i> , sex?	<p>Fragments of neurocranium and splanchnocranium, mandible and teeth.</p> <p>A larger fragment of neurocranium and nine shards, left temporal bone (fragment with part of squama and mandibular fossa, petrous pyramid separated), a fragment with right mastoid process. Left zygomatic bone, left maxilla with teeth, left part of mandible with teeth.</p> <p>Permanent teeth on the left side (po – lost postmortem; b – bud; ? – uncertain if ever formed):</p> <table border="1" data-bbox="715 866 756 1227"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>?</td> </tr> <tr> <td>1</td><td>2</td><td>po</td><td>4</td><td>5</td><td>6</td><td>7</td><td>b</td> </tr> </table> <p>Left M³ probably never formed. Dental crowns not worn. Left M₁ with severe carries which destroyed almost entire crown, formed periapical fistula (possibly cause of death).</p>	1	2	3	4	5	6	7	?	1	2	po	4	5	6	7	b															
1	2	3	4	5	6	7	?																									
1	2	po	4	5	6	7	b																									
Trench 2, trench for sewage/water mains next to lot no.14, bones from profile S, 24.07.2017 ind. II, <i>adultus</i> , male?	<p>Heavily damaged neurocranium and splanchnocranium, mandible and teeth.</p> <p>Fragment of frontal squama with right orbit (the supraorbital margin thickened), fragment of frontal squama from central area with glabella region (not prominent) and nasal edge (damaged), partly visible frontal sinuses, right temporal bone (without squama, mastoid processes, mandibular fossa; heavy), fragment of occipital squama, basilar part with shards of lateral parts of occipital bone, shard of sphenoid, 25 neurocranium shards. Right zygomatic bone, fragment of left maxilla with teeth, teeth in alveoli in C-M³ segment, formed a bud of M³ (visible empty space in alveoli) but not preserved; other maxillar teeth outside the alveoli, loose.</p> <p>Mandible separated at the front and towards the right, bilaterally condylar process missing, damaged posterior right ramus; damaged right P-1 alveolar segment.</p> <p>Permanent teeth (po – lost postmortem; pr – lost perimortem; ? – unknown if ever formed; N – never formed):</p> <table border="1" data-bbox="1047 407 1087 1227"> <tr> <td>?</td><td>po</td><td>po</td><td>po</td><td>3</td><td>2</td><td>1</td><td>po</td><td>po</td><td>po</td><td>4</td><td>5</td><td>k</td><td>pr</td><td>po</td> </tr> <tr> <td>N</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>po</td><td>po</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>N</td> </tr> </table> <p>Teeth crowns without signs of wear.</p>	?	po	po	po	3	2	1	po	po	po	4	5	k	pr	po	N	7	6	5	4	3	po	po	1	2	3	4	5	6	7	N
?	po	po	po	3	2	1	po	po	po	4	5	k	pr	po																		
N	7	6	5	4	3	po	po	1	2	3	4	5	6	7	N																	

cont. Table 1

Described bone concentration, inventory data. Number of individual, age and sex	Description of osteological material																
Trench 2, profile S, human bones, skull no.2, date – <i>senilis</i> , male	Skull well preserved. Male morphology. Damaged left orbit area of frontal bone; marked frontal sinuses. Glabella slightly prominent, deg.2, pronounced right brow ridge, deg.4. Zygomatic arches destroyed. Mastoid processes quite large, deg.3/4, it is difficult to pinpoint the location of the right <i>asterion</i> point. Destroyed occipital condyles, small foramen magnum, occipital squama of male morphology, markedly pronounced external occipital protuberance, deg.5, well pronounced supreme nuchal line, condylar canal not present, left hypoglossal canal doubled. Cranial sutures largely obliterated; coronary suture visible in right C1 section; sagittal suture most visible in sections S3 and S4; the lambdoid suture is partly discernable. Several fragments were preserved separately, chiefly of the sphenoid bone.																
Trench 2, human bones, 21.07.2017 ind. III, <i>infans</i> II– <i>juvenis</i> , sex?	Mandible with teeth: right segment (without ramus), the mental protuberance and small fragment of left segment. State of teeth preservation; permanent teeth from left I ₁ to right M ₂ , right P ₃ has not yet emerged above bite line due to retained m ₃ ; the right m ₃ is visibly worn, with three carious cavities (mesial, distal and centre of crown), the right M ₁ with crown entirely destroyed by caries – a resulting general infection leading to death cannot be ruled out.																
Trench 2, bone concentration in middle of trench (fragment of skull), 31.07.2017 <i>maturus</i> , male	Damaged neurocranium, mandible and its teeth. Neurocranium fragmented, massive reassembled, consisting of: fragment of right part of frontal bone, parietal bones (left with major part missing, right almost complete), occipital squama (almost complete). Separately 12 small fragments, temporal bones (left without squama, right preserved with anterior fragment and mandibular fossa), the basilar part attached with lower left lateral and right lateral parts. Relatively massive mastoid processes, deg.3/4. Pronounced external occipital protuberance, deg.4. Condylar canal not present (only major grooves). Section of S3 of sagittal suture not visible, other sutures in progressive obliteration.																
	Mandible missing left ramus, left head centrally damaged. Massive, very male, with high body (dental part damaged in frontal section), mental protuberance square, angles slightly everted. The right (preserved) coronoid process higher than condylar process, right ramus slightly tilted back and concave. Dental arch U-shaped. Permanent teeth of mandible (po – lost postmortem): <table border="1" data-bbox="841 543 866 1231"> <tr> <td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>1</td><td>2</td><td>p0</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td> </tr> </table> Dental crowns heavily worn, particularly molars; premolars poorly. The left I ₁ , I ₁ were discovered outside their damaged alveoli. Practically only the root of the right M ₃ remained, the left M ₃ preserving only a small part of the crown (caries). Exposed dental necks; traces of plaque.	8	7	6	5	4	3	2	1	1	2	p0	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	p0	4	5	6	7	8		
Trench 2, bone concentration in middle of trench, section 4, 31.07.2017 ind. I, <i>adultus</i> , female	Fragmented neurocranium, zygomatic bone, fragment of mandible without teeth. The frontal bone: reassembled squama with orbital segment, nasal part damaged; gently shaped, glabella and brow ridge mild, gently marked frontal tubers, supraorbital margins sharp, deg.2, bilaterally foramen supraorbitale. Separately preserved left temporal bone, damaged squama, mastoid processes quite delicate, deg.2/3; a shard of right temporal bone with part of external auditory foramen. Large part of occipital squama present, mildly formed, lambdoid suture visible only on the sides (not obliterated), upper fragment missing. Also, separately 13 fragments of neurocranium, including four with open sutures and one from parietal bone, with squama edge. Left zygomatic bone and fragment of left mandible, however without teeth (not known if M ₃ formed); angle slightly everted, visible muscle attachment.																

cont. Table 1

Described bone concentration, inventory data. Number of individual, age and sex	Description of osteological material																														
Trench 2, human bones, 21.07.2017 ind. IV, <i>maturus</i> – closer to <i>senilis</i> , male	<p>Relatively well preserved neurocranium, missing mandible and teeth. Skull partly deformed, with male morphology. Damaged supraorbital margins (visible small fragment of left orbit, prominent in deg.3) and the glabella area; marked frontal sinuses. Destroyed zygomatic arches. Left temporal bone separated from the skull, and the pyramid from it. Mastoid processes prominent, deg.4. Right parietal foramen. The occipital squama of male morphology was preserved, with marked external occipital protuberance, deg.3 and prominent nuchal crest. <i>Os bregmaticum</i> present. Coronary suture visible. Sagittal suture obliterated, discernable in sections S1, S2. Lambdoid suture still visible. About a dozen fragments preserved separately.</p>																														
Trench 2, loose bones, 25.07.2017 ind. III, <i>infans II-tuvenis</i> , sex?	<p>Selection of bones from neurocranium and splanchnocranium, shards of mandible and teeth. Parietal bones (incomplete, assembled from 10 fragments, coronary suture open), separately 15 fragments of neurocranium, right temporal bone (petrous pyramid separately, a quite slim mastoid process, deg.2/3), basilar part and lateral parts of occipital bones. Fragment of right zygomatic bone, two fragments of maxillar alveolar processes (one from left side, four single alveoli; the second – right side, with two single alveoli), nasal bones, four shards of mandible, four fragments of cranium. Permanent teeth (po – lost postmortem; ? – unknown if ever formed):</p> <table border="1" data-bbox="567 366 607 1227"> <tr> <td>?</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td><td>1</td><td>2</td><td>3</td><td>4</td><td>po</td><td>po</td><td>po</td><td>po</td><td>?</td> </tr> <tr> <td>?</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td><td>po</td><td>4</td><td>4</td><td>5</td><td>6</td><td>?</td> </tr> </table> <p>Dental crowns with no signs of wear.</p>	?	po	po	po	po	po	1	2	3	4	po	po	po	po	?	?	po	po	po	po	po	po	po	po	po	4	4	5	6	?
?	po	po	po	po	po	1	2	3	4	po	po	po	po	?																	
?	po	po	po	po	po	po	po	po	po	4	4	5	6	?																	
Trench 2, trench for sewage mains, fragment of skull and other bones to the E of the wall, section 6, 24.07.2017 ind. I, <i>infans</i> I, c. 6 years old, sex?	<p>Selection of bones from neurocranium and splanchnocranium. Fragmented neurocranium, maxilla, mandible and teeth. Fragmented neurocranium – 82 fragments. Three fragments of orbital part of frontal bone, temporal bones (both missing squama, separate fragment of mandibular fossa), two larger fragments of occipital squama, basilar part of occipital bone, separately occipital condyles, five shards of sphenoid bones. Parts of both maxilla with milk teeth (worn) and buds of permanent teeth. Mandible with right ramus, left damaged (separately three shards), with milk teeth (worn) and buds of permanent teeth. Milk teeth (po – lost postmortem):</p> <table border="1" data-bbox="841 765 882 1227"> <tr> <td>5</td><td>4</td><td>3</td><td>po</td><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>5</td><td>4</td><td>3</td><td>po</td><td>1</td><td>po</td><td>po</td><td>3</td><td>4</td><td>5</td> </tr> </table> <p>Both M₁ and M₂ (preserved left) visible above alveolus line. Outside/apart from alveolar process also left I, M₂.</p>	5	4	3	po	1	1	2	3	4	5	5	4	3	po	1	po	po	3	4	5										
5	4	3	po	1	1	2	3	4	5																						
5	4	3	po	1	po	po	3	4	5																						
Trench 2, skull brought up by excavator, skull no.5, 31.07.2017 ind. I, <i>senilis</i> , female	<p>Calvaria. Reassembled from seven fragments (one remained loose); parts of the parietal bone and occipital squama were preserved; poorly developed external occipital protuberance; deg.1, nuchal crest likewise, sagittal suture obliterated, lambdoid suture in fusing stage.</p>																														

cont. Table 1

Described bone concentration, inventory data. Number of individual, age and sex	Description of osteological material																																
Trench 2, bones brought up by excavator, including a skull, 31.07.2017 <i>senilis</i> , male	<p>Damaged skull, mandible and teeth. Skull fragmented, yet it was possible to reassemble most of it, including the calvaria. Still some segments were missing: smaller in central part of frontal squama and in right parietal bone, larger in left parietal bone (separate – two fragments with squama edge), and in left side of occipital squama. Remained separate: temporal bones, basilar part and parts with occipital condyles. Gently shaped brow rim, deg.5, prominent glabella. Left supraorbital foramen present. Mastoid processes short but broad, deg.4. Parietal foramen not visible. External occipital protuberance in deg.3. Pronounced nuchal crest. Cranial sutures with visible obliteration, poorly but still visible (open in sections S3, S4).</p> <p>Facial part heavily damaged. Right maxilla joined with zygomatic bone, partly stained green. Left maxilla incomplete. Separate fragment of left zygomatic bone, with shaft missing. The alveolar process strongly porous, transverse palatine suture with prominent fusing marks.</p> <p>Mandible divided at the site of the mental foramen. Right side stained green (ramus with condylar process and body up to mental foramen). Massive, with pronounced male morphology, well developed mental protuberance, square, deg.5, broad dental arch. The angles everted, bilaterally ramus tilted back, concave.</p> <p>Permanent teeth (po – lost postmortem; pr – lost perimortem, no obliteration; ob – obliteration of alveolus; N – never formed; r – fragment of root remained; d – damage to alveolus):</p> <table border="1" data-bbox="635 465 672 1227"> <tbody> <tr> <td>N</td><td>7</td><td>ob</td><td>5</td><td>4</td><td>3</td><td>pr</td><td>1</td><td>1</td><td>pr</td><td>3</td><td>4</td><td>5</td><td>r</td><td>pr</td><td>d</td> </tr> <tr> <td>8</td><td>pr</td><td>ob</td><td>4</td><td>4</td><td>3</td><td>2</td><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>pr</td><td>ob</td><td>7</td><td>8</td> </tr> </tbody> </table> <p>Dental crowns very heavily worn, only roots of right C and Pⁱ remain. Exceptionally both M₃ minimally worn (especially the left); the preserved right Mⁱ was more worn than those two. Nowhere was obliteration complete; advanced: left M₁, right P₂, M₁, right M₁; perimortem loss: left P₃, left I^r (here periapical fistula), right M₂ (here fistula), left M₁, Fistula also at right Pⁱ. Only remnant of root from left Mⁱ.</p>	N	7	ob	5	4	3	pr	1	1	pr	3	4	5	r	pr	d	8	pr	ob	4	4	3	2	1	1	2	3	4	pr	ob	7	8
N	7	ob	5	4	3	pr	1	1	pr	3	4	5	r	pr	d																		
8	pr	ob	4	4	3	2	1	1	2	3	4	pr	ob	7	8																		

cont. Table 1

TABLE 2. Body height (cm) of *maturus* male (trench no.1, skeleton no.3) calculated by different methods from the maximum length of the femur

Method	Left	Right	Mean
Breitinger	161,59	163,07	162,33
Trotter-Gleser 1952	158,75	160,89	159,82
Trotter-Gleser 1958	160,42	162,51	161,47
Pearson (female/male)	158,20	159,89	159,05

TABLE 3. Minimal number of individuals – children and juveniles plus adults by postcranial left side (L), right side (R) and undetermined bones (L/R)

Children, juveniles (N)				Adults (N)			
Bone	L	R	L/R	Bone	L	R	L/R
Clavicle	8	6	-	Clavicle	7	7	1
Scapula	6	6	2	Scapula	6	3	5
Humerus	6	10	1	Humerus	16	15	16
Ulna	4	3	2	Ulna	11	9	2
Radius	4	3	1	Radius	8	5	2
Forearm	-	-	1	Forearm	-	-	4
Pelvic bone	3	1	2	Pelvic bone	7	9	1
Ilium	5	3	1	Femur	12	19	9
Ischium	1	1	-	Patella	4	5	-
Pubis	-	-	2	Tibia	15	19	6
Femur	8	12	3	Fibula	7	8	10
Patella	1	1	-				
Tibia	8	5	4				
Fibula	-	1	6				

TABLE 4. List of individuals with various skeletal changes or specific bone features

Described bone concentration, inventory data, number of individual, age and sex	Description of osteological material
Trench 1, skeleton no.2 ind. I; <i>maturus</i> , female?	Dental plaque deposits (see Table 1). The right humerus clearly longer than the left, with a supratrochlear foramen in both. The right tibia is preserved with an inflammatory lesion of the periosteum (<i>periostitis</i>) (Fig. 9).
Trench 1, skeleton no.3 <i>maturus</i> , male	Degenerative changes of the spine: left-sided scoliosis, osteophytes on the preserved Th7-Th12 and L1-L5 vertebrae. Femurs: extensive linea aspera and gluteal tuberosity, distal epiphyses with slight bone rims. The left tibia is clearly longer than the right, with a larger sagittal diameter of the shaft; mild <i>periostitis</i> on its lateral surface, and a slight depression of an oblong shape in its middle part – possibly healed trauma. Fibulae with marked muscle attachments.
Trench 1, loose bones from the grave section 4 ind. II (min. 1 ind.); <i>maturus?</i> , male; others?	On one of the two preserved fragments of the skull – the parietal bone, a porous structure is visible, but without any traces of diploe growth. Right humerus with a slight bone rim around the head and slight bone spurs around the crests.
Trench1, section 1, profile N ind. I; <i>senilis</i> , male	Dental crowns strongly worn, exposed dentin; small carious cavities on the C and P ¹ contact surfaces. The only preserved lumbar vertebra with a slight porosity of the surface of the body and the articular process. The articular surface of the right pelvic bone with a bony rim.
Trench 1, section 1, profile N ind. II; adult, sex?	Only a fragment of the femoral shaft is preserved, heavy, massive, but heavily altered by strong inflammatory changes (bone layers and porosity); it is impossible to assess the condition of the remaining bones of the skeleton, therefore it is difficult to identify specific ailments, and we must limit ourselves to pointing out <i>osteomyelitis</i> (inflammation of bone and marrow).
Trench1, section 1, bottom part of the S profile <i>senilis</i> , male	Asymmetric mastoid processes, left shorter, deg.2, right longer, deg.4. Strongly, deeply marked impression of the vessel on the right parietal bone along the coronary suture. A small ossicle in the area of the right section of S1. Skull characteristic see Table 1. Dental crowns heavily and very heavily worn; the most – left P ¹ and right P ² ; the least – right M ² . Marks of plaque deposit. Exposed dental necks, particularly in maxilla. Alveoli of frontal maxillar teeth and posterior of mandible fully obliterated, alveoli lowered. Right M ² centrally rotated. In the preserved left humerus – supratrochlear foramen.
Trench 2, human bones from profile S (concentration no.4?), section 5, 22.07.2017 ind. IV; <i>iuvenis</i> , male	Left I ¹ with minor mesial carious cavity, next to neck. Right M ² with major carious cavity, affecting mesial and distal parts of crown; right M ³ with mesial carious cavity. Major plaque deposit on buccal sections of both tooth. Only root of right M ₁ remains, a periapical fistula present. Skull characteristic see Table 1.

cont. Table 1

Described bone concentration, inventory data, number of individual, age and sex	Description of osteological material
Trench 2, profile S, trench for sewage/ water mains next to lot no.14, fragments of skeleton from concentration no.4, 24.07.2017 ind. II; <i>iuvenis</i> , sex?	Left M ₁ with severe caries which destroyed almost entire crown, formed periapical fistula (possibly cause of death). Skull characteristic see Table 1.
Trench 2, human bones from profile S, 26.07.2017 ind. IV and min. 1 more; <i>maturus-senilis</i> , sex?	Partial obliteration of the preserved alveoli of the left maxilla, a fraction of the left maxilla present. Lumbar vertebrae – traces of Schmorl nodules on both surfaces of the body. Preserved left clavicle – well marked muscle attachments, with degenerated ends and a porous recess at the site of the impression for costoclavicular ligament. The head of the femur with a bone rim.
Trench 2, profile S, skull no.3, 27.07.2017 <i>maturus</i> , male	Perimortem loss of teeth and/or obliteration of the alveolus. At the left P ² a large periapical fistula. In the right maxilla, on the C-P2 segment, the alveolar process is clearly exposed. Skull characteristic see Table 1.
Trench 2, profile S, human bones from the trench (skull, vertebrae), skull no.1, 31.07.2017 <i>maturus</i> , male	Mastoid processes asymmetric, right more massive, wider, deg.3, left clearly more slender, deg.2. Alveolar obliteration. In the missing part of the maxilla, teeth marked as lost postmortem could also have fallen out during life; in the case of the right P ¹ , only a double root was present, and the absent P ² also had a double root. The left part of the alveolus is partially damaged, but it can be seen that most of the teeth were lost in the life, shortly before death. Preserved teeth heavily worn. Plaque deposits. Tooth necks exposed. Cariou stains: distal surfaces of both C, on the right contact surfaces M ₂ and M ₃ , on M ₂ also on the mesial surface. Periapical fistula at C of the left maxilla. Skull characteristic see Table 1. Degenerations of the preserved vertebrae: C1-C5 ossification of the C2 tooth apex ligament, osteochondrosis of the bodies, especially C4 and C5; porosity and enlargement of most articular surfaces; two adjacent Th bodies with osteochondrosis.
Trench 2, profile S, fragment of skeleton (bones), section 3, 31.07.2017 ind. II, III; <i>maturus?</i> , male; adult, female; <i>maturus?</i> , female?	Degenerations of the vertebrae: C – slightly porous upper articular processes; body of Th and a fragment of another Th – osteochondrosis, osteophytes. Right femur (“a”) preserved without distal end, massive, heavy, head with a widened articular surface, overlapping the neck in the front part, high linea aspera.
Trench 2, human bones, 21.07.2017 ind. III; <i>infans II-iuvenis</i> , sex?	Special condition of dentition: preserved permanent teeth from left I ₂ to right M ₂ ; the right P ₂ has not yet completely over the occlusal line due to retained m ₂ ; right m ₂ clearly worn, with three carious cavities (on the mesial side, distal and in the middle part of the crown), right M ₁ with a completely damaged crown due to caries – perhaps an indirect cause of death? (Fig. 11, Table 1).

cont. Table 1

Described bone concentration, inventory data, number of individual, age and sex	Description of osteological material
Trench 2, bones from dump, 22.07.2017 ind. II and others	The left C of the mandible shows a trace of linear enamel hypoplasia. Preserved left ilium with age-related changes, e.g. bone rim around the auricular surface.
Trench 2, concentration of bones in the centre of the trench, 31.07.2017, mark 3 os. II; <i>maturus</i> , male	Degenerations of the preserved Th and L vertebrae: slight porosity of the body surfaces and traces of Schmorl nodules. Among the preserved fragments of ribs, there is a slightly degenerated sternum end. The left clavicle with slightly porous ends is preserved.
Trench 2, concentration of bones in the centre of the trench, 31.07.2017, mark 4 <i>maturus?</i> , female?	Degeneration of the vertebrae: four C osteochondrosis of the bodies; Th7 and eight Th osteochondrosis, slight osteophytes. The right clavicle is preserved with the present degenerated sternum end. Body and manubrium of the sternum degenerated; body curved. The distal phalanx of the foot is preserved.
Trench 2, concentration of bones in the centre of the trench (fragment of skull), 31.07.2017 ind. I; <i>maturus</i> , male	Dental crowns of mandibular teeth (missing maxilla) heavily worn, especially molars, the weakest premolars. Apart from the damaged sockets, there are left I ₁ and I ₂ . From the right M ₂ , almost only the root remained, the left one with only a small part of the crown (carious process). Dental necks exposed, traces of plaque. Skull characteristic see Table 1.
Trench 2, human bones from the trench, bottom, 31.07.2017 ind. I; <i>maturus-senilis</i> , male?	Degeneration of vertebrae: two Th bodies with visible osteochondrosis, osteoarthritis on the articular surfaces of other fractions. The clavicles are light, degeneration (porosity) of both ends.
Trench 2, human bones from the trench, 31.07.2017, mark 2 <i>maturus</i> , male	A fragment of the mineralised thyroid cartilage preserved. Degeneration of the preserved vertebrae. Cervical complete set, including: C6 and C7 bodies only, with slight osteophytes; in C4 and C5, the right transverse foramen divided. From the thoracic segment, seven damaged bodies with slight osteophytes and 31 fragments. Clavicles right green at the shoulder end; noticeable porosity of the articular surfaces at both ends.
Trench 2, bones collected by the excavator, including the skull, 31.07.2017 <i>senilis</i> , male	Local greening of the skull: part of the right maxilla, the mandible on the right (a ramus with a coronoid process and a body up to the mental foramen). Dental crowns very heavily worn, roots remained on the right C and P ¹ . Exceptionally both M ₃ worn poorly (especially the left one); the preserved right M ² heavier. Perimortem loss of some teeth. The obliteration is not fully at any case; advanced: left M ₁ , right P ₂ , M ₁ , right M ₁ ; perimortem loss without obliteration: left P ₂ , left I ² (here periapical fistula), right M ₂ (here fistula), left M ₁ . The fistula also on the right P ¹ . Only a root remained from the left M ¹ . The condition of the maxilla teeth Fig. 10. Skull characteristic see Table 1.

cont. Table 1

TABLE 5. Cranial indexes of examined individuals from Biecz with interpretation

Cranial indexes	Formula for the index	Trench 2, human bones, 21.07.2017, ind. IV, maturus (closer to the senilis), male	Trench 2, profile S, skull no.3, 27.07.2017, maturus , male	Trench2, profile S, human bones from the trench (skull, vertebrae), 31.07.2017, maturus , male	Trench 2, profile S, human bones, skull no.2, date -, senilis , male
Cranial index	(maximum cranial width $eu-eu \div$ maximum cranial length $g-op$) $\times 100$	-	84,57 brachycranic	-	79,78 mesocranic
Cranial length-height index	(maximum cranial height $ba-b \div$ maximum cranial length $g-op$) $\times 100$	-	77,14 hypsicranic	-	75,28 hypsicranic
Cranial width-height index	(maximum cranial height $ba-b \div$ maximum cranial width $eu-eu$) $\times 100$	-	91,22 tapei-nokranic	-	94,37 metiocranic
Transverse fronto-parietal index	(minimum frontal width $ft-ft \div$ maximum cranial width $eu-eu$) $\times 100$	60,90 stenometopic	66,22 metriometopic	64,24 stenometopic	-
Nasal index	(nasal aperture width $apt-apt \div$ nasal height $n-ns$) $\times 100$	-	52,08 chamae-rhinc	-	-
Orbital index	(orbital height $spa-sbk \div$ orbital width $mf-ek$) $\times 100$	-	86,49 hypsikonch	-	-

TABLE 6. Mean ranges of indexes of long bones from upper and lower limbs of examined individuals from Biecz

Index	Formula for the index	N	Range of value
Humerus – cross-section of shaft	(minimum diameter of midshaft ÷ maximum diameter of midshaft) x 100	9	76,19 – 95,00
Humerus – robusticity	(least circumference of midshaft ÷ maximum length) x 100	2	18,12 – 18,44
Humerus – shape of the head	(maximum diameter of head ÷ vertical diameter of head) x 100	7	83,33 – 127,27
Ulna – robusticity (caliber index)	(least circumference of midshaft ÷ physiological length) x 100	2	15,42 – 16,69
Ulna – cross-section of shaft	(anterior-posterior diameter of shaft ÷ mediolateral diameter of shaft) x 100	10	68-75 – 146,15
Radius – robusticity	(least circumference of midshaft ÷ physiological length) x 100	3	16,43 – 19,91
Radius – cross-section of shaft	(anterior-posterior diameter of shaft ÷ mediolateral diameter of shaft) x 100	9	64,71 – 78,57
Femur – length-thickness	(circumference of midshaft ÷ physiological length) x 100	1	22,20
Femur – robusticity	(anterior-posterior + mediolateral diameter of midshaft) x 100 ÷ physiological length	1	14,27
Femur – pilaster	(anterior-posterior diameter of shaft ÷ mediolateral diameter of shaft) x 100	22	73,89 – 124,00
Tibia – cross-section of shaft	(mediolateral diameter of shaft ÷ anterior-posterior diameter of shaft) x 100	17	66,67 – 96,00
Tibia – platycnemic	(mediolateral diameter at the nutrient foramen ÷ anterior-posterior diameter at the nutrient foramen) x 100	18	65,52 – 83,33
Tibia – length-thickness	(minimum circumference of midshaft ÷ length) x 100	2	19,30 – 21,74