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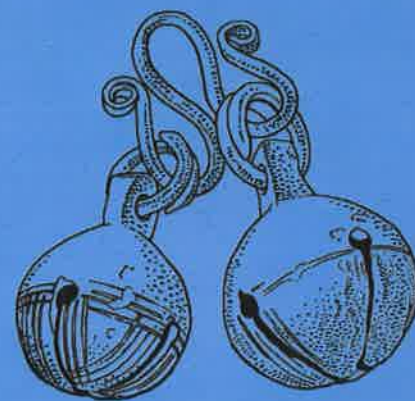
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НОВГОРОД И НОВГОРОДСКАЯ ЗЕМЛЯ

ИСТОРИЯ И АРХЕОЛОГИЯ



ВЕЛИКИЙ НОВГОРОД • 2011

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PELLET BELLS OF LATE IRON AGE FINLAND: LOCAL PRODUCTS AND EASTERN IMPORTS

Introduction

Nearly every year archaeological excavations in Finland bring forth fragmentary metal artefacts that resemble traditional pellet bells or sleigh bells. The artefacts consist of more or less globular bodies, sound holes and loose pellets that dash against the inner walls. In several cases the sound is still audible. These sound-producing devices number at least 308 in Finnish finds. They have been found in all centres of habitation dating from the 10th–12th centuries AD, i.e. from the period of Late Iron Age. This points to the conclusion that the artefacts were in regular and established use, embellishing or manipulating the soundscape of the time.

During the past years, I have studied these previously unexplored pellet bells – as well as other types of Finnish Iron Age bells – for my doctoral thesis (Rainio 2010). The thesis contributes to the field of music archaeology (cf. Hickmann 1997; Hickmann 2000). I have catalogued and documented all the Finnish finds and investigated them by means of cluster analysis, sound analysis, elemental analysis, ethnological analogy and contextual archaeological methods. I have limited this paper to the field of typology. My purpose is to display the Finnish material in outline and to show how the material forms into groups and subgroups. My other purpose is to present the material as a supplement to the earlier papers by Malm & Fehner (1967), Ryndina (1963), Sedova (1981), Gräslund (1984), Malinowski (1994) and Povetkin (2009) on pellet bells in neighbouring countries. About a thousand years ago, the pellet bells seem to have been fairly popular throughout North and Eastern Europe.

The classification of the Finnish pellet bells, presented here, was made mainly statistically. At the first stage of the classification, I measured, observed and photographed the artefacts at the National Museum

of Finland and at several provincial museums. Then I coded the most relevant observations into numerical variables, fed them into a matrix file and analysed the information with the Two-Step Cluster Analysis procedure (APPENDIX, SPSS 2001). Since the types separated by cluster analysis are hypothetical, I revised the classification by means of the find contexts of the artefacts: by comparing the computed clusters chronologically and geographically. Finally, it was possible to integrate some of the clusters into larger entities, which represent ancient styles or manufacturing traditions. The alloy of thirteen pellet bells was analyzed by mineralogist Seppo Hornytzkjy with an EDXRF spectrometer.

Clusters 1 and 2

The pellet bells belonging to clusters 1 and 2 are globular or a little bit flat in shape (FIG. 1, 2, TAB. 1). Their bodies have been decorated with ringed dots and equipped with two crossing slits that serve as sound holes. It seems that the artefacts have been cast and finished carefully after the casting. Visible joints, however, reveal that the suspension loops in cluster 2 have been bent from a separate metal rod. According to the elemental analysis, the alloy consists of copper and lead. All pellets are of iron.

The pellet bells in clusters 1 and 2 have distinctly different patterns of distribution, which do not overlap. The former type can be found in the historical provinces of Finland Proper and Satakunta, the latter type in the historical province of Tavastia. Since there are only one or two foreign parallels (Gräslund 1984, 122, Fig. 13: 1), these bells seem to be of local manufacture, made probably by a limited number of craftsmen who worked on their own models somewhere in southwestern and interior parts of Finland. Both types can be dated to the end of the 10th century or the beginning of the 11th century.

Clusters 3 and 4

The pellet bells belonging to clusters 3 and 4 are either angular or globular, and equipped with either one or two slits that serve as sound holes (FIG. 3, 4, TAB. 1). In spite of this heterogeneity, the types still have a lot in common. Casting seams on the opposite sides of the bodies indicate that these bells have been cast in two-part outer moulds and left untouched after the casting. Decoration has been carried out by pressing the line ornaments to the moulds. According to the elemental analysis, the bells and their pellets have been made of an alloy, which contains copper, tin and lead.

The pellet bells in clusters 3 and 4 can be found throughout the country. Archaeological parallels are known from Western and Central Russia, the Ukraine, Estonia, Latvia, Lithuania, Poland and Sweden (e.g. Ryndina 1963, 244–247, Ris. 24: 2, 3; Malm & Fehner 1967, 136–137, 142–147, Ris. 20: 1, 3, 21; Jaanusson 1971, 99–104, fig. 2; Apals *et al.* 1974, att. 145: 6, 7, T. 49: 1, 53: 6, 56: 1, 61: 1; Sedova 1981, 156, Ris. 62: 1–8; Malinowski 1994, Fig. 3: 16, 10: 1–4, 8: 1–3; Mägi 2002, Pl. 19: 6, 26: 1, 33: 3, 6, 7, 85: 9; Povetkin 2009, Ris. 1: 1–12). The distribution pattern and similar alloys found in the Russian finds (Konovalov 1972, 152, Ris. 2, Tab. 1, 2) suggest that these bells were mass-produced articles spread by traders, travelers, warriors or itinerant craftsmen. According to Ryndina (1963, 244–247), their main centre of manufacturing was in Novgorod, where it was customary to copy artefacts using two-part outer moulds. In Finland, the types can be dated to the 11th and the beginning of the 12th century.

Cluster 5

The pellet bells in cluster 5 are angular or pyramidal in shape (FIG. 5, TAB. 1). The body has been made of a plate by shearing it in the shape of a star and bending the points down. The suspension loop has been made of a separate metal rod, which has been bent into a curve and stuck in through a hole in the body. The details, however, vary from specimen to specimen. Half of the artefacts seem to be corroded by iron rust and the rest by copper rust. Pellets are of iron or stone.

The area of distribution for these pellet bells covers Finland, Sweden, Norway, Denmark and Estonia (e.g. Westin 1941, 85–100, fig. 5: 6–10, 8; Nørlund 1948, 129, 280, Pl. XXV: 4; Petersen 1951, 56–59, fig. 48; Mägi 2002, 95, Pl. 44: 22, 23, 58: 4, 60: 9, 67: 1, 2, 71: 6, 73: 3). In other Baltic Countries or in the east the type is rare. Since these bells were relatively easy to make, and appear to be rather heterogeneous in their technical realization, they were probably made by local blacksmiths, those who also made knives, sickles, shears, kettles and other articles for daily use. The type was in common use during the 11th century.

Cluster 6

Representatives of cluster 6 are globular in shape and uniformly small in size (FIG. 6, TAB. 1). They have been made using press-sheet metal technique: by embossing two hemispherical halves and soldering them together. The suspension loop has been bent from a bit of metal wire and stuck in through a hole in the upper half. The sound holes consist of either one or two slits ending in round openings. The alloy comprises copper, tin

and lead, and corresponds to the alloys in clusters 3 and 4. Since the two halves have easily come apart at the seams throughout time, the pellets are nearly always lost.

These pellet bells can be found in Finland, northern Sweden (Serning 1956, 124, 142, Fig. 6a, Pl. 18: 13–14, 42: 6) and Novgorod (Povetkin 2009, 81–84, Ris. 2: 1–11). Since there are also leftover sheets and other workshop material related to press-sheet metal technique in Novgorod, it is possible that a place of manufacture for these bells existed there. In Finland, the type was characteristic of the 12th century.

Conclusions

By means of the cluster analysis, the Finnish pellet bells can be divided into six mutually exclusive clusters or groups. Each of these groups seems to have a slightly different dating or a different geographical distribution. Since the number of anomalous outliers is only 41, the six clusters seem to describe the data fairly well. By taking into account the technological principles and manners of decoration, it is possible to integrate some of the clusters into larger wholes, which represent different styles or manufacturing traditions. These traditions can be either local or internationally spread, as can be seen from the distribution maps of other North and Eastern European bell finds.

The pellet bells in clusters 1 and 2 were probably made in Finland. They represent a Scandinavian casting tradition, which used copper-lead alloys and involved a careful finishing and polishing stage (Tomanterä 1991, 35, 48–49). The pellet bells in clusters 3 and 4 were probably imported in Finland or made by foreign, itinerant craftsmen. They represent an Eastern European casting tradition, which used copper-tin-lead alloys and two-part outer moulds to copy other ornaments. The surfaces were left untouched after the casting. (Tomanterä 1991, 35, 48–49.) The pellet bells in cluster 5 were hammered by local blacksmiths, who copied Scandinavian types of bells. The bells in cluster 6 were made with press-sheet metal technique, which became the main method of manufacturing pellet bells in Europe in later centuries (Oldeberg 1966, 163, 267–268, fig. 444, 449).

Thus, setting up a typology for the pellet bells enables one to study ancient metalwork, craftsmanship, communications, trade contacts and cultural relations in the area of North and Eastern Europe. It is also fruitful for understanding the norms, values or preferences of the people who made and used the bells.

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APPENDIX

Variables used in the cluster analysis of pellet bells:

I Maximum width of the body (mm).

II Thickness of the body (mm).

III Height of the body / maximum width of the body.

IV Height of the curve in the body / height of the body.

V Shape of the body in vertical section.

1. Round, no angles.
2. Roundish, slight angles.
3. Angular, sharp angles.

VI Way by which the suspension loop has been fixed to the body.

1. Embedded in the body, no discernible seams or joints.
2. Embedded or soldered in the body, discernible seams at the joints.
3. Stuck in through a hole in the body and tied in a bow or bended to the side.

VII Traces on the body that have been left over from the manufacturing process.

0. No discernible traces.
1. Casting seams.
2. Soldering seams.

VIII Main ornamental element.

0. No ornamentation.
1. Ringed dot.

2. Grooved line.
3. Embossed line.

IX Shape of the sound hole.

0. No sound holes or small rectangular or round opening.

1. Slit.
2. Slit ending in round openings.
3. Two crossing slits.
4. Two crossing slits ending in round openings.
5. Two crossing slits of unequal size, the larger ending in round openings.
6. Two crossing slits, with a round opening at the intersectional point.
7. Two crossing slits with tapering ends.
8. Two crossing slits with widening ends.

CLUSTER	NUMBER	DIAMETER*	DATING	GEOGRAPHICAL DISTRIBUTION
1	44	30 mm	975–1025	Finland Proper, Satakunta (in Finland)
2	34	16 mm	1000–1050	Tavastia (in Finland)
3	26	20 mm	1000–1100	Finland, Estonia, Latvia, Lithuania, Russia, Poland, Sweden
4	6	17 mm	1050–1150	Finland, Estonia, Latvia, Lithuania, Russia, Ukraine, Poland
5	73	19 mm	1000–1150	Finland, Estonia, Sweden, Norway, Denmark
6	84	13 mm	1100–1200	Finland, Sweden, Russia

Table 1. Facts and figures about the clusters (* = mean).

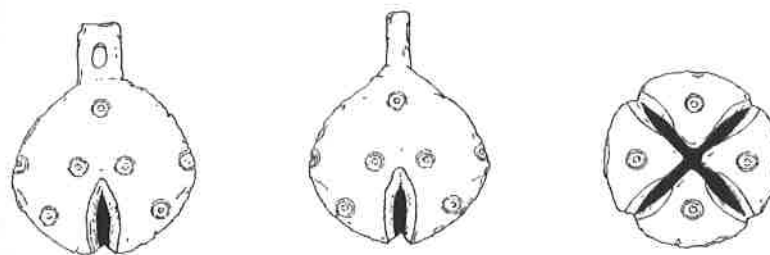


Figure 1. A pellet bell representing cluster 1 (NM 8602: 31). Scale 3:4.

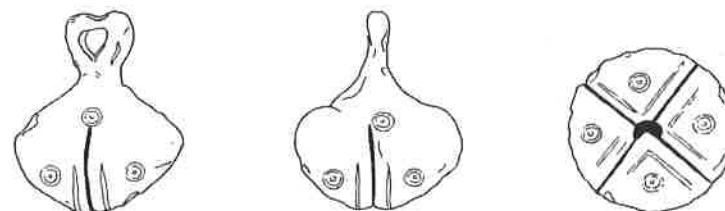


Figure 2. A pellet bell representing cluster 2 (NM 30871: 58). Scale 1:1.

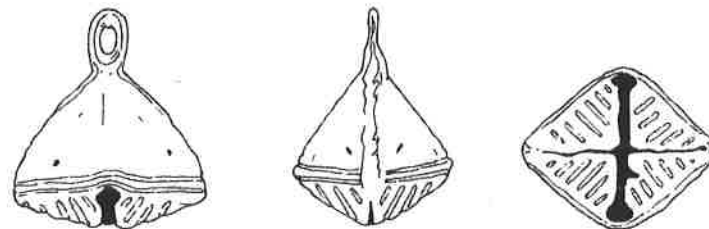


Figure 3. A pellet bell representing cluster 3 (NM 18000: 4634). Scale 1:1.

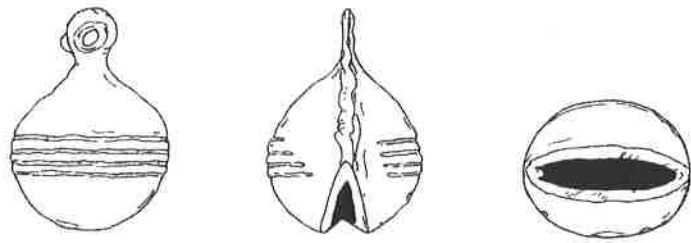


Figure 4. A pellet bell representing cluster 4 (NM 9315: 4). Scale 1:1.

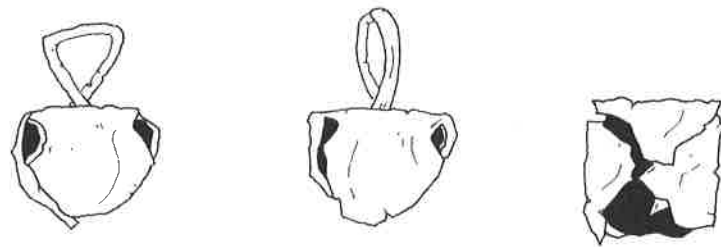


Figure 5. A pellet bell representing cluster 5 (NM 7874: 40). Scale 1:1.

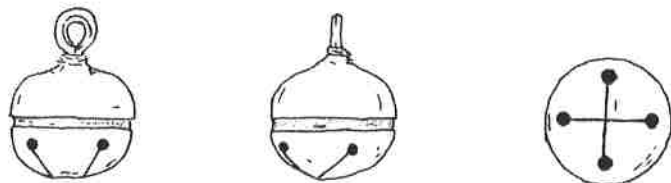


Figure 6. A pellet bell representing cluster 6 (NM 8656: H21: 9a). Scale 1:1.

СКАНДИНАВСКАЯ ПОГРЕМУШКА X В. С ГОРОДИЩА ПОД НОВГОРОДОМ¹

В течение нескольких последних полевых сезонов на центральной площадке Рюрикова городища под Новгородом исследовался участок древнего рва, разделявшего укрепленную и неукрепленные части поселения IX – X вв. В 2010 г. при разборке его заполнения в черном слое X в. найдено плоское круглое железное кольцо (НОЭ–2010, РГ–156; кв. 100; гл. 4,99 м; *рис. 1: 1*). Оно сделано из прямоугольного в сечении прута шириной 0,4–0,5 см и толщиной 0,3–0,4 м. На основное кольцо диаметром 6,7 см нанизаны три плоских железных колечка меньшего размера подовальной формы размерами, соответственно, 2,1x2,3 см; 2,4x2,7 см и 2,1x2,4 см. Этот предмет не является уникальной находкой, но не относится он и к категории массового материала, встречаемого на археологических памятниках.

За 35 лет исследований на новгородском Городище найдено три аналогичных железных кольца. Кольцо, найденное в 1978 г. в раскопе на северном берегу Сиверсова канала² (НОЭ–1978; РГ–223; кв. 8, пл. 3; *рис. 1: 3*), имело диаметр 5 см, а нанизанные на него маленькие колечки – 2,4, 2,4 и 2,9 см. Диаметр второго, найденного в 1982 г. в раскопе на центральной площадке городищенского холма к югу от ц. Благовещения³ (НОЭ–1982; РГ–269; кв. 94; гл. от 0,8 м до 1,04 м; *рис. 1: 4*), составлял 10,5 см; маленьких колечек – 2, 2,5 и 3 см. Третье кольцо, найденное в 2008 г. также на центральной площадке памятника (НОЭ–2008; РГ–1274; кв. 76, гл. 4,91 м, черный слой X в.; *рис. 1: 2*), было подовальной формы 5,5x6,5 см, но, в отличие от

¹ Работа выполнена при финансовой поддержке ОИФН РАН в рамках Программы фундаментальных исследований «Генезис и взаимодействие социальных, культурных и языковых общностей».

² Носов Е. Н. Новгородское (Рюриково) городище. СПб., 1990. С. 74, *рис. 30: 2*.

³ Там же. С. 76; 124–126, *рис. 46: 5*. В публикации В. И. Поветкина (*Поветкин В. И. Гудебный обиход Новгородского (Рюрикова) городища // У истоков русской государственности: к 30-летию археологического изучения Новгородского Рюрикова городища и Новгородской областной археологической экспедиции: Материалы междунауч. конф. (4–7 октября 2005 г., Великий Новгород, Россия)*). СПб., 2007. С. 180, *рис. 1: 5*) приведены ошибочные данные этой находки – вместо «НОЭ–1985, РГ–53» надо «НОЭ–1982; РГ–269».