Silver and lead production centre in southern Poland - between Bytom, Olkusz and Tarnowskie Góry in the Middle Ages. Research Problems

Středověké centrum produkce stříbra a olova v jižním Polsku mezi Bytomí, Olkuszem a Tarnowskými Horami. Problémy výzkumu.

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Abstract: In this paper will be shown the main problems of research on a centre of mining and metallurgy of silver and lead on the border of Silesia and Lesser Poland. In the light of recent discoveries we can see the work between the XI and XVI centuries. The resort has not created much of the settlement clusters due to the characteristics of the deposits. Given the research of the recent years, we can see a new image of the territories on the border between Silesia and the Lesser Poland in the early Middle Ages. The archaeological research conducted in the past few years confirm what the written sources conveyed about the local silver and lead mining. Origins of the silver used in minting production in the 12th, and maybe even 11th century, can be answered as follows: one of the sources of the Piasts silver was located near today's Bytom, Będzin and Sławków.

Keywords: Silver and lead mining and metalurgy, early medieval Poland

The possibility of native origin of some silver in early medieval Poland was considered, it was never thought to be significant. Because of the lack of archaeological evidence, the only record was the Bull of Gniezno (1136), where a mention about silver miners from a mysterious town called Zversov near Bytom occurs. However, according to Ryszard Kiersnowski "they were not specialized miners" and "their number was rather not significant" (Kiersnowski 1960: 25). Several years later this opinion was somewhat toned down by Stanisław Suchodolski (1973). As a new element he mentioned the work of Rabbi Raszi of Troyes describing a town called Ha-'Elqosi. Addressing the arguments that appeared that there was no information about the miners in later texts.

The last several years brought us an entirely different image of the history and culture of the eastern part of the today's Silesian province (voivodeship - województwo) in the early Middle Ages. It occurs that as early as in the 11th and 12th century this territory was an area of mining and steel industry oriented towards extracting silver and lead from the local ores. Along with these activities settlement and trade were developing. Also, when it comes to production, a significant role of these territories can be observed. Probably this was the place where enameled ceramics was widely used for the first time, while in other parts of Poland this technique was used only several decades later.

The deposits of lead and silver which are the subject of this investigation can be found in the eastern part of the Silesian Upland, on its border with the Polish Jura. Three main areas of ore presence can be distinguished:

- the first region near Bytom, which includes the towns of Bytom, Będzin and Tarnowskie Góry
- the area between Olkusz and Siewierz, including also Dąbrowa Górnicza and Sławków
- the region near Chrzanów, with Trzebinia, Długoszyn and Szczakowa. (Molenda 1963, 35).

At present most of the deposits in these areas have been already exploited, however, there is still a number of places which are left intact. Ore deposits on the territories of Silesia and Krakow are characterized by their rather irregular presence in the dolomite rock. This causes the constant need of searching for ore and the discontinuity of exploitation. A considerable difficulty was the varying content of metal in the local deposits. Turbulent times of the local silver and lead mining are best visible if we take a look at the history of the town Olkusz, where the years of prosperity were interweaving with the times of crisis. This depended on the availability of the metal ores and the methods of extraction. The main minerals which can be found in this area are sphalerite (ZnS) and galena (PbS), which contains silver. In the early Middle Ages, but also later, mainly galena was exploited. Depending on the deposit type, it might contain even 70 % of lead and 2,4 % of silver. It is also possible that silver could have been found in this area in its pure form – in nodules (Molenda 1963). What we do not know, however, is whether of the main interest were, like since the 13th century, both lead and silver, or was it only silver, lead being just a side product. Already in the 19th century K. Kozłowski claimed that lead ores were mainly

exploited to extract silver (Kozłowski 1887, 293–294). Also, the mentions from written sources concentrate mostly on silver, while lead is usually not mentioned. It is hard to believe, however, that lead, which sometimes constituted even 99 % of the ore, was treated exclusively as a production waste. It seems that the authors of these written sources paid more attention to the most spectacular product – silver – almost forgetting about lead, which was much more common, but at the same time much less valuable than silver.

For many years the only archaeological evidence of local silver and lead ore exploitation have been the findings from Bytom and the cemetery in Dąbrowa Górnicza – Strzemieszyce. A hearth in one of the sheds in Bytom showed traces of melting lead and the nearby objects were identified as mining shafts by Jerzy Szydłowski (Szydłowski 1966, 1967). There are opinions appearing recently, however, that some of these objects are in fact wooden drains (Andrzejewska 2004, 217). Considering the fact that evident mining shafts are found in this area, the above opinion requires further research. When it comes to the cemetery in Strzemieszyce (exploited in 1932/33), it stood out among others on this area. First of all, for many years it has not had any confirmed settlement background. Moreover, the quality of the local soil was not good enough for agricultural or farming development. At the same time, there are many objects found at the cemetery which were no longer commonly placed in the graves in the 12th century. Among these there are 78 metal objects – 63 made of silver and 15 of lead. Also, there are some examples of glazed ceramics, which had until then been very rare. Józef Kostrzewski associated these findings with the Kievan Rus influences (Kostrzewski 1949, 333). When it comes to the leaden objects, these were rather common in this area. Most of the researchers agree that the leaden objects commonly found on the cemeteries dated back to the Halstatt period and to the 9th and 10th century might have been produced using local lead deposits (Szydłowska 1988, Rogaczewska 2008, 65–66). The only problem with this concept was to find evidence that silver and lead were exploited there in the 11th and 12th centuries.

Researches conducted on the settlement site in Strzemieszyce Wielkie can be considered one of the first factors to contribute to the image of an early medieval metallurgic centre. The ceramic objects found there were identical to the ones discovered at the nearby cemetery (Pierzak 2000, 116–119). There is a thesis about connection of this settlement with silver and lead metallurgy, based on the large number of metal objects found at the cemetery as well as the analysis of the archaeological layers. Further exploration of this site by Aleksandra Rogaczewska confirmed his assumption (Rogaczewska 2002, 222–228; 2004a, 315–326; 2004b, 69–80; 2006). During the research, a production site was discovered, with remains of a shaft furnace, various types of open furnaces used to melt lead and also other objects connected with ore roasting (Rozmus et Suliga 2012). Several nails found in one of the hearths can be interpreted as an element of a bellows, based on their size and structure. The research conducted in Strzemieszyce Wielkie revealed several furnaces used to melt lead, including the remains of a shaft furnace. What is interesting, the ashes contained traces of desilvered lead, which contained about 0,01 % of silver. It is possible, then, that the process of desilvering was conducted immediately after the melting, in the same furnace, or that the melting process was designed specifically to obtain silver, lead being merely a production waste (Rogaczewska 2004a, 323–324).

A real Eldorado for the researchers of the early silver and lead metallurgy was the production-oriented settlement in Dąbrowa Górnicza-Łosień, explored by Dariusz Rozmus since 1999 (Roś et Rozmus 2000, 2002, Bodnar et Rozmus 2004, 9–60; 2006, 150–165, Rozmus 2009A, 45–55). There were numerous furnaces and other metallurgy-related objects discovered there. One of the most spectacular discoveries was the furnace size 3 × 5 metres. The furnace was not emptied after the melting, probably the workers had to leave the settlement urgently. About 200 kg of iron and lead slag were removed from the fill inside the furnace, which allowed the researchers to recognize some production processes. We also know there was a roofing raised above the place where the furnaces were. Traces of tall pillars were found, measuring about 30cm in diameter, some of which were circled with stones. Most of the pillars line up in two rows, forming a hall which measured about 150–200 square metres. The roofing seems reasonable if we consider rain falling on a working furnace, which temperature reaches 1000 degrees centigrade. Protection against furnace cracking was essential for successful melting process. The remnants of a similar hall were discovered on a different metallurgy-related site, in Sosnowiec-Zagórze.

Advanced technical skills and knowledge of the local metallurgists are confirmed by the spectroscopic analysis of leaden weights found in Łosień and a nearby Okradzionów. The weight from Łosień contained 92,17 % of lead and only 0,0049 % of silver, and the one from Okradzionów – 95,66 % of lead and 0,0045 % of silver (Rozmus 2004, 312–313). This again proves the advanced knowledge the workers had and their skills in extracting silver from lead.

Another spectacular discovery made in Łosień was the silver treasure found during the archaeological research. In consisted of 1100 silver coins as well as numerous silver bars and nodules, weighing about 2 kg. Almost all of the coins date back to the reign of Władysław II the Exile and Bolesław IV the Curly. According to the numismatic analysis, the treasure must have been hidden after around 1160–1165. It is possible that the dates indicate also the end of the metallurgical settlement. The destruction of the settlement in Łosień and hiding of the treasure can be associated with the events that took place around 1166, when Bolesław I the Tall, Mieszko IV the Tanglefoot and Konrad, the sons of Władysław the Exile raised against Bolesław the Curly. The reason was they wanted to get back some gords which were not given to them after the senior returned to Poland. What is also important, the treasure which is called the treasure of the foundry worker was found in a glazed pot.

Since the discoveries in Strzemieszyce Wielkie and Łosień the amount of settlements oriented towards mining and silver and lead metallurgy has started to increase. During the research conducted before the start of the construction of an express way to Pyrzowice Airport in 2004 an early medieval settlement was discovered in Przeczyce. In 2009 a research was started on the site in Sosnowiec-Zagórze, which has since then been known mainly for its gord. In a direct neighbourhood of this gord a production settlement was discovered which dates back to the early Middle Ages. Until now the remains of 8 furnaces and hearths have been found which are connected with the metallurgic production (Rozmus 2009B, 70–79). Numerous fragments of nozzles were discovered inside and near the furnaces. Over the furnaces, there was a roofing, based on pillars 40–50cm in diameter, similar to the hall discovered in Łosień. Also, large fragments of stone paving were found around the furnaces. According to the petrographic analysis, the stones used to pave the ground come from a distance of 8–9 km (the border between Sosnowiec and Mysłowice). During the research, various kinds of iron slag were found, which were used in the lead extraction process, as well as a fragment of a silver lunula.

In 2010, also during a road construction, a settlement was found in Siewierz, dated back to the 12th century. When examining the remains of the local sheds, 4 bars of lead were discovered, sized 30 × 10 × 5 cm and weighing several kilograms each. Three of them were found in one shed. Since the results of the research done in Siewierz are still being compiled, one cannot determine the production- or trade-oriented character of the settlement yet. However, we have finally gained an archaeological evidence of the early medieval settlement in Siewierz, until now known only from the written sources and from the Romanesque St. John's church. Worth noticing is also the fact that every object discovered in Siewierz contained glazed ceramics, identical to the one from Strzemieszyce Wielkie and Łosień (Dobrakowska et Dobrakowski 2013).

The research of recent years reveals the existence of a silver and lead mining and metallurgy center, dating back to the 12th, and according to some sources even to the 11th century. Currently we know of 5 production settlements on this area, but judging from surface research we can expect discovering some of these also in this region. In all settlements being subject to archaeological research either traces of metallurgical production (furnaces, hearths, production halls, nozzles, melting pots etc.) or objects made of lead were found. Also, all the excavation sites contain large amounts of glazed ceramics, which until recently was associated with a later period in history. The amount of ceramics on early medieval sites was usually very scarce. Recent research of Michał Auch, proves that the earliest utensils made of glazed ceramics were found in Krakow, Strzemieszyce Wielkie and Dąbrowa Górnicza-Łosień, and are dated back to the second half of the 11th century (Auch 2012). On the border of Silesia and the Lesser Poland glazing could have occurred as a local invention thanks to the availability of a basic enamel ingredient, which was the lead oxide (the so-called litharge). The invention might have originated from an observation of the enamel which appeared on the baked clay in metallurgic furnaces during the production of lead and silver (Bodnar et al. 2006). Glazed ceramics in considerable amounts was also found among the objects found by Czesław Hadamik in the settlement in Ruda Śląska-Kochłowice (Hadamik 2010, 113–124; 2013). It was also a production site, mainly connected with iron metallurgy, although some leaden objects were also found there. Could this be associated with the fact that the local mining industry is dated back by some researchers only to the 13th century? Maybe with the specific direction in which the local community developed? We do not know that. However, the problem might be our way of interpreting the archaeological evidence, and the fact that until recently glazed ceramics was considered a definitely more modern invention, and therefore not even recorded during the research. If we consider also how technologically advanced the glazed ceramics from the border of Silesia and Lesser Poland was, its characteristic ornamental features, namely its obvious originality, there is no wonder the objects found on some sites, the municipal ones in particular, were misclassified.

Despite the mention from the Bull of Gniezno about the rural silver miners – *rustici argenti fossores* – sounds rather flippant, there are many factors indicating that this social group was quite wealthy. The silver treasure from Łosień might be one of them, but we do not know who its owner was. More reliable are the objects found at the cemetery in Strzemieszyce and in the neighbouring settlements. These are the 63 silver and 15 leaden pieces of jewellery, which were already mentioned above. One of the missing objects is the silver captorga, probably picturing a griffin, with traces of gilding (Tokaj 2009, 242). This is the only example of such captorga found on the Polish territories. A fragment of a similar ornament, but made of bronze, was found during the 2007 research in Łosień. In Sosnowiec-Zagórze also a piece of lunula was found.

The evidence to the wealth of the silver and lead metallurgy centre might be the local churches. Despite the lack of any written sources, we know of at least 3 mason churches dated back to the 12th century. In fact the only object which was fully preserved until today is the church of St. John the Baptist in Siewierz. It was directly connected with the settlement where the leaden bars were discovered. The second church is the St. Margaret Church in Bytom, known to us only from the carvings on the tympanum of the Abbey of St. Vincent in Wrocław-Ołbin. This was probably funded by Bolesław the Curly, with whom we associate the events that put an end to the settlement in Łosień. The third Romanesque church in this area was discovered 4 years ago in Wojkowice Kościelne, during the renovation of the building. After removing the outer layer of plaster, fragments of stone walls were discovered, built using the same stone blocks

as the ones found in Siewierz (Gano-Kotula 2000). Part of the blocks had been used when renovating the church in the past, but some of the walls must come from the early Middle Ages. All the above indicates similarities in the history of this building and the church in Siewierz. After all, the distance between the two is not very long, it is only 7 km in a straight line. Both churches are also similarly situated near the valley of the River Przemsza, which flows south from the churches. At present there are plans to do an archaeological reconaissance of the area around the church. Another church, entirely built in the Romanesque style, can be found somewhat beyond the silver and lead metallurgy area known to us, in Giebło. However, it is localized on the border of the area where the dolomite stone rich in ore is found. The research on local architecture is only beginning, but the mere fact of its existence enriches our image of this settlement area.

Unfortunately, there is no clear information about the ecclesiastical institution to which the properties in this area belonged. Written sources are mainly episodic, and they rise more questions than give answers. This applies to the text mentioned at the beginning of this paper, about the silver miners from the town called Zversov near Bytom. They are said to belong to the archbishopric of Gniezno: *Item villa ante Bitom que Zversov dicitur cum rusticis argenti fossoribus cum duabus tabernis ninnisi ad archiepiscopi pertinet iuriditionem.* Did the archbishop own the countrymen who were silver miners or the countrymen and the silver miners? The absence of punctuation marks in the Latin text does not allow to determine it without any doubt. Not only do we not know where Zversov was, but also we have no information about the archbishop's possessions in this area. What is interesting in the text is the mention about the two inns, which were to be found in Zversov. Since an inn (called a tavern in the sources) played many other roles beside the current one, and because the duke held the monopoly on running inns, the existence of two such buildings in a settlement can be considered an evidence to its wealth. A mention of two taverns in Bytom appeared in the text written by cardinal Idzi in 1105 (1123–25) and was then repeated in a document regarding the monastery in Tyniec from the 26th of May, 1229. When listing the properties of the monastery, two taverns were mentioned and a marketplace in Bytom. (KDKT 1875: 19–20, nr 11) Are these the same inns that are described in the Bull of Gniezno? This, unfortunately, cannot be determined. The abbeys started having their share in the income from the taverns in Bytom in the year 1234, when Henry I the Bearded granted them half of the taverns' profits. The rights were bestowed by the duchess Viola, a widow of Casimir I of Opole (CDS 1857: 4–6).

The territories being the subject to this paper belonged entirely to the Krakow bishopric. What is interesting, though, is that the Wrocław diocese also had its share in this area. This is with regards to the beforementioned Abbey of St. Vincent in Wrocław-Ołbin. The church of St. Margaret might have been bestowed to the abbey in the sixties of the 12th century, what might be deducted from the presence of duke Leszek, the son of Bolesław the Curly, on the tympanum described above. However, it is hard to determine if the two events took place at the same time. It is possible that the bestowal happened earlier, and the tympanum only describes this event. The ownership of the church was transferred from the Ołbin Benedictines to the Premonstratensians from the Abbey of St. Vincent at the turn of the 12th and 13th centuries. Thus, Bytom was the place where the Benedictines from Tyniec and from Wrocław, the latter later replaced by the Premonstratensians, had their share.

Apart from the mixing of ecclesiastical influences from Silesia and the Lesser Poland in this area, one can observe similar situation when it comes to the political and administrative adherence. Around 1177 Casimir II the Just, who was the Duke of Lesser Poland at that time, granted two castellanies – of Bytom and of Oświęcim – to Mieszko the Tanglefoot, the duke of Racibórz. The circumstances of this bestowal are not entirely clear, but these will not be discussed here. A large part of the territories with the production settlements was handed over to the new ruler. An important question arises here, namely what was the value of this endowment? Did Casimir present Mieszko with the goose that laid the silver eggs – a highly-developed silver and lead metallurgy center? Or were the deposits of metal ores already exploited in the late 70ties, and some of the settlements, like the one in Łosień, destroyed and abandoned?

The problem is connected with the administrative centers present on this area. One of them was the gord in Bytom, known from the written sources from the 12th century. However, there was another gord in Będzin, which developed even earlier, but is not mentioned in any written sources. All the knowledge we now have about this castle comes from the analysis of archaeological evidence. We know that the gord had functioned from the 9th century, but probably by the end of the 11th century it was destroyed. However, in the second half of the very same century its fortifications were repaired (Rogaczewska 2008). Since there is no mention of Będzin in the written sources from the 13th century, we might assume the local administrative centre was destroyed. It is possible that Bytom, which lays only 16 km south from there, took over its role. There are some more mentions in the sources about other administrative centers in this area, like Chrzanów, Siewierz or Sławków. However, all the information comes from the 13th century and it is hard to overestimate their age without any confirmation in the sources.

One of the most important research problems is the question of the chronology of the silver and lead metallurgic centre on the Silesia and Lesser Poland border. It seems certain that it had functioned since the end of the 11th century until the 60ties of the 12th century. However, it is not possible to determine if all the recently discovered settlements co-existed at the same time. The characteristics of the local galena deposits might have imposed frequent relocation on the miners. After one area had been exploited, they might have moved to another one. The similarity of various objects found in the so-called micro-region of Strzemieszyce

and Łosień may be the evidence to such migratory way of life. Metallurgy required also large amounts of timber, and if the miners used a shaft method of mining, wood was essential. This might have caused deforestation of the areas near the settlements, which in turn imposed a difficult decision on the producers – to transport timber or silver ore? What is certain here is that this activity did not lead to an ecological cataclysm we know from later history of these territories, when extensive cutting down of forests to provide timber for local mines and metallurgic centres as well as dehydration caused by the presence of drifts led to the forming of the Błędowska and Starczynowska Deserts. Desertification of these territories and the presence of sand dunes forced the citizens of Siewierz to afforest the nearby fallow lands in order to protect the town from being covered with sand (Korusiewicz 1990, 167). The actions of the early medieval miners and steelworkers were definitely not that extensive, although it is not possible to analyze their behaviour without considering the impact they had on the environment, and the other way round. We do not know, for example, if they searched for silver and lead deposits on forested or deforested areas. In the latter case, their actions must have been preceded by clearing the terrain from the trees.

Another interesting research that contributed to identifying the function of the silver and lead mining and metallurgic center on the border of Silesia and Lesser Poland was the analysis of the bog contamination. The research was conducted by Leszek Chróst from the EKOPOMIAR Agency from Gliwice (Chróst 2013). He based his observation on the fact that "a bog is an area where organic material is accommodated in layers, in conditions hampering its decomposition. Every year the plants that grow on these areas die, but do not decay entirely, becoming the substratum for the next generations of plants. The factor that contributes to this is water, which blocks the access of oxygen, essential for the microorganisms to decompose the plants. The organic and mineral dust, including the contaminants produced by humans, that sets on the plants is then preserved in particular peat layers. Thus, bogs can register consecutive phases in the history of nature and the economic transformations of the past communities. Thanks to this special feature of archiving the past they can be applied while trying to recreate the history." The research of the bogs near Wolbrom indicate rapid development of silver and lead metallurgy between the years 800 and 860 AD (radiocarbon dating) and its slow decline until around 1500, when more efficient methods of dehydrating were introduced. The local bogs, thanks to their localization, were the place where the contaminants from all the Silesia and Lesser Poland area set. Also, intensification of lead dust-fall was observed near Tarnowskie Góry between 850 and 1500, although since 1000 until 1500 the fall had significantly decreased. At the same time, during the period when the dust-fall was lesser and lesser near Tarnowskie Góry, a significant increase can be observed near Wolbrom.

The results of this research are only partially compatible with the archaeological observations, not to mention the written sources. However, considering the fact that both the analysis of bogs contamination and the archaeological research on the area near the Silesian and Lesser Poland border are at the early stage, one should see the future in the collaborative discovering of the past.

Another element, which was actually rarely used to analyze the evidence of the local mining industry, are the remains of the mining activity left above the ground. These are the so-called *warpie*, the funnel-like hollows in the ground, leftovers after the galena and calamine exploitation, coming from the period when the ores were being mined manually. *Warpie* originated as a result of such activities as boring of shafts, exploiting of galleries or digging and accommodating of gangue in the form of embankments or mounds (Osiński 1782, 87, Linde1860, 221). They used to be a common part of the local landscape, however recently they began being overgrown by plants and disappearing. Very often the only trace of their existence is the toponymic material. Common place names which refer to the word *warpie* prove the history of these territories is directly connected with mining. Unfortunately, it is not possible to determine the age of these objects by means of linguistics. However, when analyzing the history of the mining industry one has to consider not only the traces of human activity, but also the impact they had on the environment. The discovery of *warpie* on the areas where no mining activity was undertaken in the late Middle Ages and in modern times will be particularly significant for the research on the early medieval mining industry.

Given the research of the recent years we can see a new image of the territories on the border between Silesia and the Lesser Poland in the early Middle Ages. The archaeological research conducted in the past few years confirm what the written sources conveyed about the local silver and lead mining. One might assume that the production settlements discovered recently are not the only ones which used to operate in this area. Time will tell what mysteries are hidden in the local ground. What also needs addressing is the re-verification of the research done on the sites where obviously early medieval objects of glazed ceramics might have been misinterpreted. Separate studies should also be dedicated to the local sacral architecture, which until now has not been examined thoroughly. What I refer to is not only the church in Wojkowice Kościelne, but also the parish church in Będzin, built in a close neighbourhood of the early medieval gord and cemetery. Despite the lack of written sources, the presence of the church on the castle hill might be considered, after the gord was destroyed and before the town was located there in the 14th century.

The research on the silver and lead mining and metallurgy centre on the border of Silesia and Lesser Poland is still in its early stage. Many questions have not been answered yet. However, the one about the origin of the silver used in minting production in the 12th, and maybe even 11th century, can be answered as follows: one of the sources of the Piasts silver was located near today's Bytom, Będzin and Sławków.

SHRNUTÍ

Nedávné objevy podávají svědectví o výrobní činnosti v 11. až 16. století. Uvažovalo se o možném místním původu části stříbra v raně středověkém Polsku, ale tento podíl nebyl považován za nijak významný. Archeologické výzkumy z posledních let potvrzují zprávy písemných pramenů, týkající se místní těžby stříbra a olova.

Pravým Eldorádem pro badatele zabývající se počátky metalurgie stříbra a olova je v této souvislosti sídliště výrobního charakteru Dąbrowa Górnicza-Łosień, které bylo zkoumáno Dariuszem Rozmusem od roku 1999. Bylo zde odkryto velké množství pecí i jiných objektů souvisejících s metalurgickou činností. Z výplně pecí se podařilo získat přibližně 200 kg železné a olověné strusky, díky níž bylo možné identifikovat některé z použitých výrobních postupů.

Dalším působivým objevem na lokalitě Łosień byl hromadný nález stříbrných předmětů nalezený při archeologickém výzkumu. Obsahoval 1100 stříbrných mincí a velké množství stříbrných polotovarů o celkové váze přibližně 2 kg. Převážná většina mincí pochází z období vlády Vladislava II Vyhnance a Boleslava IV Kadeřavého. Výsledky numizmatické analýzy naznačují, že poklad musel být ukryt někdy po letech 1160–1165.

S objevy na lokalitách Strzemieszyce Wielkie a Łosień začal vzrůstat počet sídlišť s doklady hornictví a metalurgie stříbra a olova. Během výzkumu v roce 2004 bylo objeveno raně středověké sídliště Przeczyce. V roce 2009 začal výzkum na lokalitě Sosnowiec-Zagórze, která je známá hlavně jako hradiště. V blízkosti tohoto hradiště bylo odkryto také sídliště výrobního charakteru raně středověkého stáří. Doposud se zde podařilo identifikovat 8 pecí a ohnišť souvisejících s metalurgickou činností.

V roce 2010 bylo během výstavby silnice objeveno sídliště Siewierz, datované do 12. století. Pozůstatky zdejších objektů obsahovaly 4 olověné pruty, každý z nich o váze několika kilogramů.

Výzkumy z posledních let dokládají existenci centra hornictví a metalurgie stříbra a olova, které je datováno do 12. století, podle některých pramenů dokonce už do 11. století. V současnosti je v této oblasti známo 5 sídlišť výrobního charakteru, ale povrchové průzkumy naznačují, že takových lokalit zde bylo více. Na všech archeologicky zkoumaných sídlištích se našly doklady metalurgie (pece, ohniště, výrobní objekty, dýzny, tyglíky atd.) nebo olověné předměty.

LITERATURE

ANDRZEJEWSKA A. (2004): Początki miasta lokacyjnego Bytomia w świetle badań lokacyjnych. – In: D. ABŁAMOWICZ, M. FURMANEK et M. MICHNIK [eds.]: Początki i rozwój miast Górnego Śląska w świetle badań interdyscyplinarnych, Gliwice: 215–220.

AUCH (2012): Wczesnośredniowieczne naczynia szkliwione z terenu zachodniej Małopolski. – Archeologia Polski, 57 (1–2): 199–246.

BODNAR R., KRUDYSZ L., ROZMUS D., SZMONIEWSKI B. (2006): Wczesnośredniowieczna ceramika szkliwiona z Dąbrowy Górniczej - Łośnia. – In: DARIUSZ ROZMUS et BARTŁOMIEJ SZMONIEWSKI: „Skarb hutnika", „Zeszyty Łosieńskie", t. 1, Kraków-Dąbrowa Górnicza.

BODNAR R. et ROZMUS D. (2006): Badania archeologiczne na wczesnośredniowieczny, stanowisku hutniczym w Dąbrowie Górniczej-Łośniu, województwo śląskie. – In: Badania archeologiczne na Górnym Śląsku i ziemiach pogranicznych w latach 2003–2004, Katowice: 150–165.

BODNAR R. et ROZMUS D. (2004): Wczesnośredniowieczne ślady hutnictwa w Dąbrowie Górniczej-Łośniu oraz na obszarach pogranicznych. – In: ROZMUS D. (2004) [ed.]: Archeologiczne i historyczne ślady górnictwa i hutnictwa na terenie Dąbrowy Górniczej i okolic, Kraków: 9-60.

CDS (1857): Codex Diplomaticus Silesiae, t.1, [ed.] W Wattenbach, Breslau.

CHRÓST L. (2013): Ołowiowy ślad istnienia Wiślan odczytany z torfowisk obszaru kruszconośnego śląsko-małopolskiego. – In: Argenti fossores at alii. Znaczenie gospodarcze wschodnich części Górnego Śląska i zachodnich krańców Małopolski w późnej fazie wczesnego średniowiecza (X–XII wiek), Wrocław.

DOBRAKOWSKA T. et DOBRAKOWSKI M. (2013): Osada wczesnośredniowieczna w Siewierzu. – In: Argenti fossores at alii. Znaczenie gospodarcze wschodnich części Górnego Śląska i zachodnich krańców Małopolski w późnej fazie wczesnego średniowiecza (X–XII wiek), Wrocław.

GANO-KOTULA A. (2000): Romańskie relikty w kościołach parafialnych w Łanach Wielkich oraz w Wojkowicach Kościelnych. – In: Europejskie inspiracje w sztuce romańskiej województwa śląskiego, Bytom: 41–42.

HADAMIK C. (2010): Wyniki badań sondażowych na średniowiecznej osadzie produkcyjnej w Rudzie Śląskiej-Kochłowicach, województwo śląskie. – In: Badania archeologiczne na Górnym Śląsku i ziemiach pogranicznych w 2007–2008 roku, Katowice: 113–124.

HADAMIK C. (2013): Archeologiczne badania sondażowe na średniowiecznej osadzie produkcyjnej w Rudzie Śląskiej-Kochłowicach, województwo śląskie, w 2007 roku. – In: Argenti fossores at alii. Znaczenie gospodarcze wschodnich części Górnego Śląska i zachodnich krańców Małopolski w późnej fazie wczesnego średniowiecza (X-XII wiek), Wrocław.

KDKT (1875): Kodeks dyplomatyczny klasztoru tynieckiego. [eds.] W. Kętrzyński et S. Smolka, Lwów.

KIERSNOWSKI R. (1960): Pieniądz kruszcowy w Polsce wczesnośredniowiecznej, Warszawa.

KORUSIEWICZ S. (1990): Dzieje Księstwa Siewierskiego i Siewierza do roku 1900, Piekary Śląskie.

KOSTRZEWSKI J. (1949): Kultura prapolska, Poznań.

KOZŁOWSKI K. (1887): O przemyśle górniczym w dawnej Polsce. Najdawniejsze ślady górnictwa srebrno-ołowiowego w Polsce. – Wszechświat, 19: 293–294.

LINDE S. B. (1860): Słownik języka polskiego. t.6, Lwów.

MOLENDA D. (1963): Górnictwo kruszcowe na terenie złóż śląsko-krakowskich do połowy XVI wieku. – Studia z dziejów górnictwa i hutnictwa, t.8.

OSIŃSKI J. (1782): Opisanie polskich żelaza fabryk, Warszawa.

PIERZAK J. (2000): Osada wczesnośredniowieczna w Dąbrowie Górniczej - Strzemieszycach Wielkich, województwo katowickie. – In: E. TOMCZAK [eds.]: Badania archeologiczne na Górnym Śląsku i ziemiach pogranicznych w 1996 roku, Katowice: 116–119.

ROGACZEWSKA A. (2002): Stanowisko wielokulturowe w Dąbrowie Górniczej-Strzemieszycach Wielkich, województwo śląskie. – In: E. TOMCZAK [eds.]: Badania archeologiczne na Górnym Śląsku i ziemiach pogranicznych w latach 1999–2000: 222–228.

ROGACZEWSKA A. (2004A): Początki metalurgii ołowiu w rejonie Strzemieszyc Wielkich na podstawie badań prowadzonych na stanowisku 2 w okresie dwóch ostatnich lat. – In: D. ABŁAMOWICZ, M. FURMANEK, M. MICHNIK [eds.]: Początki i rozwój miast Górnego Śląska. Studia interdyscyplinarne: 315–326.

ROGACZEWSKA A. (2004B): O początkach hutnictwa metali nieżelaznych na terenie Strzemieszyc Wielkich. – In: D. ROZMUS [eds.]: Archeologiczne i historyczne ślady górnictwa i hutnictwa na terenie Dąbrowy Górniczej i okolic: 69–80.

ROGACZEWSKA A. (2006): Wyniki badań archeologicznych na osadzie wczesnośredniowiecznej (stanowisko 2) w Dąbrowie Górniczej-Strzemieszycach Wielkich, województwo śląskie. – In: E. TOMCZAK [eds.]: Badania archeologiczne na Górnym Śląsku i ziemiach pogranicznych w latach 2003–2004: 147–149.

ROGACZEWSKA A. (2008): Archeologia pogranicza małopolsko-górnośląskiego w rejonie Będzina. – In: M. Z. PULINOWA, J. SPERKA et A.GLIMOS-NADGÓRSKA: Będzin 1358–2008, t. 2: 21–100.

ROŚ J. et ROZMUS D. (2000): Wczesnośredniowieczny piec do wytopu i ołowiu w Dąbrowie Górniczej-Łośniu st. 2. – Sprawozdanie Archeologiczne, 52: 389–403.

ROŚ J. et ROZMUS D. (2002): Badania archeologiczne na stanowisku 2 w Dąbrowie Górniczej-Łośniu, województwo śląskie. – In: Badania archeologiczne na Górnym Śląsku i ziemiach pogranicznych w latach 1999–2000: 290–302.

ROZMUS D. (2004): Wczesnośredniowieczne zagłębie metalurgii srebra i ołowiu. – In: D. ABŁAMOWICZ, M. FURMANEK et M. MICHNIK [eds.]: Początki i rozwój miast Górnego Śląska w świetle badań interdyscyplinarnych, Gliwice.

ROZMUS D. (2009): Próba rekonstrukcji procesu wytopu srebra i ołowiu w XI i XII w. (na przykładzie osady produkcyjnej w Dąbrowie Górniczej-Łośniu). – Archaeologia Historica Polona, 18: 45–55.

ROZMUS D. (2009): Wstępne wyniki badań sondażowych na stanowisku nr 5 Sosnowiec-Zagórze. –In: D. ROZMUS et S. WITKOWSKI [eds.]: Gospodarka nad Przemszą i Brynicą. Od pradziejów do początków XX wieku w świetle badań interdyscyplinarnych, Dąbrowa Górnicza-Olkusz-Sosnowiec: 70–79.

ROZMUS D. et SULIGA I. (2012): Piece i paleniska o przeznaczeniu hutniczym do wytopu ołowiu ze stanowiska nr 5 w Sosnowcu-Zagórzu – wstępne wyniki badań prowadzonych w latach 2009–2010. – Śląskie Prace Prahistoryczne, 7: 250–286.

SUCHODOLSKI S. (1973): Mennictwo polskie w XI i XII wieku, Wrocław.

SZYDŁOWSKA E. (1988): Zagadnienie eksploatacji ołowiu w kulturze łużyckiej w Polsce. – In: Surowce mineralne w pradziejach i we wczesnym średniowieczu Europy Środkowej. – Prace Komisji Archeologicznej PAN: 41–52.

SZYDŁOWSKI J. (1966): Bytom. Pradzieje i początki miasta. Rocznik Muzeum Górnośląskiego w Bytomia. – Archeologia, t. 4: 85–86.

SZYDŁOWSKI J. (1967): Rozwój przestrzenny i zabudowa Bytomia do schyłku XIV wieku, Kraków.

TOKAJ J. (2009): Wyobrażenie gryfa na kaptordze z cmentarzyska w Dąbrowie Górniczej – Strzemieszycach Wielkich. – In: D. ROZMUS et S. WITKOWSKI [eds.]: Gospodarka nad Przemszą i Brynicą. Od pradziejów do początków XX wieku w świetle badań interdyscyplinarnych, Dąbrowa Górnicza-Olkusz-Sosnowiec.

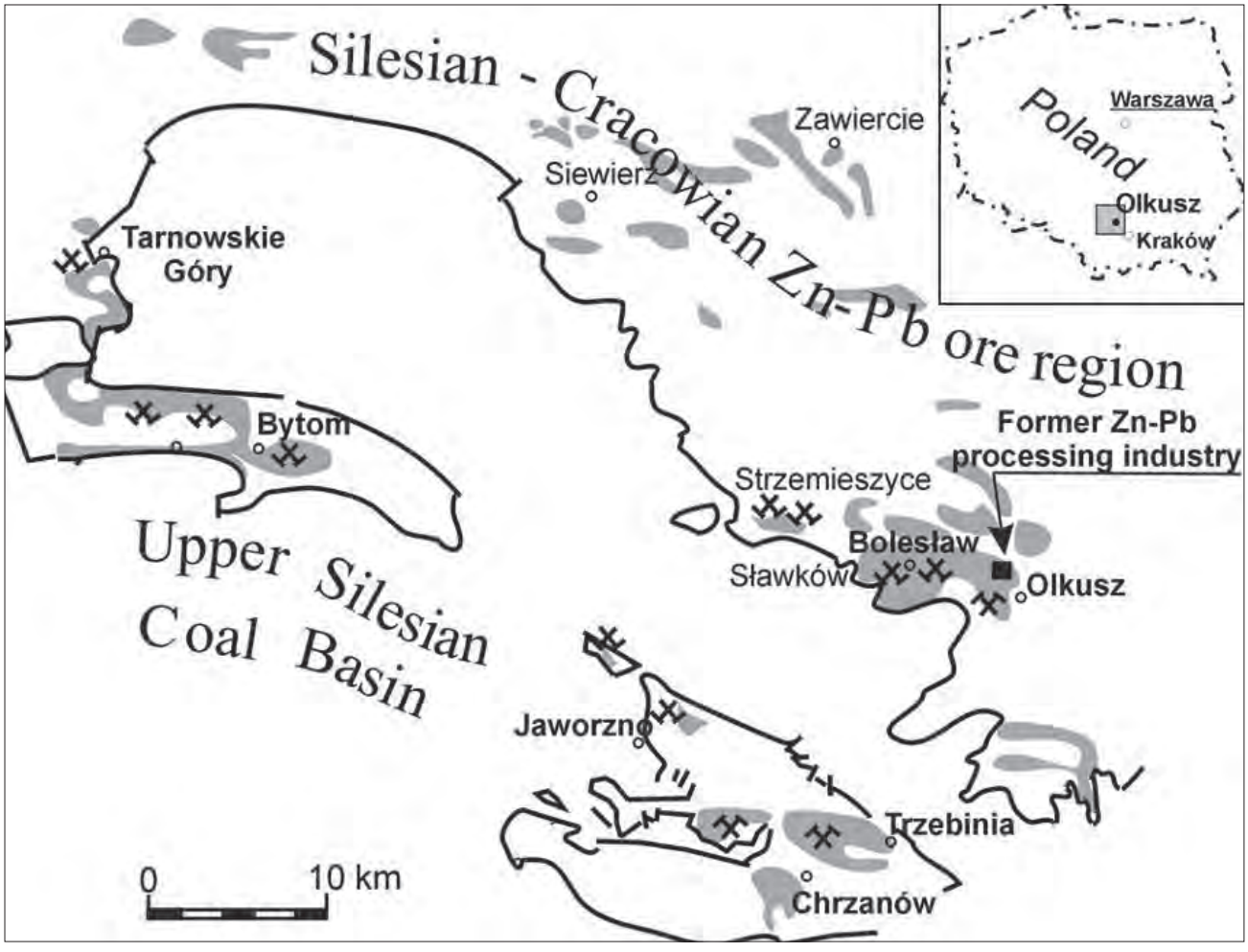

Fig. 1. Location of the Centre of mining and metallurgy of silver and lead. (after Cabała, Zogała, Dubiel 2008)
Obr. 1. Umístění střediska těžby a metalurgie stříbra a olova.

Fig. 2. Glazed ceramics from Dąbrowa Górnicza-Strzemieszyce. Photo D. Rozmus.
Obr. 2. Glazovaná keramika z Dąbrowa Górnicza-Strzemieszyce. Foto D. Rozmus.

Fig. 3. Reconstruction of lead smelting kilt (Muzeum Sztygarka w Dąbrowie Górniczej).
Obr. 3. Rekonstrukce olověné pece (Muzeum Sztygarka w Dąbrowie Górniczej).

Fig. 4. Examples of iron weights plated bronze and brass. Photo I. Stanisławski.
Obr. 4. Příklady železných závaží pokovených bronzem a mosazí. Foto I. Stanisławski.

Fig. 5. The discovery of lead bars on the settlement in Siewierz. Photo J. Pierzak.
Obr. 5. Objev olověných tyčí na sídlišti v Siewierz. Foto J. Pierzak.

Fig. 6. The grave of the cemetery in Dąbrowa Górnicza-Strzemieszyce. Photo NAC.
Obr. 6. Hrob na hřbitově v Dąbrowa Górnicza-Strzemieszyce. Foto NAC.