NOTAE NUMISMATICAE
ZAPISKI NUMIZMATYCZNE

Tom XIV

MUZEUM NARODOWE W KRAKOWIE
SEKCJA NUMIZMATYCZNA
KOMISJI ARCHEOLOGICZNEJ PAN
ODDZIAŁ W KRAKOWIE

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Stefan Skowronek (1928–2019) podczas wykopalisk archeologicznych w Egipcie (1960/1961)
Ze zbiorów Ośrodka Dokumentacji Filmowej Nauki Polskiej Uniwersytetu Pedagogicznego w Krakowie

Stefan Skowronek (1928–2019) during archaeological excavation in Egypt (1960/1961)
From the Center of Visual Documentation of Polish Science (Pedagogical University of Cracow)

Szanowni Państwo,

oddajemy w Państwa ręce tom XIV *Notae Numismaticae – Zapisków Numizmatycznych*. Zgodnie z przyjętymi przez nas zasadami wszystkie teksty publikujemy w językach kongresowych, z angielskimi i polskimi abstraktami. Polskojęzyczne wersje tekstów odnoszących się w większym stopniu do zainteresowań czytelnika polskiego są zamieszczone w formie plików PDF na stronie internetowej Muzeum Narodowego w Krakowie (https://mnk.pl/notae-numismaticae-zapiski-numizmatyczne-1). W podobny sposób udostępniamy cały obecny tom oraz tomy archiwalne. Na stronie internetowej dostępne są ponadto wszelkie informacje ogólne o czasopiśmie oraz instrukcje dla autorów i recenzentów.

11 czerwca 2019 r. w wieku 91 lat odszedł prof. dr hab. Stefan Skowronek (1928–2019), nestor polskiej numizmatyki, wieloletni pracownik i kierownik Gabinetu Numizmatycznego Muzeum Narodowego w Krakowie, wybitny znawca numizmatyki antycznej, wykładowca i pracownik Uniwersytetu Pedagogicznego w Krakowie, wykładowca Uniwersytetu Jagiellońskiego, członek wielu towarzystw i organizacji naukowych, w tym członek honorowy Sekcji Numizmatycznej Komisji Archeologicznej Polskiej Akademii Nauk Oddział w Krakowie.

Jego pamięci poświęcamy XIV tom *Notae Numismaticae – Zapisków Numizmatycznych*, czasopisma, które mocno wspierał jako autor i członek Komitetu Naukowego.

Redakcja

Dear Readers,

It is with great pleasure that we present volume XIV of *Notae Numismaticae – Zapiski Numizmatyczne* to you. In accordance with the principles that we have adopted, our texts are published in the conference languages with English and Polish abstracts. The Polish-language versions of the texts that are more relevant to the interests of the Polish reader can be found as PDFs on the website of the National Museum in Krakow (https://mnk.pl/notae-numismaticae-zapiski-numizmatyczne-1). Similarly, the whole of the present volume is available online, as are previously published volumes of the journal. The website also contains general information about the journal as well as information for prospective authors and reviewers.

Prof. Dr. Hab. Stefan Skowronek (1928–2019), the doyen of Polish numismatics, died on June 11, 2019, at the age of 91. For many years, he worked as an employee – and then as head – of the Numismatic Cabinet at the National Museum of Krakow. He was also a lecturer and employee of the Pedagogical University of Krakow, a lecturer at the Jagiellonian University, and a member of numerous scientific societies and organizations, having honorary membership status at the Krakow branch of the Numismatic Section of the Polish Academy of Sciences' Commission on Archaeology.

It is to his enduring memory that we dedicate volume XIV of *Notae Numismaticae – Zapiski Numizmatyczne*, a journal that he helped to support as both an author and as a member of the Scientific Committee.

The Editors

Tom XIV
Kraków 2019
NOTAE NUMISMATICAE
ZAPISKI NUMIZMATYCZNE

DARIUSZ ROZMUS
Humanitas University in Sosnowiec
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Early Medieval Lead "Weights" from Młoszowa (near Trzebinia)

ABSTRACT: Early medieval lead weights from Młoszowa (near Trzebinia), Lesser Poland Voivodeship, are further examples of finds of artefacts of this type from the lands of Poland, Bohemia, Slovakia, and Moravia. They appear in various archaeological contexts, and the function they served has been interpreted in many different ways. So far, however, they have not been adequately described or catalogued. From melted lead, a great deal of weights in various shapes were produced. Most of these have holes, which may have been used to group the weights into bunches. We know of ring-shaped weights, conical weights, and barrel-shaped weights. Artifacts in the shape of billets have been counted among them, as have very thin round plates with a hole in the center. The discussion as to the function of these artefacts is ongoing.

KEY WORDS: Młoszowa (near Trzebinia), lead "weights", early medieval archaeological sites in the district of silver and lead metallurgy, the borderland between Silesia and Lesser Poland

ABSTRAKT: *Wczesnośredniowieczne „ciężarki" ołowiane z Młoszowej k. Trzebini*

Wczesnośredniowieczne ciężarki ołowiane z Młoszowej k. Trzebini (woj. małopolskie) to kolejne znaleziska tego typu zabytków odkrytych na terenach Polski, Czech, Słowacji i Moraw. Pojawiają się one w różnym kontekście archeologicznym, a interpretacja ich funkcji jest bardzo zróżnicowana. Nie zostały jednak dotychczas w dostateczny sposób opisane i skatalogowane. Z wytopionego ołowiu produkowano bardzo liczne i różne w swoich kształtach ciężarki, z których większość ma otworki umożliwiające łączenie ich w pęki. Znane są formy pierścieniowate, stożkowate, beczułkowate. Zaliczono do nich także zabytki w kształcie sztabek

oraz cieniutkich okrągłych blaszek z otworem w środku. Wciąż trwa dyskusja dotycząca ich funkcji.

SŁOWA KLUCZOWE: Młoszowa k. Trzebini, ołowiane „ciężarki", wczesnośredniowieczne stanowiska archeologiczne na obszarze zagłębia hutnictwa srebra i ołowiu, pogranicze śląsko-małopolskie

Early medieval lead weights make up a category of artefacts that have been found in Central Europe and Scandinavia.[1] They appear in various archaeological contexts, and the function they served has been interpreted in many different ways. To date, however, they have not been adequately described or catalogued. From melted lead, a great deal of weights in various shapes were produced. Most of these have holes, which may have been used to group the weights into bunches. We know of ring-shaped weights, conical weights, and barrel-shaped (cylindrical) weights. They have also taken the form of billets or even very thin round plates with a hole in the center, ones with a weight of 1.9 g.[2] It needs to be emphasized that in rare circumstances artifacts in this category may be mistaken for lead shots.

Kazimierz Wachowski has rightly observed that there is no definition of the concept of a "weight" in the archaeological literature, nor, in keeping with this, do we have a list of characteristics that would allow us to differentiate weights from the entire group of similar objects.[3] It is the opinion of the author of the present article that this term should be understood such that a "true" weight is used mostly (with an emphasis on mostly) as a weight. To take an example, weights that have neither a hole nor a handle (for example, iron weights encased in bronze) cannot be used as sinkers. The kind of weight that we are concerned with in this article, that is, an artifact with holes or handles, can be a sinker, but – if its weight is correlated with the units of weight in use at a given moment in history – it can also be used as a commercial weight.

The weights in this article (Tables 1 and 2) come from the village of Młoszowa, which is near Trzebinia (Plate 3) in Lesser Poland Voivodeship. Młoszowa is located near an area that has been recognized over the last twenty years as an early medieval (early Polish) district of silver and lead metallurgy. It was located in the borderland of present-day Lesser Poland and Upper Silesia.[4] These weights are further examples of the artefacts of this type that have been announced and published within the last ten years. This group includes both stray finds (Malinowice, Psara District;[5] Kuźnica

[1] JANKUHN 1943: 189, 192; SZAFRAŃSKI 1948: 93.

[2] ROZMUS 2014: 216, ill. 208.

[3] WACHOWSKI 1974: 173.

[4] ROZMUS 2004: 301–315; IDEM 2014; IDEM 2016b; GARBACZ–KLEMPKA and ROZMUS 2015: 17–20.

[5] Polish Archaeological Record, Working area 95, site 49. ROZMUS 2016a: 263–274.

Błędowska, Dąbrowa Górnicza;[6] Jaworzno[7]) as well as ones from archaeological research sites in the following places: Łosień, Dąbrowa Górnicza;[8] Strzemieszyce Wielkie, Dąbrowa Górnicza;[9] Zagórze, Sosnowiec;[10] and Stare Bukowno.[11]

Archaeological sites located in the above-mentioned metallurgical district indicate that local ores were smelted, mainly galena (PbS) and lead, and that lead monoxide (litarge, Pb0)[12] and silver were produced. Litarge was used in the glazing process of ceramics.[13] In 2006 at the production settlement in Łosień, Dąbrowa Górnicza, discovery was made of a so-called "foundry hoard", that is, a deposit of more than a thousand silver coins and about 2 kg of silver in clumps. The hoard was studied and a monograph was published[14] as were works discussing artistic phenomena related to the monetary iconography.[15]

It is unclear how the weights were found. According to word of mouth, they were taken from an arable field – from plot number 1059/71 (Plate 3). Here, early medieval ceramics were found during a survey of the land conducted by Marek Szymaszkiewicz, M.A., from the Department of Archaeology at the Irena and Mieczysław Mazaraki Museum; Piotr Kolasa, M.A.; and Dr. hab. Dariusz Rozmus from the Department of Archaeology at the Sztygarka Municipal Museum in Dąbrowa Górnicza. In addition to the weights under discussion in this article, numerous lead castings were found in this area. These artefacts are now located in the Sztygarka Municipal Museum in Dąbrowa Górnicza. The site was reported to the Provincial Monument Preservation Office in Krakow. At the present moment, there is no evidence that would suggest that the collection of weights was discovered by a detectorist. No one has admitted to having searched for these objects, which were discovered years ago; however, it is probable that this was the case.

[6] *Ibidem*: 263–274.

[7] ROZMUS and SZMONIEWSKI 2013: 15–25.

[8] ROZMUS and BODNAR 2004: 61–68; RYBAK, ROZMUS and BODNAR 2005: 34–38, ill. 41–56; ROZMUS 2014: 215–223.

[9] ROGACZEWSKA 2002: 224, ill. 3:a.

[10] ROZMUS 2012: 42–49.

[11] IDEM 2016a: 263–274.

[12] During excavations at the Małgorzatka hillfort in Bytom, dated to the period between the 10th and 12th centuries, heavy lumps of litarge (PbO) were found. W. PASTUSZKA, *W Bytomiu odkryto pozostałości grodu*, in *http://archeowiesci.pl/2014/10/20/w-bytomiu-odkryli-pozostalosci-grodu/*, accessed on October 20, 2014. The University of Silesia has even made a film about it – available online. cf. Dr. inż. Renata Baranowska (Medical University of Silesia), Dr. hab. Piotr Boroń (University of Silesia), Dr. Grzegorz Dziubanek (Medical University of Silesia), Marcin Paternoga, M.A. (Armaja), *Ocena zanieczyszczenia metalami ciężkimi nawarstwień kulturowych wczesnośredniowiecznego grodziska na Wzgórzu Małgorzaty w Bytomiu*. Presentation given on September 21, 2017 at an Upper Silesian archaeology conference on the 20th Anniversary of the Death of Prof. Jerzy Szydłowski.

[13] BODNAR et AL 2006; AUCH 2016; ROZMUS and GARBACZ-KLEMPKA 2017: 261–285.

[14] ROZMUS, SUCHODOLSKI and TOKAJ 2014.

[15] ROZMUS and TOKAJ 2010; ROZMUS 2012; ROZMUS and TOKAJ 2017: 38–50.

The illegal search for artefacts is a very difficult problem to solve. It is commonly believed that it is admissible to search for treasures (hoards) and the discovery of something valuable is a natural bonus resulting from such activities.[16] Because the use of metal detectors to search for artefacts is now a common occurrence in Europe, different countries (and, with regard to Germany, even different states) have developed different legal strategies to deal with this phenomenon. The things that treasure hunts do can be advantageous, or they can result in huge losses for archaeology. Not only does it depend on the legal regulations, but it also depends on the work done by conservation offices and the level of consciousness of the people who take part in these searches. It is a complicated matter and it has been discussed from numerous points of view.[17]

At present it is unclear what role the artefacts under discussion in this text played.[18] They have often been interpreted as sinker stones, that is, hook or line sinkers.[19] However, there are many arguments against their having played a role in fishery. Examples in the form of very thin lead plates with a weight of barely 1–2 g are known from both the lands of Poland and Bohemia.[20] For similar reasons, it does not seem right to treat these artefacts as loom weights. Heavy "weights" would have ripped through the thread, and what could ones weighing hardly two grams have been used for? Likewise, it is unlikely that these artefacts were used as plummets.[21] Some of the "weights" do not even have a hole for fastening (Table 2, nos. 9, 11, 12, 13, 14); thus, how can they be made into sinker stones or plummets? In addition, some of them have markings, e.g. in the shape of an X (Table 2, no. 14). The use of a plummet in settlements in which wooden (and earthen) dwellings were dominant would seem to be pointless. A strongly flattened oval plate made of lead with a drilled-in hole from an early medieval cemetery in Strzemieszyce Wielkie has been interpreted as possibly being a decoration because this artefact was discovered near the neck together with glass beads. It has thus been regarded as pendant.[22] This is the only instance in which such an artefact has been interpreted in this way.

One of the hypotheses that we can examine concerning the role played by artefacts of this type is that they were used as a form of nonmonetary money, that is, as commodity money. This hypothesis is inspired by a fragment of a report made

[16] ROZMUS 2017: 11–19.

[17] SCHUSTER 2017: 19–31; TRZCIŃSKI 2017: 33–45; CARNAP-BORNHEIM, ICKERODT and SIEGLOFF 2017: 13–18.

[18] ROZMUS 2014: 215–223, ills. 208, 210, 211, and 212.

[19] HENSEL 1987: 157, ill. 74, nos. 8 and 9; KOSTRZEWSKI 1939: 64; IDEM 1967: 457.

[20] ROZMUS 2014: ill. 208; BLÁHA, HEJHAL and SKALA 2013: 300, ill. 6.

[21] FOGEL 1991: 112.

[22] MARCINIAK 1960: 171. After seeing the monument, you can agree with the opinion of Marciniak. The monument is in the Collection of the Museum in Bytom.

by Ibrahim ibn Yaqub on Mieszko's state: "The taxes [or fees] collected by him [Mieszko] [consist in] commercial weights…"[23] The perspective presented here, which the author of this article and others (Szmoniewski, Zaborski, Bodnar, Firlet, and others) have already advanced for a few years now, is that these lead weights served many functions. We also hold that they may have been used as substitute money.[24] Some of these weights are discs with a hole in the center; this would have made it possible to tie the weights into bunches in much the same way as this was done, for example, with Chinese coins. This would have greatly facilitated their transport and storage. The problem is that while this relation comes from the 10th century, the weights were found in cultural layers dating, among others, to the 11th century (e.g. the cemetery in Strzemieszyce Wielkie, Dąbrowa Górnicza) or to the 12th century (Łosień, Dąbrowa Górnicza). Thus, it is worth inquiring what, in essence, these small lead objects were.

1) Do they form a category of artefacts that, while having the same function, differs with regard to the shape and weight of the individual artefacts?

2) Do they have something in common with a system of payments?

Above all, the objects described here as lead "weights" come from early medieval cultural layers. They were found in the main centers of early medieval Poland, some of which belonged to the so-called *Civitates Principales*.[25] They have been discovered in a number of cities, including the following: Gniezno; Poznań; Ostrów Lednicki; Płock; Bytom; Zawodzie, Kalisz; Łęczyca; Wrocław; Bytom Odrzański; Kraków; Cieszyn; Biskupin; Kałdus. A review of the archaeological literature referring to the sites at which the lead weights were found is presented in a monograph devoted to this category of artefacts.[26]

Lead "weights" are most often found at sites connected to the early medieval production of silver and lead, that is, within the region, mentioned above, of the early Polish district of silver and lead metallurgy. This is not surprising because it is in these places that these "weights" were produced. In addition, these artefacts are found on archaeological sites that are connected to places of a commercial character.[27] These weights are also found in archaeological cultural layers together with coins. However, what is meant here are both true weights (barrel-shaped weights, cubo-octahedral weights, certain bronze-plated iron weights) and the lead "weights"

[23] KOWALSKI 1946: 50.

[24] ROZMUS and BODNAR 2006: 154, footnote 6; FIRLET 2006: 424; BODNAR, ROZMUS and SZMONIEWSKI 2007.

[25] JANIAK and STRYNIAK 1998: 22, 42, 65, and 99.

[26] BODNAR, ROZMUS and SZMONIEWSKI 2007.

[27] Numerous weights were also attained during archaeological investigations in Opole (in Ostrówek), where, according to the archaeologist Hołubowicz (1953: 47), "they could have been lost by itinerant traders".

under discussion in this text. Many researchers have expressed the opinion that there is a direct tie between these artefacts and early medieval trade.[28] "Weights" are also known from burial gifts.[29] Burials with weights are interpreted as the graves of people who were involved in trade.[30] One can also assume that their finds are grouped around trade routes.[31]

Recently, a large number of artefacts of this type were uncovered in the south of Moravia and in Bohemia.[32] Most of the weights have a form that is not only similar but downright identical to the shapes of the "weights" known from the lands of Poland, including, of course, those from Dąbrowa Górnicza and Sosnowiec. Czech researchers theorize that the lead "weights" could have come from within Poland.[33] That this thesis is true is supported by research on the isotopes of the lead; according to this research, these lead artefacts from finds in early medieval Prague were made out of lead which originated from the smelting of lead ores from deposits from ore-bearing dolomite outcrops from Silesia and Lesser Poland.[34]

At the current state of research, it is difficult to unambiguously and definitively state whether "weights" in the form of lead discs and cones played the role of nonmonetary money – *mercantile miskals*.[35] However, there is no lack of opinions that this was indeed the case. According to the Orientalist A. Zaborski, lead weights could have played the role of so-called exagia (from the Latin word *Exagium*: *weighing*, *test of weight*), that is, metal weights used to weigh coins that could have been and "even must have played the role of substitute money".[36]

It will not be possible to determine the function served by these metal objects described as "weights" unambiguously until further discoveries are made; we also need to make a thorough analysis of the artefacts that have been found in the lands of Poland, taking into account all the metric data. The "weights" described in this

[28] WACHOWSKI 1974: 191–193; MOŹDZIOCH 2002: 156 and others.

[29] ABRAMOWICZ et AL 2003: 42, 49, 65–66; MARCINIAK 1960: 171.

[30] KAŹMIERCZYK 1969: 145, 159–160.

[31] Such is the conclusion that a Czech researcher comes to based on his observations. I obtained this information from a conference lecture. Cf. Jan Mařík's presentation, which is titled *Non-ferrous metals and their processing on the Early Medieval stronghold of Libice*, from the International Conference Silver in Early Medieval Central Europe PAN Warsaw, November 30, 2017 to December 1, 2017.

[32] BIERMANN and MACHÁČEK 2012: 183; MACHÁČEK and MECHURA 2013: 275–288.

[33] Cf. Jiří Macháček's presentation *"Raně středověká tržní osada v Kosticích (jižní Morava)– stříbro, olovo"*, and R. Bláha, P. Hejhal, and J. Skala's presentation *"Nálezy olověných artefaktů z lokality Roudnice a okolí (11. Století, východní Čechy)"*, given at the conference titled *Argenti fossores et alii – znaczenie gospodarcze wschodnich części Górnego Śląska i zachodnich krańców Małopolski w późnej fazie wczesnego średniowiecza (X–XII wiek)*, which took place in Katowice from October 24 to October 25, 2012.

[34] ETTLER et AL 2015: 72–83.

[35] Formed on the basis of Arabic, the word translated as *mercantile* was used in an Arabic chronicle. It was Ibrahim ibn Yaqub – a Radhanite, a Jew from Tortosa, a merchant, a traveler, and probably an intelligence agent in the service of Arabic rulers – who informed the world at that time that such a currency no doubt existed.

[36] ZABORSKI 2008: 50.

article come in all different weights. The lightest "weight" belonging to the category of conical weights has a weight of 6.43 g (Table 1, no. 1; Plate 1, no. 1); the lightest belonging to the ring-shaped (disc-shaped) weights, a weight of 5.52 g (Table 1, no. 18; Plate 1, no. 18). The heaviest lead (barrel-shaped/cylindrical) weight has a weight of 64.47 g (Table 2, no. 15; Plate 2, no. 15).

Lead weights were used in Europe during a period in which a mixed system of weights existed, one that was tied, at the same time, to the systems used in Western Europe, Scandinavia, and the Orient. A discussion of the ties and of the proposals for interpreting the weights in the different systems can be found in the work titled *Wczesnośredniowieczne odważniki z Dąbrowy Górniczej-Łośnia*… [Early Medieval Weights from Dąbrowa Górnicza].[37] This, however, was only a research proposal. Not until we catalogue and conduct binding research on a very large number of these artefacts will it be possible to give – or at least come close to giving – an answer as to the function of these artefacts.

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[37] BODNAR, ROZMUS and SZMONIEWSKI 2007.

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TABLE 1

The list of features of these lead artefacts includes a description of each artefact as well as its weight, height, and width, measured from the points farthest from each other. Wherever possible, the width of the weight's hole has also been provided at its widest point. The numbers in the table correspond to the numbers in the text of the article and on PLATE 1. Photo: Piotr Kolasa

No.	Weight (g)	Height (cm)	Width (cm)	Width of the hole (cm)	Description of the artefact
1	6.43	1.1	1.4	0.8	Ring-shaped weight
2	19.01	1.5	1.6	1.1	Barrel-shaped weight
3	9.01	1.0	1.6	0.8	Ring-shaped weight
4	17.27	1.3	2.2	1.0	Conical weight. Deformed
5	8.57	0.8	1.8	1.0	Ring-shaped weight
6	17.34	1.4	2.1	0.9	Conical weight. Deformed
7	13.33	1.0	1.8	0.8	Ring-shaped weight
8	16.72	1.9	1.8	1.0	Barrel-shaped weight
9	10.30	1.3	1.7	1.0	Conical weight (oblate)
10	33.85	1.3	2.4	0.6	Conical weight (oblate)
11	11.89	1.0	1.9	1.2	Ring-shaped weight. Deformed
12	19.87	1.2	2.0	1.1	Ring-shaped weight
13	16.28	0.7	2.1	1.0	Ring-shaped weight
14	10.75	1.0	1.9	1.0	Ring-shaped weight. Deformed
15	9.01	0.6	2.2	1.3	Ring-shaped weight
16	15.54	1.0	1.9	0.7	Ring-shaped weight
17	14.92	0.9	2.1	0.8	Ring-shaped weight
18	5.52	0.3	2.0	0.9	Ring-shaped weight

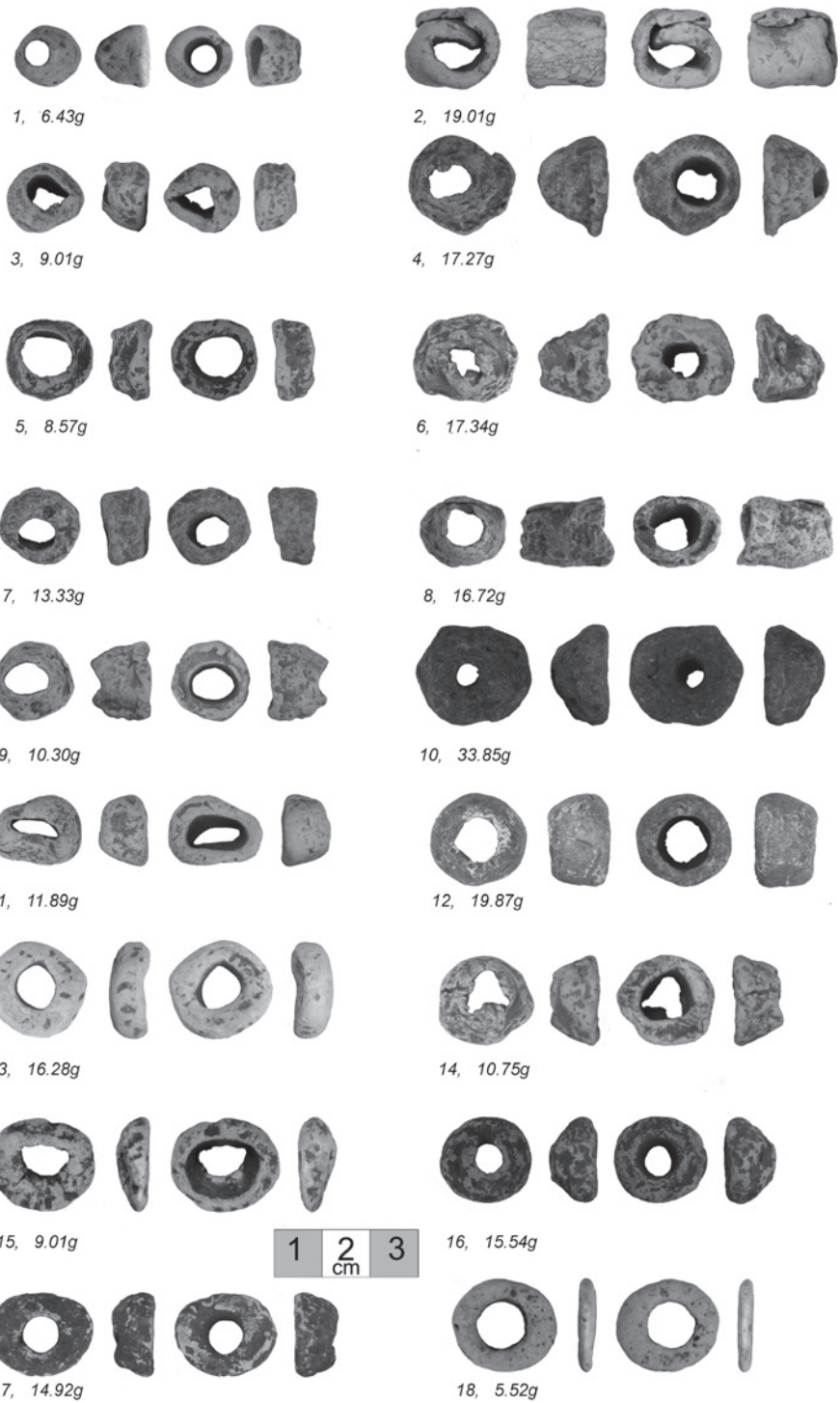
1, 6.43g
2, 19.01g
3, 9.01g
4, 17.27g
5, 8.57g
6, 17.34g
7, 13.33g
8, 16.72g
9, 10.30g
10, 33.85g
11, 11.89g
12, 19.87g
13, 16.28g
14, 10.75g
15, 9.01g
1 2 3
cm
16, 15.54g
17, 14.92g
18, 5.52g

TABLE 2

The list of features of these lead artefacts includes a description of each artefact as well as its weight, height, and width, measured from the points farthest from each other. Wherever possible, the width of the weight's hole has also been provided at its widest point. The numbers in the table correspond to the numbers in the text of the article and on PLATE 2. Photo: Piotr Kolasa

No.	Weight (g)	Height (cm)	Width (cm)	Width of the hole (cm)	Description of the artefact
1	54.37	1.8	2.7	1.5	Conical weight. Slightly deformed
2	30.00	1.1	2.9	1.8	Ring-shaped weight. Slightly deformed
3	30.81	2.0	2.3	1.0	Conical weight. Deformed
4	19.87	0.9	2.4	0.9	Ring-shaped weight. Slightly deformed
5	47.96	2.1	2.8	1.1	Ring-shaped weight
6	19.94	0.8	2.1	0.9	Ring-shaped weight
7	33.76	2.1	3	1.3	Conical weight. Deformed
8	18.37	0.7	2.1	0.9	Ring-shaped weight
9	19.00	2.2	1.3	–	Presumed to be a weight
10	16.11	0.7	2.1	0.8	Ring-shaped weight
11	20.12	1.9	1.3	–	Presumed to be a weight
12	29.15	1.1	2.4	–	Ring-shaped weight (deformed; no hole)
13	14.60	1.4	1.5	–	Presumed to be a weight
14	13.86	1.4	1.4	–	A ring-shaped weight without a hole. It is marked by the X that can be found on it.
15	64.47	1.7	2.9	–	Barrel-shaped weight. This weight has a hole but because it is deformed, it is not possible to measure its width.

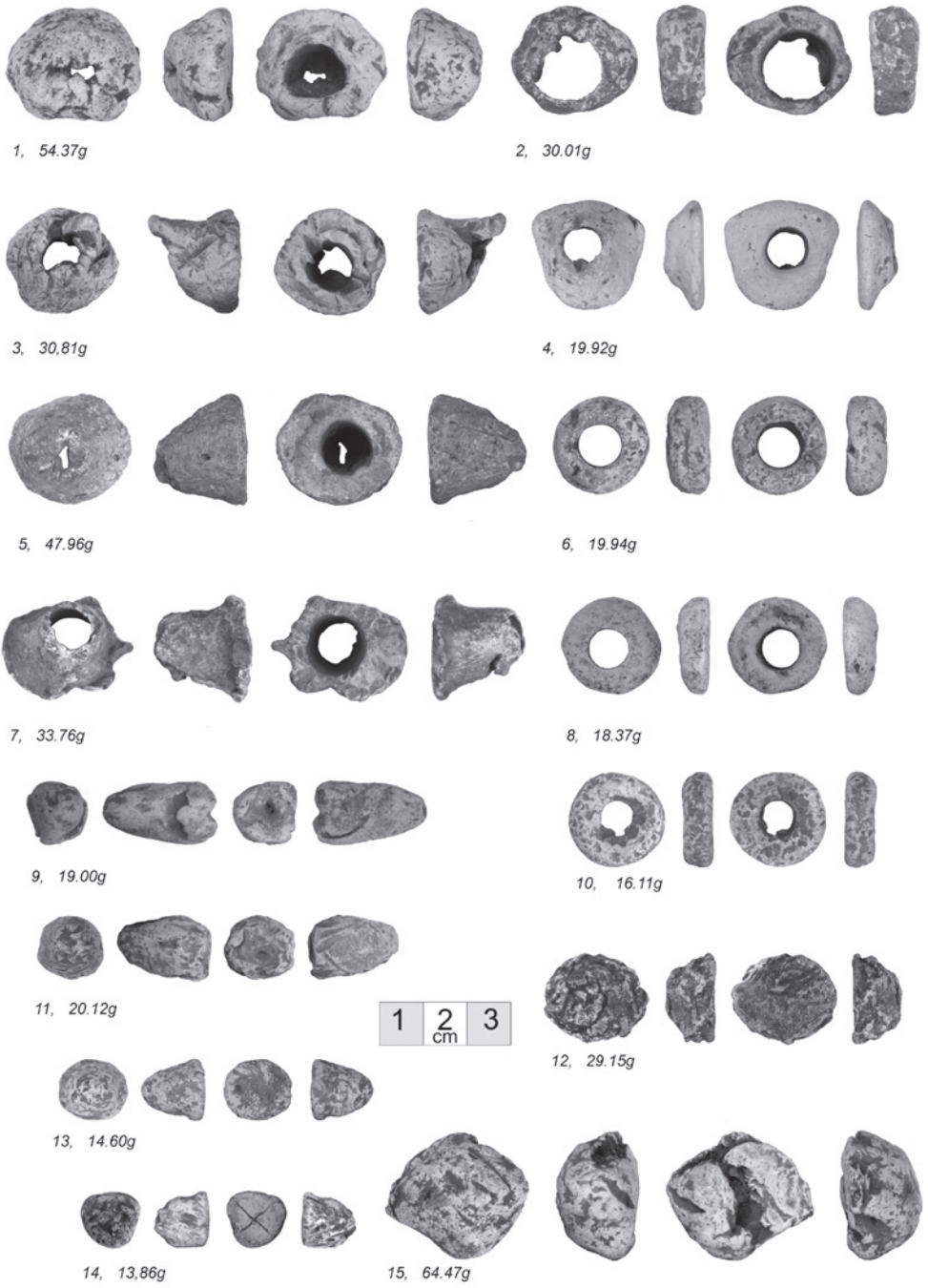
1, 54.37g
2, 30.01g
3, 30,81g
4, 19.92g
5, 47.96g
6, 19.94g
7, 33.76g
8, 18.37g
9, 19.00g
10, 16.11g
11, 20.12g
1 2 cm 3
12, 29.15g
13, 14.60g
14, 13,86g
15, 64.47g

Fig. 1. The view of Młoszowa village, near Trzebinia, Lesser Poland Voivodeship. Author: Dariusz Rozmus