THE DISTRIBUTION AND CHRONOLOGY OF TRADING EQUIPMENT IN PRESENT-DAY LATVIA IN THE TENTH TO THIRTEENTH CENTURIES

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Abstract

This article brings together the main research findings of recent years relating to tenth to thirteenth-century trading equipment from present-day Latvia. Finds of collapsible scales and weights from all regions of Latvia have been mapped and investigated. These include finds from archaeological sites in the Zemgale and Kurzeme regions that have previously not been extensively analysed. Issues relating to the chronology of the scales and weights are discussed. The main trade routes and the dynamics of trade contacts are determined, based on the distribution of the material in different regions.

Key words: trade routes, chronology, scales, weights.

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Introduction

The trading equipment of the tenth to thirteenth centuries includes collapsible scales, weights, boxes used to store them, substitutes for weights, and steelyards, or balances using a single weight, and the weights attached to them. About 180 collapsible scales (whole sets of scales and elements from them) are currently known in Latvia. A correspondingly large number of weights have also been found in Latvia: about 400 pieces, which come from burials and settlements. This represents the largest concentration of such finds in the Baltic. The topic of trading equipment in Latvia has been discussed by Ēvalds Mugurēvičs in a monograph on trading contacts in eastern Latvia, in which he brought together and mapped all the data available at the time, on 93 scales and 169 weights, from 44 find locations (Mugurēvičs 1965, 31ff.). From the analysis of finds of scales, it was concluded that they were in use starting from the second half of the tenth century, and were locally made. Particularly important for the study of this topic was the work by Rasma Ceplīte 'Weights in tenth to thirteenth Century Grave Inventories in Latvia' (Ceplīte 1974). This article includes tabulated data on 216 weights found in the course of excavations, setting out their dimensions and weight, and the weight markings on them. In recent decades, from the 1970s up to the present day, a significant body of additional trading equipment has been found at archaeological sites in Latvia: more than 200 weights and about 90 collapsible scales (whole sets and elements), as well as two steelyards and three steelyard weights. Particularly large numbers of finds have been found in these years at Daugava Liv sites and in northern Kurzeme. The author has previously analysed collapsible scales, considering their origin and chronology. The article 'Collapsible Scales in Latvia (tenth to thirteenth Centuries)' brought together all the data on finds of sets of scales and parts belonging to them, examining regional differences in their construction, ornamentation and details. The chronological limits of their use were ascertained (Berga 1992, 1996). The author has continued the study of trading equipment, paying particular attention to the analysis of weights. The article 'Trading Equipment of the Daugava Livs' was devoted to sets of weights from burial sites (Berga 2009), looking at their form, material and weight, and determining the unit of weight, which, in the case of all the weights, conforms to the Scandinavian system of weights. In the article 'Finds of Scale Weights from tenth to thirteenth Century Hill-Forts and Village Sites in Latvia', continuing the work begun by R. Ceplīte, the author presents a list of finds of weights in the form of a table, describing their form, weight, dimensions, material, and marks indicating the units of weight (Berga 2011). Special attention has been given to 14 large weights found in Latvia, most of them recovered on settlements Almost all of the large weights correspond to the weight of half a Scandinavian mark, 102 grams. This is equivalent to the weight of the hammered silver bar, or *osering*, and it is possible that these weights were, in fact, used for weighing such a quantity of silver. It is noted in the work 'Trading Equipment in Eastern Latvia in the tenth to twelfth centuries. Chronological Issues' that trading equipment is less commonly found at Latgallian and Selonian archaeological sites than

elsewhere in Latvia (Berga 2014a). On the other hand, eastern Latvia has produced the earliest weights with Arabic inscriptions and sets of weights corresponding to the earliest group. By grouping the weights according to the markings on their faces, it was possible to distinguish four chronologically divergent groups of weights. A list of all the weights found in eastern Latvia is given in the form of a table.

Hitherto, most attention has been focussed on the material from eastern Latvia and the Lower Daugava area, whereas the present article also brings together all the information about finds of trading equipment from Zemgale and Kurzeme. This makes it possible to use the distribution of all the material to identify the main trade routes and the dynamics of trading contacts, and to refine the chronology. The tenth to thirteenth-century trading equipment recovered in the course of archaeological excavations over many years is kept mainly at the National History Museum of Latvia, the Museum of the History of Riga and Navigation, the Madona Regional History Museum, Turaida Museum Reserve, the Ģ. Eliass History and Art Museum of Jelgava, and elsewhere.

The distribution of trading equipment

The mapping of finds of trading equipment permits three areas of concentration to be distinguished: the Lower Daugava area, the Lielupe basin, and northern Kurzeme (Fig. 1). A particularly large number of scales, weights and sets of weights have been recovered from burial sites of the Daugava Livs. The Daugava Livs had very extensive contacts with the west and east during the tenth and eleventh centuries, as is indicated by the particularly numerous finds of trading equipment from the archaeological sites of this area: more than 50 scales and 210 weights, along with Arabic dirhams and European coins (Berga 1988, 53). Weights and scales have been found at nine cemeteries of the Daugava Livs: Salaspils Laukskola, Doles Vampenieši I and II, Ciemupes Čabas, Ogresgala Lielpeči, Skrīveru Aizkraukle, Skrīveru Lielrutuļi, Vējstūri and Tomes Nariņi. At Salaspils Laukskola, trading equipment was found in 15 adult male and four boys' graves (Zariņa 1997). Of the Daugava Liv habitation sites, scales and weights have been found at Ikšķile, Doles Rauši, Vecdole Castle site, Salaspils Laukskola village, and the castle and village of Mārtiņsala. Daugmale hill-fort, which played an important role in international transit as well as local trade, has produced 70 weights and 26 parts of scales (Berga 2011). The hill-fort has also produced a particularly numerous assemblage of coins: 190 dirhams, along with English, German and Danish coins.

In the second area of concentration, the Lielupe basin, trading equipment has been found at two hill-forts, Tērvete and Mežotne, as well as nine Semigallian cemeteries: Bāļas-Šķērstaiņi, Jausvirlaukas Ciemalde, Mežotne, Mežotnes centrs, Ceraukstes Podiņi, Čunkāni-Dreņģeri, Vecsaules Čapāni, Gaideļi-Viduči and Lielvircavas Mazroķi. Dirham finds indicate that the Lielupe trading waterway was particularly important for contacts with the west in the tenth century (Berga 1988, 10). Zemgale, along with eastern Latvia, has produced the earliest graves with trading equipment, dating from the second half of the tenth century. In total, around 70 weights, along with 23 scales and parts of scales, have been found on sites in the Lielupe basin. Tērvete hill-fort, which in the tenth to thirteenth century was the main trading centre of western Zemgale, has produced 22 weights and five components of scales. Trading equipment has also been found in the southern part of Zemgale, in present-day Lithuania. Here, eight scales have been found at seven sites, along with boxes for scales and weights (Vaškevičiūtė 2001).

Third most important in terms of the concentration of finds is the Kurzeme region, where about 76 scales and scales components have been found, as well as about 60 weights and more than ten bronze boxes for scales. The greatest numbers of finds come from Curonian burial sites: thus, there are 11 components of scales from Lake Vilkumuiža burial site, nine from Pasilciems cemetery, and eight from Sāraji cemetery. In Lithuania, scales finds are likewise concentrated in the Curonian-populated area; here, about 40 scales have been recovered from 17 sites (Asaris et al. 2008, 126). The numerous finds of west European tenth to thirteenth-century coins and trading equipment at Talsi hill-fort reflect extensive contacts with the west (Berga 2011). Seven weights and seven components of scales have been found at Talsi hill-fort. Important evidence regarding the north Kurzeme region is provided by the recent excavations at Mežīte hill-fort, located not far from Talsi hill-fort (Guščika, Vasks 2010). Excavations on the hill-fort and settlement site have produced eight coins minted in the first half of the eleventh century, six weights and one scales mechanism, along with a piece of a silver bar. Finds from the two hill-forts indicate that there was an important trading centre here in northern Kurzeme. Scales and weights have also been found in the cemeteries near the two hill-forts: at Lake Vilkumuiža, and at Sarāji, Lībagu Ķīli, Bēķi, Alsungas Kantiķi and Sabiles Krievu kapi. We may also note the numerous finds of trading equipment along the banks of the Venta, as well as from the hill-fort and cemetery of Puze. The Venta trade route was particularly important for the inhabitants of Talsi and Mežīte. The recently discovered coin hoard from Vārves Pasiekste, on the

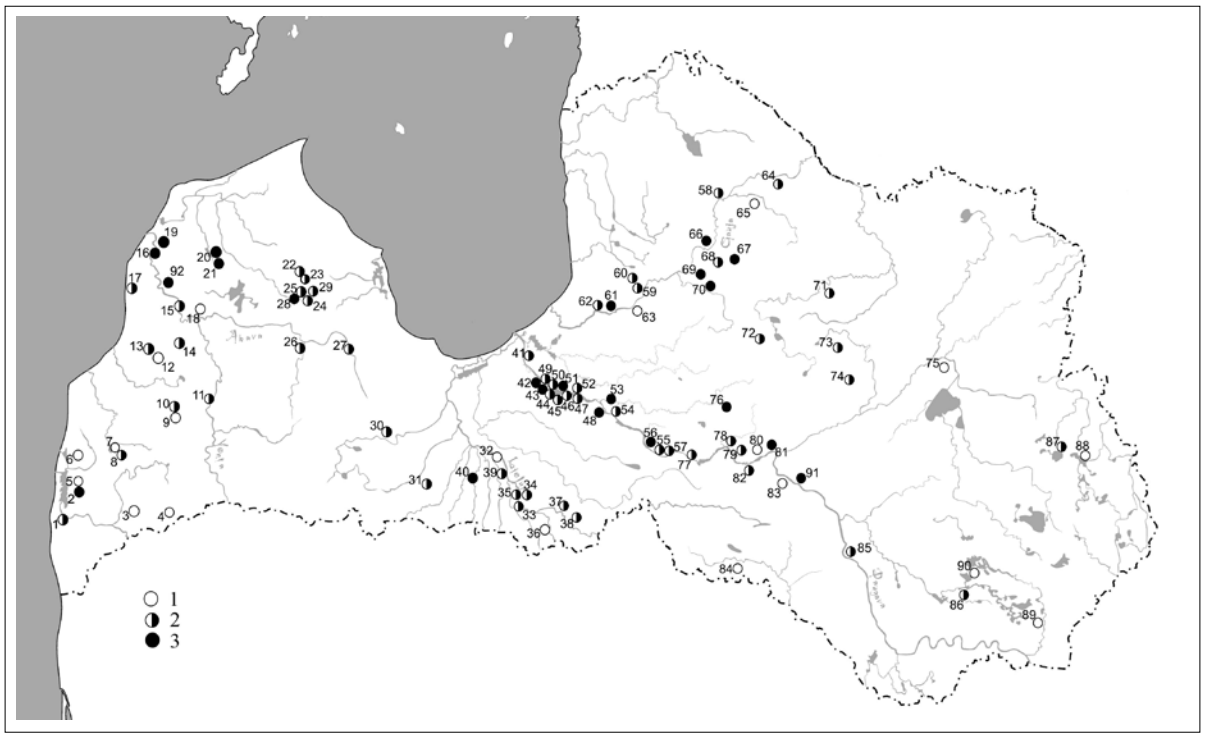

Fig. 1. Finds of collapsible scales and weights in Latvia. Legend: 1 scales; 2 scales and weights; 3 weights. 1 Nīca cemetery; 2 Grobiņas Straume village site; 3 Purmsātu Dzērves cemetery; 4 Gramzdas Dārznieki cemetery; 5 Stroķi, stray find; 6 Medzes Strautiņi cemetery; 7 shore of Lake Durbe; 8 Durbes Dīri cemetery; 9 Kazdangas Roņi cemetery; 10 Kazdangas Apariņas cemetery; 11 Raņķu Kapenieki cemetery; 12 Kantiķi cemetery; 13 Alsungas Kalniņi cemetery; 14 Lielīvande cemetery; 15 Piltenes Pasilciems cemetery; 16 Pasiekste, stray find; 17 Užavas Silmalciems cemetery; 18 Gaisiņi, stray find; 19 Dokupe, stray find; 20 Puzes Lejaskrogs churchyard; 21 Puze hill-fort; 22 Lake Vilkumuiža cemetery; 23 Talsi hill-fort; 24 Sarāji cemetery; 25 Lībagu Ķīļi cemetery; 26 Matkule cemetery; 27 Pūres Zviedri cemetery; 28 Bēķi stray find; 29 Mežīte hill-fort; 30 Bāļas-Šķērstaiņi cemetery; 31 Tērvete hill-fort; 32 Jausvirlaukas Ciemalde cemetery; 33 Mežotne cemetery; 34 Mežotnes centrs cemetery; 35 Mežotne hill-fort, 36 Ceraukstes Podiņi cemetery; 37 Čunkāni-Dreņģeri cemetery; 38 Vecsaules Čapāni cemetery; 39 Gaideļi-Viduči cemetery; 40 Lielvircavas Mazroķi cemetery; 41 Riga old town; 42 Vecdole Castle; 43 Doles Rauši village site; 44 Doles Vampenieši I cemetery; 45 Doles Vampenieši II cemetery; 46 Mārtiņsala Castle, village site and church; 47 Daugmale hill-fort; 48 Tomes Nariņi cemetery; 49 Salaspils Vējstūri cemetery; 50 Salaspils Laukskola cemetery; 51 Salaspils Laukskola village; 52 Ikšķile village; 53 Ogresgala Lielpeči cemetery; 54 Ciemupes Čabas cemetery; 55 Skrīveru Lielrutuļi cemetery; 56 Skrīveru Aizkraukle cemetery; 57 Aizkraukle hill-fort; 58 Valmiera Castle; 59 Turaida Castle; 60 Turaidas Pūteļi cemetery; 61 Krimulda, stray find; 62 Krimuldas Priedes cemetery; 63 Siguldas Saksukalns cemetery; 64 Trikātas Ķikuti cemetery; 65 Trikātas Lubumuiža cemetery; 66 Lenču Strīķi, stray find; 67 Raunas Strantes cemetery; 68 Ģūģeri cemetery; 69 Lake Āraiši settlement; 70 Drabešu Liepiņas cemetery; 71 Jaunpiebalgas cemetery; 72 Ērgļu Jaunāķēni cemetery; 73 Viesienas Mežāres cemetery; 74 Madona cemetery; 75 Lubanas Veverāji cemetery; 76 Liepkalnes Ķesteri cemetery; 77 Lejaszagari cemetery; 78 Koknese Castle; 79 Koknese cemetery; 80 Oliņkalns hill-fort; 81 Pļaviņu Radzes cemetery; 82 Sēlpils Lejasdopeles cemetery; 83 Ābeļu Priednieki cemetery; 84 Stupeļukalns hill-fort; 85 Jersika cemetery; 86 Brūveri cemetery; 87 Zvirgzdenes Kivti cemetery; 88 Ludzas Odukalns cemetery; 89 Sauleskalns cult site hoard; 90 Aglona Old Church cemetery; 91 Asote hill-fort; 92 Piltene hoard.

bank of the Venta, indicates that the Venta waterway was just as important for contacts with the west in the tenth and eleventh centuries as the Daugava waterway (Berga, Vijups 2012).

In central Latvia, less trading equipment has been found in the area of the Gauja Livs; there are scales and weights from only five sites. At the same time, there are many more west European coins at burial and living sites there. Several major eleventh-century hoards are also known from the Gauja basin: the Lēdurga I and II hoards, and the Krimuldas Ragana, Branti and Cēsis hoards (Berga 2012, 42).

In eastern Latvia, at Latgallian and Selonian archaeological sites, trading equipment is found less commonly than in western Latvia. Here, 28 archaeological sites (hill-forts and cemeteries) have produced 25 scales and 74 weights, including early scales and weights dating from the second half of the tenth century. The earliest finds of trading equipment come from the Latgallian burial sites between the left bank of the Gauja and the

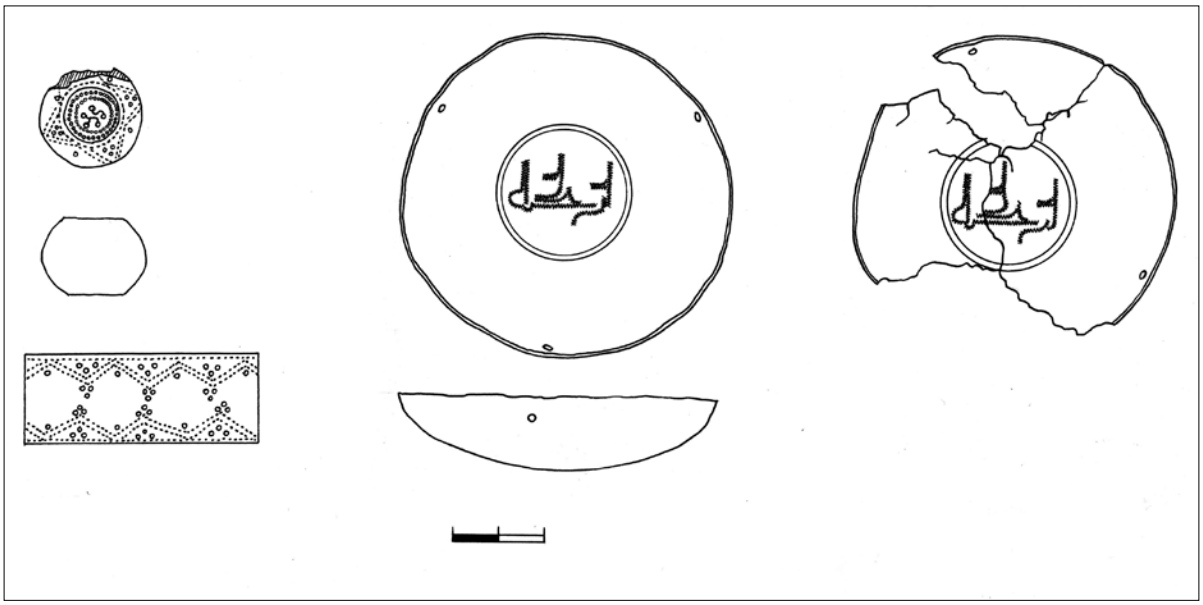

Fig. 2. A set of scales with an inscription in Arabic and an ornamented weight from the first chronological group (second half of the tenth century) from Viesienas Mežāres cemetery, burial 4. VI 10: 20 (drawing by Dzintra Zemīte).

Arona, a tributary of the Aiviekste: the cemeteries of Viesienas Mežāres, Madona and Ģūģeri.

Collapsible scales

As is indicated by the dating of cultural layers and graves, collapsible scales and weights appeared in Latvia at the end of the tenth century, and were particularly widespread in the eleventh century, by which time they were being used for weighing west European coins, and remained in use right up to the thirteenth century. Collapsible scales and weights, like dirhams, were brought to eastern Europe and Scandinavia from the east, from the Arab world. Two finds of tenth-century scales in eastern Europe with Arabic inscriptions, from the cemetery of Vesienas Mežāres in Latvia (Berga, Šnore 1992) and from the cemetery of Timerevo in ancient Russia, in the Yaroslavl Volga region (Fehner, Ianina 1978), provide proof that the first scales were imported (Fig. 2). The local craftsmen modelled their scales on those imported from the east. The diversity of the scales found in Latvia, the variety of ornamentation and the differences in details indicate that most of them were made locally. Scales and weights were not simple items for craftsmen to make. When increasing or reducing the size of the weighing pans, fashioning their rims and the attachment, and when decorating them, it was necessary to be as precise as possible, making sure that all the parts were balanced. Accordingly, they were kept and remained in use for a long time. Most of the recovered weighing pans are ornamented. The most complex design consists of concentric circles with rhombuses, squares or hatched triangles inside them. This elaborate design occurs on scales found in burial 2 in barrow 5 at Lejasdopeles in the region of Sēlija (VI 56: 358), and at the settlement of Stupeļukalns (VI 227: 769). They have parallels with the design on scales found with burial 311 at the Semigallian cemetery of Čunkāni-Dreņģeri (VI 250: 168). The weighing pans vary in size: those of a larger diameter (mean 7.2 cm) are most commonly found at sites of the Daugava Livs; those of a medium diameter (ca 6.2 cm) occur among the Semigallians and Curonians. The weighing pans of Latgallian scales are generally medium-sized, although pans with a smaller diameter (ca 4.8 cm) also often occur (Fig. 3). This difference in the dimensions of the scales can possibly be explained not only by differences in the quantity of silver coins between different areas, but also in terms of the chronology of the scales. Scales with pans with a smaller diameter, 4.8 centimetres, occur in chronologically earlier graves: burial 24 at Madona cemetery, and burial 32 at Ludzas Odukalns. The edges of the pans were either level or had a small triangular ridge. Only the weighing pans of scales of the Curonians had an unusual design, being bent around a fine wire (Fig. 4). The largest and the smallest scales come from the cemetery of Aizkraukle: with pans 8.3 centimetres in diameter (depth 2.5 cm), and with a diameter of 3.8 centimetres (depth 1.1 cm) (CVVM 64713). It has been ascertained that the largest scales could be used to weigh up to 150 grams of silver, the medium-sized scales 50 to 100 grams, and the smallest ten to 30 grams (Steuer 1987). The pans had either three or four perforations for attachment to the

Fig. 3. Scales from Madona cemetery, burial 24. Diameter of the pans of the scales 4.9 millimetres. MNM 640:10 (photograph by T. Berga).

arms of the scales. If the pans were attached by a linen cord, then they generally had four perforations. The remains of silk thread were preserved with the pans of scales from the cemetery at Viesienas Mežāres. In ancient Russia, the sole form of attachment of the pans was by means of linen, woollen or silk cord (Pushkina 2010, 148). Attachment of the pans with thread may be the oldest form of attachment; double chains were used less commonly, and were particularly characteristic of the Curonians. However, scales with chains are also found among the Semigallians, occurring in burial 9 at the cemetery of Mežotne; two more have been found at Semigallian burial sites in present-day Lithuania (Vaškevičiūtė 2001, 282). Scales with chains have also been found at Daugava Liv sites: at Aizkraukle cemetery, and with burial 582 at Salaspils Laukskola (Fig. 5). In the Latgallian area, they are known from finds at Aglona Old Church cemetery and the Sauleskalns hoard (Berga 2014a). These scales usually had three, and less commonly four, chains connected to a chain divider. The chain dividers are generally bell-shaped, although simple circular plates could also serve this purpose. An analysis of changes in the length of the arms of the scales, the variation in the polyhedral broadened sections, and the placement of grooving, have permitted the separation of seven chronologically distinct basic forms of beam (Berga 1996). The earliest form of beam may be dated to the second half of the tenth century (burials 311 and 339 at Čunkāni-Dreņģeri), and the latest forms occur in the twelfth/thirteenth centuries (Lielīvandes muiža, Pasilciems cemeteries). The arms of the scales were very rarely ornamented: decoration usually occurs on the rhombuses of the broadened sections, in the form of dot-and-circle signs or circles. In the thirteenth century, collapsible scales remained in use in Latvia, but new, larger scales also appeared. These were very solidly made: judging by the dimensions, they could be used to weigh quantities of silver up to 150 grams. Scales of this kind have been found in Riga Old Town, at Koknese Castle, and at the village site of Mārtiņsala (Berga 1996).

Boxes for scales

Collapsible scales were generally placed in a holder that could take the form of a leather purse, a circular wooden box, or a bronze box. Textile remains have also been found with scales: there were possibly textile

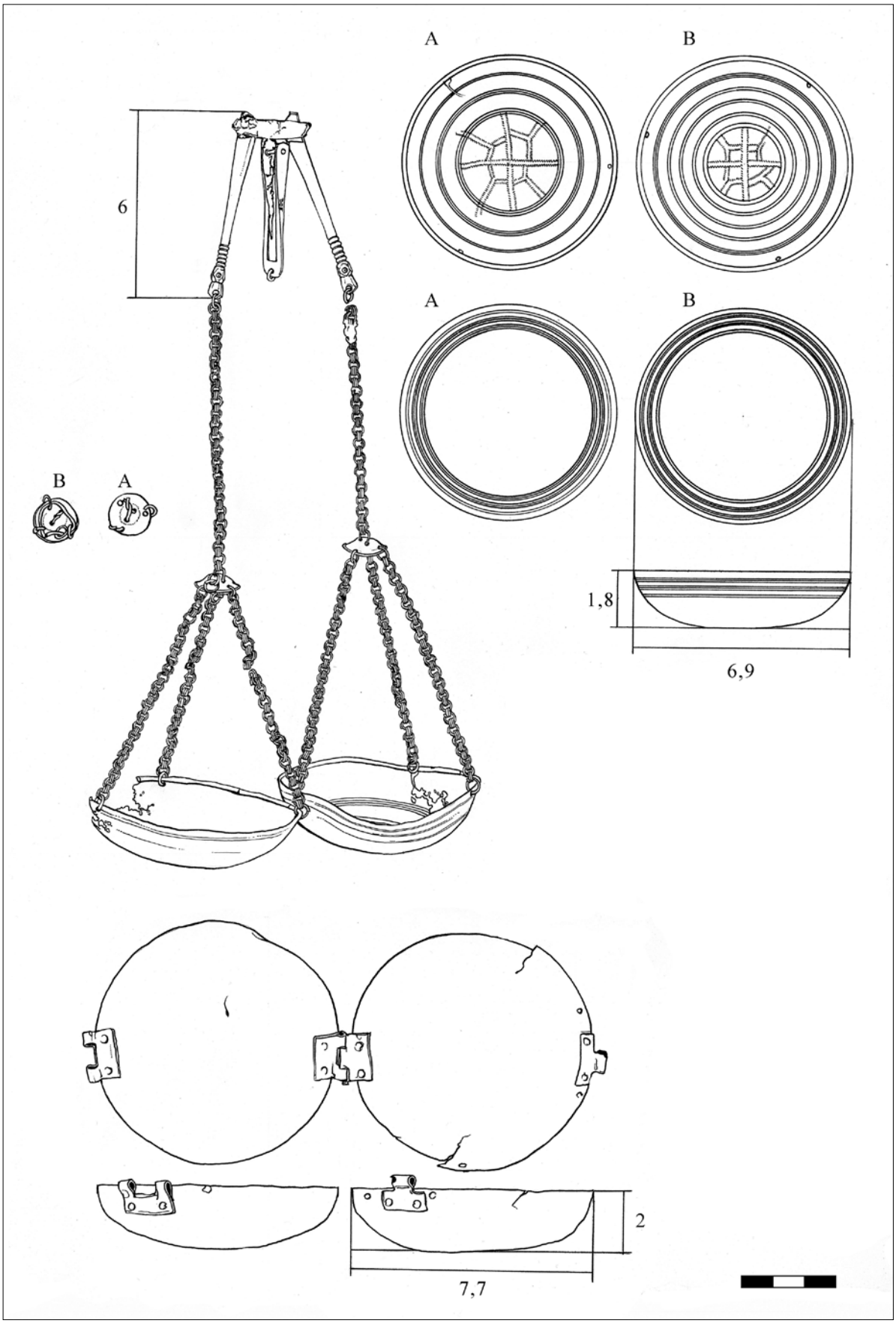

Fig. 4. Scales and a scales box from Piltenes Pasilciems cemetery. CVVM 64361:1, 2 (drawing by D. Zemīte).

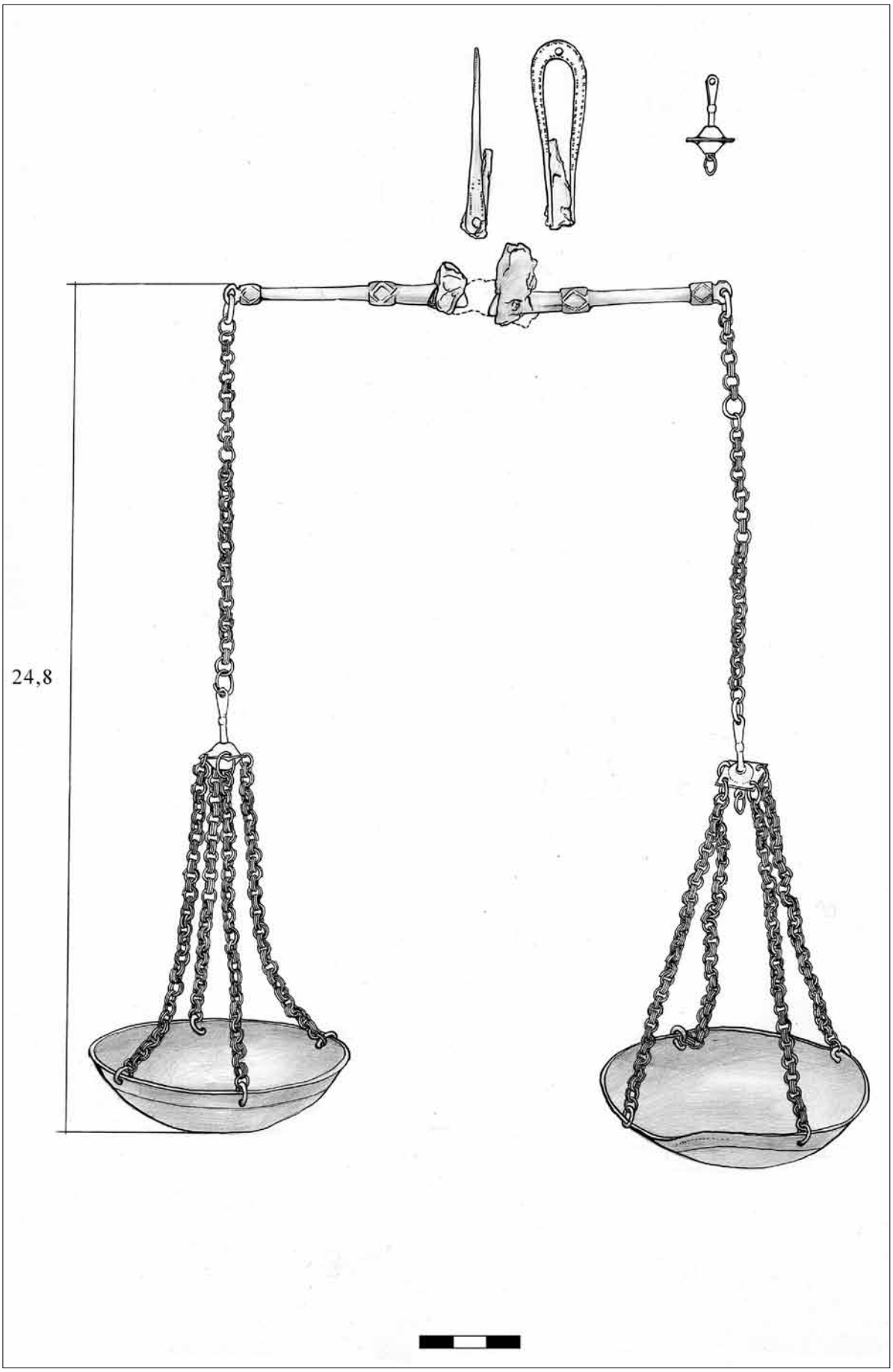

Fig. 5. Scales from Salaspils Laukskola cemetery, burial 582. VI 128:7894 (drawing by D. Zemīte).

purses as well. Wooden boxes (Salaspils Laukskola, burial 121; Vējstūri, burial 52; Vampenieši II, burial 73; Jaunpiebalga, burial 5; Jaunāķēni, burial 28; Kivti, burial 99; Čunkāni-Dreņģeri, burial 311) and leather purses (Lejasdopeles, barrow 5, burial 2; Ābeļu Priednieki, burial 2; Salaspils Laukskola, burial 121) were more widespread. Bronze boxes were more widely used in the Curonian area, being less common among the Semigallians and Daugava Livs. The boxes were made of sheets of bronze. Spherical bronze boxes have been found among the Semigallians, at Bāļas-Škērstaiņi, burial 2 (VI 235: 78), Mežotne cemetery, burial 32 (A 9628: 4) and Vampenieši I, burial 94; among the Daugava Livs at Vampenieši I, burial 94 (VI 124: 966), Vampenieši II, burial 73 (VI 144: 436); and among the Latgallians, at Lejasžagari, burial 16 (A 12221: 113). Many of the boxes are richly ornamented. In present-day Lithuania, richly ornamented bronze boxes have been found at the Semigallian cemeteries of Pavirvytė and Linkuva (Vaškevičiūtė 2001, 276). About ten bronze boxes have been found at Curonian sites (Piltenes Pasilciems, Lielīvande, Purmsātu Dzerves, Alsungas Kantiķi, Granzdes Dārznieki, Lake Vilkumuiža, etc). These are generally undecorated, and the margins have been fashioned in the same way as those of the pans of scales, bent around a fine wire (Fig. 4).

Weights

The weights found in Latvia are in three basic forms: barrel-shaped with two circular faces at the ends, polyhedral, and discoidal. Biconical weights (with a pronounced mid-rib) can be regarded as a variant of the barrel shape. Barrel-shaped weights are the most widespread. Of all the barrel-shaped weights, there are very few well-preserved pieces with the units of weight, circles, visible on both end faces. Many of the weights are strongly patinated with nicks in the body, the bronze sheathing broken, and the weight itself corroded. For such examples, the original weight can be determined approximately only from the dimensions, comparing them with the mean weight of similar-sized weights. The weight always differs somewhat from the original weight, and changes after restoration. In general, the units of weight number between one and five at each end, with 12 or 13 circles on the large weights. An analysis of the weight of those found in Latvia and a comparison with the number of marks has revealed the unit of weight of the barrel-shaped weights: it varies from 3.9 to 4.1 grams (Berga 2009, 2011). The most commonly used were weights with a weight of about 32 grams (with a total of eight marks on both fields together), about 40 grams (with a total of ten marks), and about 24 grams (with a total of six marks). Less commonly used were weights of about 16 grams and about 100 grams.

Fig. 6. Weight with imitation Arabic script, from Ciemupes Čabas cemetery. Diameter 35 millimetres, height 26 millimetres, weight 90.41 grams. A 13297 (photograph by R. Kaniņš).

There are 14 large weights from present-day Latvia used for weighing a large quantity of silver, an *osering* (half a Scandinavian mark: 204 divided by two, therefore 102 g). These weights, mainly found at settlement sites, weigh from 90 to 110 grams. The unit of weight of the large weights was 4.1 to 4.3 grams, which is half the weight of a Scandinavian *örtug*, 8.5 grams (Berga 2009, 35). Four of the large weights have imitation Arabic script. The design on a weight from the cemetery at Ciemupe (Fig. 6) is quite clearly visible; poorly visible designs are found on weights from Vampenieši II, burial 18 (VI 144: 72), Zvirgzdenes Kivti, burial 99 (VI 4: 243) and Tērvete hill-fort (VI 52: 611). These weights have three lines of script, resembling that of Arabic coins. In the view of the Swedish numismatist G. Rispling, some of the marks imitate the inscription 'Prophet of Allah' and the word *bach*, or 'choice'. Three lines imitate the placement of inscriptions on eighth-century (767–775) Abbasid dirhams (Sperber 1996, 101). The designs on the four weights from Latvia resemble those on weights found in Scandinavia with imitation Arabic script. These have been found at many sites in Scandinavia: Gotland, Uppland, Birka, Sigtuna, Hedeby and Kaupang (Sperber 1996). All of these weights were either made on the model of an unknown weight with an Arabic inscription, imported from the east, or else the inscription imitates the writing on a dirham. The imitation script on all the weights

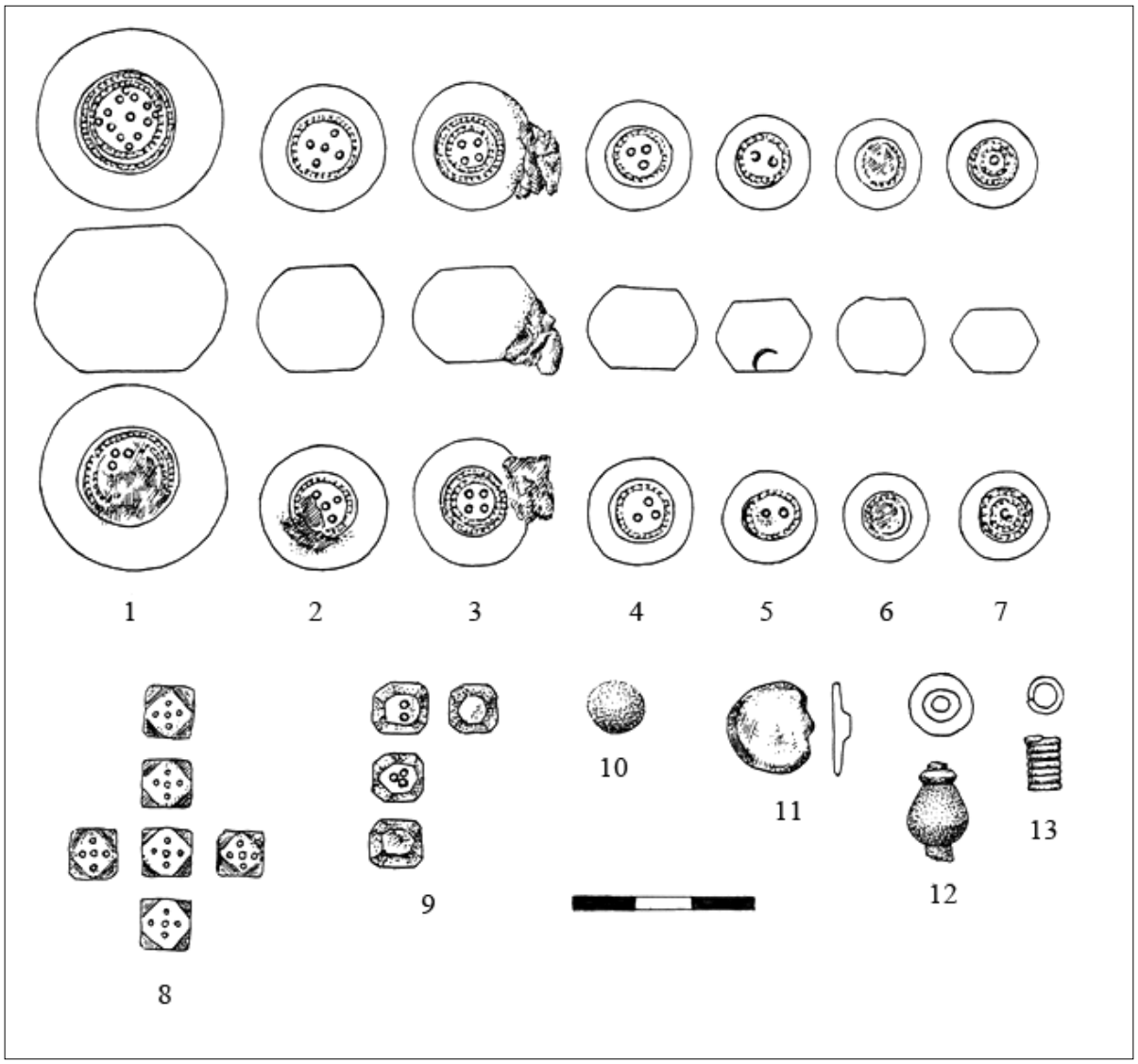

Fig. 7. Set of weights from Doles Vampenieši II, burial 74 (1–13) (VI 144: 463–475). Scale 1:1 (drawing by D. Zemīte).

is almost the same, and it seems that these were made in the same workshop. The concentration of weights with imitation Arabic writing in Scandinavia suggests that they may indeed originate from this region.

The weights of the second group, the polyhedral weights (with 14 faces), are generally made from copper alloy, but iron weights sheathed in bronze also occur. Only ten polyhedral weights are known in Latvia, the majority of which have been found at sites of the Daugava Livs (Fig. 7.8). The polyhedral and barrel-shaped weights belong to different metrological systems: base-six and decimal. It is thought that the polyhedral weights are based on the weight of the gold dinar of the Arab Caliphate, about 4.25 grams, and that they were intended for weighing gold (Nazarenko 2000). Gold coins or objects of gold have not been found in Latvia, so it may be that these weights were used by adapting them to the decimal system. There are also roughly made, non-standard polyhedral weights with four, six, ten or 14 irregular faces (Fig. 7.9). It seems that these weights were made hurriedly by local craftsmen.

Ten weights have been found in Latvia that belong to the third group, cylindrical or discoidal (Fig. 8). There are not many finds of weights of this form in other countries. The discoidal weights are usually made of lead, and less often bronze. Two out of the five cylindrical weights from Daugava Liv sites are lead. Discoidal lead weights have also been found at the Semigallian cemetery of Mežotne, burial 9, and Mežotnes centrs, burial 86. The lead weights are considered to have been used mainly by craftsmen for weighing the metal needed for making objects, a task that did not require great precision (Murasheva et al. 2007). It is possible

that the discoidal weights of bronze were used for the same purpose. The discoidal weights from Latvia are chronologically somewhat later than the other forms, being dated to the period from the late tenth to the thirteenth century.

Unusual finds include a barrel-shaped weight from the cemetery of Jersika, burial 11, wound with silver wire (A 10346: 2). Parallels with Scandinavian and ancient Russian finds indicate that the silver wire was raw material for a jeweller. Hanks of silver wire have been found in hoards in Sweden dating from the second half of the tenth and eleventh centuries, together with silver objects, pieces of bars, scales and weights (Hardh 1976, 36). Another hank of silver wire has been found in the Gnezdovo jeweller's hoard, dating from 945/946 (Pushkina 2010, 149). It may be that the silver wire from Jersika cemetery was wound around the weight to serve as raw material.

The chronology of barrel-shaped weights

Scales and weights were objects that were not simple to make on account of the requirement for precision. Accordingly, they were kept and remained in use for a long time. Judging from the dating of a grave at Vesienas Mežāres, scales and weights made in the tenth century could continue in use throughout the eleventh century and later. For this reason, they should be used with caution in the typological dating of sites. However, through the grouping of weights according to the different marks on the faces, it was possible to distinguish various chronologically distinct groups of weights. The marks on the *earliest* weights (from the second half of the tenth century) are fine and symmetrical, and all the marks consist of circles connected by wavy lines, with one or two circles of pellets around the margin (Fig. 2). These earliest weights occur mainly at Latgallian sites: the cemeteries of Mežāres, Ģūģeri and Madona. There is a well-preserved set of ten weights found with burial 30 at Ģūģeri cemetery, with linked marks visible on all the faces. The grave also contained a set of scales and six Samanid dirhams minted in the first half of the tenth century, the youngest of which is a dirham of Samanid Nuh ibn Nasr (343 AH), minted at Bukhara in 954/955. However, the rest of this very rich grave inventory indicates that it dates from the eleventh century (Apala, Zariņa 1991). The nine corroded weights from the cemetery of Madona, burial 24, generally have no visible signs on the faces; however, one of the barrel-shaped weights has a circle of pellets around the edge, and four out of five circles at the centre are connected by wavy lines. It is entirely possible that the rest of the weights also had marks of this kind. Individual examples of weights with circles connected by wavy lines have been found at Semigallian and Daugava Liv sites. At the Semigallian cemetery of Bāļas-Šķērstaiņi, among seven corroded weights found with burial 2, from the tenth century, one had a discernible design: two connected circles on the face and a circle of pellets around the edge (VI 235: 79d). There is also one weight of this kind from Daugmale hill-fort (A 12150: 38). Similar weights are known elsewhere in eastern Europe and Scandinavia. In two cases, they belong to well-dated hoards. One such hoard is the Brileucki hoard, recently discovered in Belarus. The weights of the Brileucki hoard are the earliest in Belarus, and among the earliest known in ancient Russia, dated to the end of the ninth century (Rabtsevich, Plavinski, Ioy 2011). All the weights in the hoard are badly corroded, but one still retains the design, which consists of two rows of dots around the edge, and four dots in the centre, connected by wavy lines. Such weights are also represented in one of the hoards from Gnezdovo, dating from the mid-tenth century (Pushkina 2010, 149). There are weights from Scandinavia with similar designs on the faces; at Hedeby they are noted as being the earliest, and are dated to the late ninth or tenth century (Steuer et al. 2002, 137f.). They appear in Latvia in the second half of the tenth century, probably imported from the east.

Weights of group two (the late tenth to eleventh century) have symmetrically arranged small circles on the faces, and usually one and less often two circles of dots along the edge (Fig. 9). Weights of this kind predominate in Latvia, occurring frequently with eleventh-century burials (e.g., the sets of weights found with burials 73 and 74 at Doles Vampenieši II). These weights were locally made based on imported examples; they date from the late tenth and eleventh centuries.

Weights of group three (late eleventh and twelfth centuries) differ in that they show greater diversity, with less carefully rendered designs. The circles on the faces become larger; they are asymmetrically arranged, and in certain cases they are doubled. The circle of pellets around the edge of the face is either absent altogether or consists of large circles. Instead of circles, some have simple hollows at the centre (Fig. 10). Based on closed grave assemblages, they may be dated to the late eleventh or twelfth centuries, representing chronologically later weights. Substitutes for weights are commonly found in sets of weights together with weights of group three (Salaspils Laukskola, burial 582, etc.).

The marks on certain weights differ from those in the three groups described above. These date from the eleventh century. Such marks can often be found on large weights of about 40 to 100 grams. These are more

Fig. 8. Cylindrical weight. Dimensions: 12.5 by 3.5 millimetres, weight 3.68 g, bronze. Daugmale, A 12600:82 (photograph by R. Kaniņš).

Fig. 9. Weight belonging to chronological group two (late tenth or eleventh century). Daugmale hill-fort, A 11971:765 (photograph by R. Kaniņš).

Fig. 10. Weight belonging to chronological group three (late eleventh or twelftth century). Daugmale hill-fort, A 11971:420 (photograph by R. Kaniņš).

Fig. 11. Weight with non-standard mark. Daugmale, A 11971:2422 (photograph by R. Kaniņš).

Fig. 12. Weight with non-standard marks. Daugmale, A 12705:61 (photograph by R. Kaniņš).

Fig. 13. Weight belonging to chronological group four, showing crosses on the faces and a deep cruciform chiselled mark, twelfth or thirteenth century. Piltene hoard (Berga 2014b) (photograph by Ilgvars Gradovskis).

common at Daugmale hill-fort, which displays a great diversity of weights. One large weight from Daugmale hill-fort (99 g) has a circle of rectangles along the edge of both faces, with two dot-and-circle signs inside each; the centre is corroded, but surrounding it is a second circle of rectangles, with four to six dot-and-circle marks inside each (Fig.11). No parallels for this are known. Another weight from Daugmale has a circle of beads along the edge of each face, a rhombus with circles at the corners in the centre, and a circle in the middle (Fig. 12). The large barrel-shaped weights with imitation Arabic script are thought to have been made in Scandinavia, but the origin of some of the weights cannot be determined: they may come from Scandinavia, the east or ancient Russia. However, the majority of weights were made locally.

The weights of group four, with crosses on the faces or with a deep chiselled cruciform mark, are chronologically late, dating from the twelfth or thirteenth century (Fig.13). A cross consisting of intersecting lines appears on the faces of weights in the twelfth century. It is possible that the cross sign reflects the spread of Christianity and Christian symbols (Steuer 1987, 68). Such weights are few in number. Much more frequent are weights with a deep chiselled cross on one or both faces, sometimes with chiselled marks on the sides as well. The unit of weight cannot be determined: these vary greatly in weight, and the division of the weight by four or eight gives very diverse results. It is possible that the system of weights changed, and in order to distinguish these weights from those used previously, they were marked with a chiselled cross. The practical significance of the chiselled marks is not clear, because this results in a reduction of the weight. All the weights with a cruciform chiselled mark are made of bronze, which means that many were being made anew. About 30 weights with a chiselled cross are known in Latvia: they occur in Semigallia, at the hill-forts of Tērvete (6) and Mežotne (1), and in the Lower Daugava area, namely at Riga, Mārtiņsala, the cemeteries of Aizkraukle and Ciemupes Čabas, at Daugmale, and elsewhere. The greatest concentration of weights with cruciform chiselled marks is in the Kurzeme region: they have been found at Pasiekste, on the banks of the Venta (12 pieces), at Puze hill-fort, Puzes Lejaskrogs and Dokupe, as well as Užavas Silmalciems, Kapenieki, Kazdanga, and elsewhere. Judging from the dating of the archaeological sites, these weights appeared in Latvia at the beginning of the Crusades, at the close of the twelfth century, and were particularly widespread in the thirteenth century. Weights with chiselled marks are dated very well by the Piltene hoard, from the mid-thirteenth century, where two such weights were found together with Westphalian coins and bars (Berga 2014b, 78). Outside present-day Latvia, a particular-

ly large number of weights with cruciform chiselled marks have been found on the eastern shore of the Baltic Sea, especially in the former Prussia (Steuer 1987).

Sets of weights

Burial finds include not only single weights, but also whole sets of weights. The study of these finds is very important for investigating the system of weights and for dating the weights. Sets of weights differ chronologically, belonging to specific chronological groups. Only the sets of weights from the late eleventh and twelfth centuries may also include some weights from the preceding chronological group. The number of weights in the sets varies from three to 13, with an average of six. Cemeteries of the Daugava Livs have produced 19 sets of weights, an especially large number (Berga 2009). However, only in six of these sets are the weights well preserved, with the unit of weight marked on the faces. The largest set, consisting of 13 weights, comes from Doles Vampenieši, burial 74 (VI 144: 463–475) (Fig. 7). The set of weights had been placed in a purse together with scales. One of the end-faces of the largest barrel-shaped weight shows a cross consisting of three circles at the end of each arm and another circle at the centre; the other face is patinated. The weight is 100.59 grams (Fig. 7: 1). The second weight has ten circles in total, and weighs 39.92 grams (Fig. 7: 2). The third has eight circles altogether, and weighs 31.70 grams (Fig. 7: 3). The fourth has three circles at each end, and weighs 24.54 grams (Fig. 7: 4). The fifth has four circles in total, and weighs 16.60 grams (Fig. 7: 5). The circles on two of the weights are not visible; these weigh 12.94 grams and 12.38 grams (Fig. 7: 6, 7). One of the polyhedral weights in the set has five circles on six square faces, and weighs 3.22 grams (Fig. 7: 8). Another polyhedral weight has been made from a simple ball, by removing the sides. This has four rounded square faces, a length of about 8.5 millimetres, and a weight of 3.47 grams (Fig. 7: 9). The unit of weight of this set was 3.96 to 4.19 grams, corresponding to the unit of weight of the Scandinavian system. In terms of the marks on their faces, all of the weights in this set belong to chronological group two, dated to the late tenth to eleventh century. The remaining five objects in the set are substitutes for weights: a ball weighing 1.71 grams (Fig. 7: 10), a poppy-head terminal from a brooch weighing 5.86 grams (Fig. 7: 12), a spiral weighing 0.75 grams (Fig. 7: 13), and a flat bronze disc (Fig. 7: 11). In addition to the weights, the leather purse also contained ten cherry stones for stabilising the scales, two eleventh-century coins (Germany, Strasbourg, Bishop Udo IV (950–965), Dbg. 929, a coin minted in Cologne in the early eleventh century), and a piece of a glass bead. The weights and substitutes for weights in the set weigh a total of 255.37 grams. The burial dates from the eleventh century.

Seven sets of weights are known from the Latgallian area. Generally, these are tenth to eleventh-century sets without substitute weights: Priekuļu Ģūģeri, burial 30 (10); Ērgļu Jaunāķēni, burials 17 (6) and 28 (7); Madona cemetery, burial 24 (9); Lejasžagari, burial 16 (9); Brīveri, burial 56 (3); and Liepkalnes Ķesteri, burial 2 (3).

Six sets of weights are known from the Semigallian area. Unfortunately, the weights from Semigallian cemeteries are often very poorly preserved, possibly because of the clayey soil: in many cases the bronze sheathing is broken, and the marks on the faces are poorly visible. The original weight is difficult to ascertain. Sets of weights have been found at Mežotne cemetery, burial 9 (eight pieces), and at Mežotnes centrs, burials 86 (six pieces) and 79 (four pieces) (Ceplīte 1974). The list of weights compiled by R. Ceplīte may now be supplemented with a further three sets: from Čunkāni-Dreņģeri, burial 311; Bāļas-Šķērstaiņi, burial 2; and Gaideļi-Viduči, burial 44. Burial 311 at Čunkāni-Dreņģeri, dated to about the year 1000, has produced scales along with a set of seven weights (Atgāzis, 1990). All of the weights are barrel-shaped, made of iron and sheathed in bronze; they are very badly preserved. Only two of the weights can be seen to have faces at the ends, but no markings are distinguishable. The data are as follows. No 1: weight 22.88 grams, diameter 22 millimetres. No 2: weight 24.91 grams, diameter 21 millimetres. No 3: weight 13.53 grams, diameter 18 millimetres. No 4: one face with a row of pellets along the edge, weight 7.96 grams, diameter 15 millimetres. No 5: weight 7.40 grams, diameter 14 millimetres. There were two more weights in the set, of which no more than lumps of rust remain (VI 250: 168). Scales, a box for scales, and a set of weights were found with burial 2 at Bāļas-Šķērstaiņi. The burial is dated to the tenth century (Atgāzis 1980). The ornamented scales box had been wrapped in cloth. Only the edges of the pans of the scales were preserved, and these were likewise ornamented. The balance mechanism was also decorated. Together with the scales, a set of seven weights was found in a wooden holder (Table 1).

Burial 44 at Gaideļi-Viduči, which also had scales and a box for scales, produced two weights together with discs from a bronze cruciform pin (Zemītis 2004). The burial is dated to the tenth century, but even at this early date the first substitutes for weights occur together with actual weights. The excavated material is kept at the Ģ. Eliass Jelgava Museum of History and Art.

Table 1. Seven barrel-shaped bronze weights from Bāļas-Šķērstaiņi cemetery, burial 2

No.	Dimensions: 1- diameter in the middle, 2- height, 3- diameter of the faces (mm)	Marks on the faces	Weight, unit of weight (g)	Accession No.
1.	32 x 23 x19	No marks visible on faces	96.37 (100.04 before restoration)	VI235: 79a
2.	22 x 17 x 14	No marks visible on faces	34.38 (37.35 before restoration)	VI235: 79b
3.	19 x 15 x 12	No marks visible on faces	21.36 (23.99 before restoration)	VI235: 79c
4.	17 x 12 x 9	On one face: two linked pellets, circle of dots around the edge	14.05 (14.77 before restoration)	VI235: 79d
5.	17 x 12 x 11	On one face: two circles of dots along the edge	15.00 (15.82 g before restoration)	VI235: 79e
6.	15 x11 x 9	No marks visible on faces	10.51 (11.54 before restoration)	VI235: 79f
7.	13 x 10 x 8	No marks visible on faces	7.51 (8.29 before restoration)	VI235: 79g

Only one set of weights is known from the Gauja Livs. This comes from burial 37 at Turaidas Pūteļi (six pieces). Sets of scales are not characteristic of Curonian burials: the weights generally occur individually, an exception being cremation burials 20 and 21 at Raņķu Kapenieki, each of which produced three weights (Ceplīte 1974).

Substitutes for weights

The earliest substitutes for weights occur as early as the tenth century, found with burial 44 at Gaideļi-Viduči. However, most substitutes for weights belong to sets from the late eleventh and twelfth centuries. There are 26 substitutes for weights from burial sites of the Daugava Livs, found together with actual weights. These have been recovered at: Salaspils Laukskola, burial 121 (five pieces), burial 163 (four pieces), burial 509 (one piece), burial 582 (six pieces), and burial 596 (two pieces); Vampenieši II, burial 74 (four pieces); and Ciemupes Čabas, burial 12 (four pieces). The set of pieces placed in a leather purse found with burial 582 at Salaspils Laukskola consisted of six weights and six substitute pieces (VI 128: 7895) (Fig. 14). All the weights in this group belong to chronological group three, from the late eleventh to the twelfth century. The largest one weighed 38.21 grams, while the smallest substitute piece weighed 4.59 grams. The burial is dated to the second half of the twelfth or the early thirteenth century. Parts from items of jewellery, various bars and pieces of bronze were most commonly used as substitutes for weights. Examples of pieces of bronze jewellery include: terminals from bronze penannular brooches, heads of bronze dress-pins, fragments of neck-rings, various spirals, bronze beads, and balls and fittings. Bronze blanks, bronze and silver bars, and fused pieces were commonly used. In addition to actual weights, the sets also include unusual objects: an ornamented bone tube, a piece of red amber, etc. In three cases, cherry stones were found together with sets of weights, at Salaspils Laukskola, burial 121 (two pieces) and burial 596 (one piece), as well as ten at Doles Vampenieši II, burial 74. These were evidently used for stabilising the scales. It is entirely possible that the small stones found together with weights at two sites also served as weights: these come from the cemeteries of Ciemupes Čabas (two pieces) and Brūveri (three pieces). These are all smooth pebbles, light yellow in colour, weighing 1.9 to 22.54 grams. Substitute weights become more frequent in sets of scales from the twelfth century.

The system of weights

Theoretically, the Scandinavian and ancient Russian systems of weights were known in present-day Latvia. However, research indicates that the Scandinavian system of weights was in use practically throughout Latvia (Berga 2009, 2011), in which the barrel-shaped weights had a unit of weight corresponding to 3.9 to 4.1 grams. It is possible that a local system of weights also existed in present-day Latvia, because written sources mention the *osering* as a unit of weight, a local means of payment, monetary unit and unit of accounting. Scandinavia had its own system from the ninth century, based on the mark, 204 grams, equal to half the Iraqi pound. An *öre* (1/8 of a mark) weighed 25.5 grams, and an *örtug* (1/24 of a mark) weighed 8.5 grams. The Russian system of weights was based on the 'legal' dirham, with a weight of 3.97 grams. Over time, various systems of weights developed in different countries. In Latvia, the Scandinavian system of weights was mainly used, although weights have also been found that do not correspond in terms of weight or units of weight to the Scandinavian system. These include four weights from Daugmale, which current-

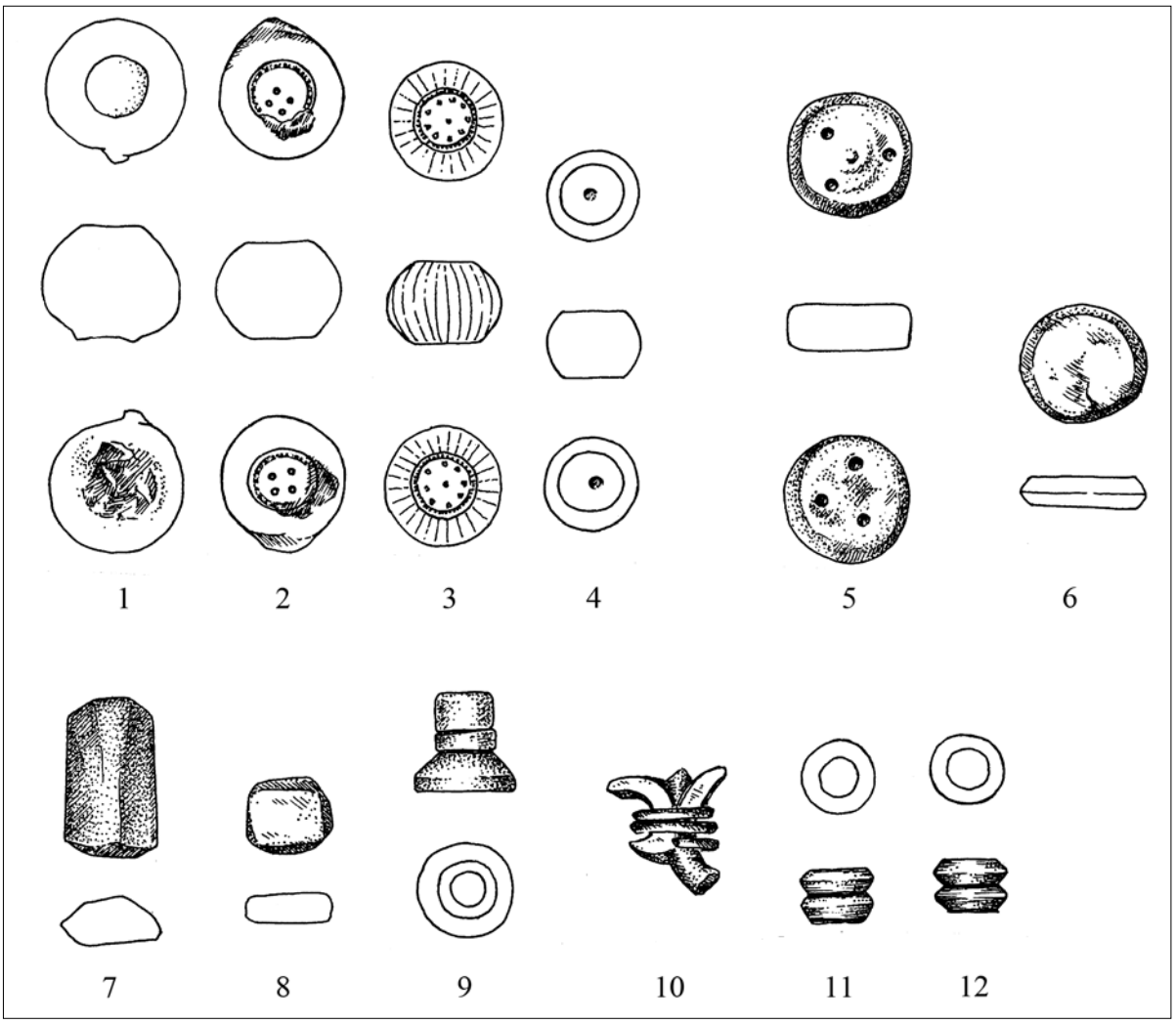

Fig. 14. Set of scales and weights from Salaspils Laukskola cemetery, burial 582. Late twelfth or early thirteenth century. 1 barrel-shaped weight, poorly preserved, diameter 22 millimetres, weight 38.21 grams; 2 barrel-shaped weight with four circles on each face, diameter 21 millimetres, weight 31.32 grams; 3 barrel-shaped weight with banded, notched sides, ten hollows on one face, nine on the other, diameter 19 millimetres, weight 25.15 grams; 4 barrel-shaped weight with one hollow on each face, diameter 15 millimetres, weight 12.90 grams; 5 discoidal (cylindrical) lead weight with three recessed circles on each face, diameter 20 millimetres, weight 23.66 grams; 6 bronze weight with a weakly expressed angle, diameter 19 millimetres, weight 10.38 grams. The rest are substitutes for weights: 7 bronze bar, weight 16.93 grams; 8 rod, square in cross-section, weight 5.17 grams; 9 trumpet or funnel-shaped hollow bronze object, weight 8.96 grams; 10 animal-head terminal from a bronze penannular brooch, weight 13.52 grams; 11, 12 two bronze double-beads, weight 4.59 grams and 4.67 grams. VI 128:7895 (drawing by D. Zemīte).

ly have no parallels (Berga 2011). A weight from the lake settlement of Āraiši represents an unusual unit of weight. It weighs 29.89 grams, and has eight marks on each face; thus, the unit of weight is 1.86 grams (A 45: 228). In the ancient Russian monetary and weights system, the smallest unit of weight, the *rezan*, corresponded to 1.36 grams; the *kun* weighed 2.73 grams; and the *nogat* weighed 1.87 grams. The unit of weight of the piece from Āraiši seems to correspond to the *nogat*. So far, this is the only weight corresponding to the Russian system of monetary weights. In the thirteenth century, judging from the weights with cruciform chiselled marks, changes occurred in the system of weights which require further research.

Steelyards

Trading equipment includes one more group of eleventh to thirteenth-century objects, which have so far been insufficiently studied in Latvia, namely steelyards with counterweights and weight balls. A steelyard is a simple one-sided balance. Two types of steelyards have been found in Latvia. The older type of steelyard consisted of a beam with weight divisions that formed a scale. A weight (a bead with a circular or square perforation, or a suspended weight) was threaded on to the bar at one end. The object to be weighed was suspended from the other end. The counterweight was moved along the scale. Steelyards of this kind were also used

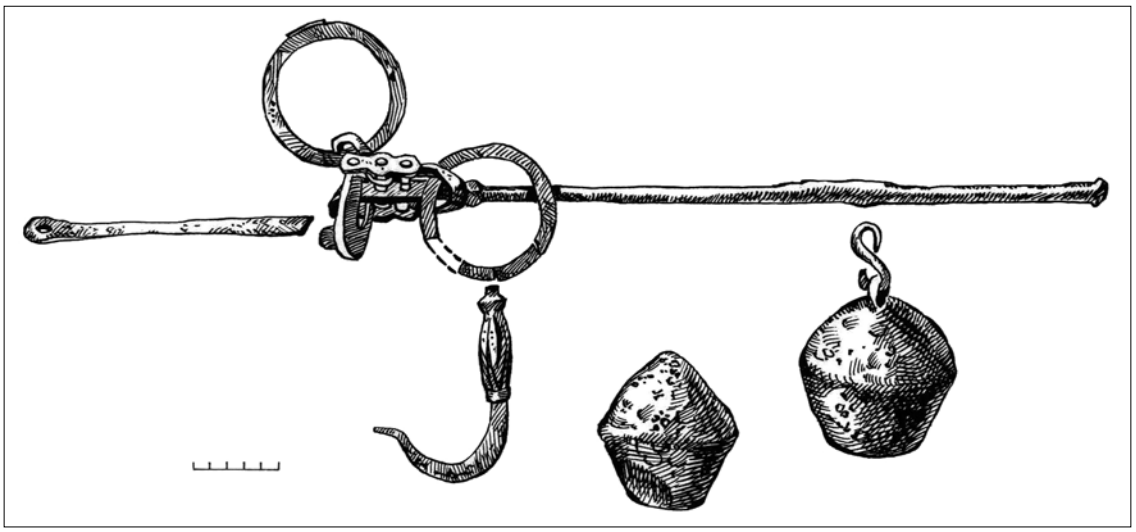

Fig. 15. Steelyard from the smith's hoard at the village site of Doles Rauši. Drawing: Gina Goģe. Plan no 145-5: 465. Collections of the Institute of Latvian History, Repository of Archaeological Material (LVI A MK) (drawing by Gina Goge).

in the Viking Age, but the parts of the wooden beam have not been preserved (Holden 2009, 587). Beads of bronze or lead serving as counterweights for steelyards have been found in Latvia, at the cemeteries of Lejasdopeles (VI 56: 368), Daugmale (A 9964:7565), Mežīte (A 13687: 17), Aizkraukle (A 13287: 47), and Mežotnes centrs (VI 150: 389). These are polyhedral, biconical or cubic, with a circular or square perforation. Steelyards of this kind could be used to weigh light objects.

Later in date heavy steelyards consist of a metal beam with chiselled marks, a hook with a chain, and a weight ball with a loop. This type of steelyard remains in use today, and could be used to weigh heavier objects. Components from a steelyard were first found in Latvia in the course of excavations at Koknese hill-fort. These finds consisted of an ornamented iron hook sheathed in bronze, a bipyramidal weight with a loop, and a ball weighing 2.85 kilograms (VI 162: 3202, 5810). There is evidence of a further two finds of steelyards in Latvia. Parts of a steelyard of the second type have been found in the craftsman's hoard from the village of Doles Rauši (Fig. 15): a beam with a hook, a chain, and two bipyramidal weights, weighing 1.3 kilograms and 2.26 kilograms (together with the hook) (VI 145: 1665, 1666, 1667). From Mārtiņsala, there is a chain from a steelyard with hooks and a weight of 530 grams (LVM, RDM I 2481; VI 127: 1082). A small iron weight of pyramidal form, with a loop at the end, is also known from Daugmale (A9964: 9129).

Trade routes

The distribution and chronology of scales and weights indicates the different directions of trade routes used by various ancient peoples. The western part of Latvia had close links with the west, and the first dirhams arrived in the ninth century by a roundabout route, through Gotland. In the tenth century, dirhams and some weights and scales from the earliest group occur in Semigallia, in the basin of the River Lielupe. The Daugava transit waterway began to function only in the tenth century, and in the eleventh century we see a concentration of west European coins and trading equipment in the Lower Daugava area. The Gauja waterway was also significant, but finds of trading equipment are not numerous in the Gauja basin, in contrast to the quantity of west European coinage. The Latgallian sites in the area between the River Gauja and the River Arona, a tributary of the Aiviekste, have produced weights from the earliest group, and unique scales with an Arabic inscription, as well as the only weight so far found that corresponds to the ancient Russian system of monetary weights. The arrival of trading equipment from the east along the Daugava was not possible during the tenth century. Right up to the tenth century, the Latgallians and Selonians were forced to block the transit trade along the Daugava waterway, in order to protect the borders of their lands from the east (Eremeev 2012). An important reason for this was the specific character of trade in this period: robbery and tax payments were a regular and unavoidable aspect of trading at that time. However, trading links with the east did exist, and the trading equipment from eastern Latvia provides clear evidence of this. The oldest trade route was the northeast land route, connecting the Latgallian-populated area with the Dnieper region of Smolensk and the sites of Gnezdovo. The Venta trade route was very important in northern Kurzeme, where the hill-forts of Talsi and Mežīte constituted an important centre. The Venta waterway continued to be used

extensively in the thirteenth century, as is indicated by finds of coins and hoards (Berga 2014b).

Conclusions

Collapsible scales and weights appear in Latvia in the late tenth century, and were particularly widespread in the eleventh century, remaining in use right up to the thirteenth century. Collapsible scales and weights, just like dirhams, were brought to eastern Europe and present-day Latvia from the east, from the Arab world. The numerous scales found in Latvia differ chronologically and in terms of the area of manufacture, showing differences in dimensions, ornamentation, form of attachment of the pans of the scales, rim design, and particular details, etc. Bronze boxes for collapsible scales were more commonly used in the Curonian area, being less widespread among the Semigallians and Daugava Livs. The weights found in Latvia include three basic forms, barrel-shaped, polyhedral and discoidal, of which the barrel-shaped weights prevailed. Grouping the weights according to the different markings on their faces has permitted the distinction of four chronologically distinct groups of weights: weights from the second half of the tenth century; weights from the late tenth and eleventh centuries; weights from the late eleventh and twelfth centuries; and weights with a cross on the face or with deep cruciform chiselled marks, which relate to a late chronological period, the twelfth and thirteenth centuries. The four large weights found in Latvia with imitation Arabic script are thought to originate from Scandinavia. The sets of weights from burials are very important for resolving the question of the system of weights and for dating the weights. The composition of these sets of weights differs chronologically, reflecting the fact that they belong to particular chronological groups. Substitutes for weights occur mainly in sets from the late eleventh and twelfth centuries. Theoretically, the Scandinavian and ancient Russian systems of weights were known in Latvia. However, research has revealed that the Scandinavian system of weights was in use practically throughout Latvia. The barrel-shaped weights generally weighed 3.9 to 4.1 grams. Judging from the weights with cruciform chiselled marks, there were changes in the system of weights in the thirteenth century which require further study. Several components of steelyards have been found in Latvia (11 in number), along with weights of various sizes. The steelyards, a simple one-sided form of balance, has not yet been sufficiently researched in Latvia.

The distribution and chronology of the scales and weights indicates the different directions of trade routes used by the various ancient peoples inhabiting present-day Latvia. Mapping all the finds reveals three areas of concentration of trading equipment: the Lower Daugava area, the Lielupe basin, and northern Kurzeme. The western part of Latvia had close contacts with the west, and the first dirhams arrived by a roundabout route via Gotland. In the eleventh century, the Daugava Livs had very extensive trading links with both the west and the east, and we see in the Lower Daugava area a concentration of west European coins and trading equipment. The Lielupe basin of Semigallia has produced the earliest scales and boxes for scales, dated to the second half of the tenth century. In the eleventh century, the Venta waterway was very important for northern Kurzeme. Trading equipment is less commonly found in the eastern part of Latvia, at Latgallian and Selonian sites, the earliest trading equipment being represented in the area between the left bank of the Gauja and the Arona, a tributary of the Aiviekste. The finds of trading equipment from this area (weights belonging to the earliest group and a unique set of scales with an Arabic inscription) mark a northeast direction, a land route connecting the Latgallian area with ancient Russia.

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Abbreviations

AE – Arheoloģija un etnogrāfija, Rīga, since 1957

CVVM, A, VI, LVM, RDM – accession codes of the collections of the National History Museum of Latvia

MNM – accession code of Madona Regional History Museum

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X–XIII A. PREKYBOS ATRIBUTŲ PAPLITIMAS IR CHRONOLOGIJA DABARTINĖJE LATVIJOJE

TATJANA BERGA

Santrauka

Sulankstomos svarstyklės ir svarsteliai pasirodė Latvijoje X a. pabaigoje, ypač išplito XI a. ir buvo naudojami iki pat XIII a. Gausiai Latvijoje randamos svarstyklės, kaip prekybos atributas, skiriasi pagal chronologiją ir gamybos vietas (1 pav.).

Latvijoje randami svarsteliai yra trijų pagrindinių tipų: statinaitės pavidalo, daugiasieniai ir elipsės pavidalo (7–14 pav.). Vyrauja statinaitės pavidalo svarsteliai.

Grupavimas pagal skirtingą viršutinių paviršių ženklinimą leido išskirti keturias chronologiškai skirtingas svarstelių grupes. Tradiciškai yra manoma, jog Latvijoje buvo naudotos skandinaviška ir Senosios Rusios svarstelių sistemos. Tyrimai atskleidė, kad skandinaviška svarstelių sistema vyravo, ji buvo naudojama visoje Latvijoje. Sprendžiant pagal svarstelius su iškaltais kryžiaus pavidalo ženklais, XIII a. svarstelių sistemoje vyko pokyčiai, kuriems suprasti dar reikia išsamesnių studijų.

Radinių kartografavimas atskleidžia tris prekybos atributų paplitimo arealus: Dauguvos žemupio, Lielupės baseino ir šiaurės Kuršo. Vakarinių Latvijos teritorijų gyventojai palaikė glaudžius ryšius su Vakarais, todėl ir pirmieji dirhemai pateko ne tiesiogiai iš Rytų, bet aplinkiniu keliu, per Gotlandą. XI a. Padauguvio lyviai palaikė intensyvius prekybinius ryšius ir su Vakarais, ir su Rytais. Lielupės baseine, Žiemgaloje, buvo pagamintos ankstyviausios Latvijoje žinomos svarstyklės ir dėžutės svarstyklėms, datuotos X a. antrąja puse. XI a. Ventos vandens kelias buvo labai reikšmingas prekybos atributams kuršių žemėse išplisti. Rytinėje Latvijos dalyje, latgalių ir sėlių žemėse, ankstyviausių prekybos atributų rasta areale tarp kairiojo Gaujos kranto ir Aronos, Aiviekstės intako. Prekybos atributų radiniai rodo šiame areale buvus prekybos kelius į šiaurės rytus, jungusius Latgalą su Senąja Rusia.