

Categoria A

REVISTA ARHEOLOGICĂ

serie nouă _ vol. XXI _ nr. 1

Indexată în bazele de date:

SCOPUS, ERIH PLUS, DOAJ, CEEOL, ROAD, ISIFI, CiteFactor

CHIȘINĂU 2025

ISSN 1857-016X
E-ISSN 2537-6144

INSTITUTUL PATRIMONIULUI CULTURAL
SECȚIA PATRIMONIU ARHEOLOGIC

REVISTA ARHEOLOGICĂ

Editor-in-Chief/Redactor șef: dr. Ghenadie Sîrbu
Secretar de redacție/editorial secretary: Livia Ermurachi

Colegiul de redacție/Editorial Board

Dr. **Ludmila Bacumenco-Pîrnău** (*Chișinău/Iași*), dr. hab. **Igor Bruiako** (*Odesa*), dr. hab. **Dumitru Boghian** (*Târgu Frumos*), dr. hab. **Roman Croitor** (*Aix-en-Provence*), dr. **Lilia Dergaciov** (*Chișinău*), dr. hab. **Valentin Dergaciov** (*Chișinău*), dr. **Alexandr Diachenko** (*Kiev*), dr. **Vasile Diaconu** (*Târgu Neamț*), dr. **Mariana Gugeanu** (*Iași*), prof. dr. hab. **Svend Hansen** (*Berlin*), prof. dr. hab. **Elke Kaiser** (*Berlin*), dr. **Sergiu Matveev** (*Chișinău*), prof. dr. hab. **Michael Meyer** (*Berlin*), dr. **Octavian Munteanu** (*Chișinău*), prof. dr. hab. **Sergiu Musteață** (*Chișinău/Târgoviște*), prof. dr. hab. **Gheorghe Postică** (*Chișinău*), dr. hab. **Eugen Sava** (*Chișinău*), prof. dr. hab. **Sergei Skoryi** (*Kiev*), prof. dr. **Victor Spinei**, membru al Academiei Române (*București, Iași*), prof. dr. hab. **Marzena Szmyt** (*Poznan*), dr. **Nicolai Telinov** (*Chișinău*), dr. **Denis Topal** (*Chișinău*), dr. **Vlad Vornic** (*Chișinău*), dr. **Aurel Zanoci** (*Chișinău*).

Manuscrisele, cărțile și revistele pentru schimb, precum și orice alte materiale se vor trimite pe adresa: Colegiul de redacție al „Revistei Arheologice”, Secția Patrimoniul Arheologic, Institutul Patrimoniului Cultural, bd. Ștefan cel Mare și Sfânt 1, MD-2001, Chișinău, Republica Moldova

Рукописи, книги и журналы для обмена, а также другие материалы необходимо посылать по адресу: редакция «Археологического Журнала», Секция археологического наследия, Институт культурного наследия, бул. Штефан чел Мареша 1, MD-2001 Кишинэу, Республика Молдова

Manuscripts, books and reviews for exchange, as well as other papers are to be sent to the editorship of the “Archaeological Magazine”, Section of Archaeological Heritage, Institute of Cultural Heritage, 1 Stefan cel Mare si Sfânt bd., MD-2001 Chisinau, Republic of Moldova

Toate lucrările publicate în revistă sunt recenzate de specialiști în domeniu după modelul *double blind peer-review*
Все опубликованные материалы рецензируются специалистами по модели *double blind peer-review*
All the papers to be published will be reviewed by experts according the *double blind peer-review* model

CUPRINS – СОДЕРЖАНИЕ – CONTENTS

STUDII – ИССЛЕДОВАНИЯ – RESEARCHES

Nadezhda Kotova (<i>Kiev</i>), Simon Radchenko (<i>Stavanger</i>) “M”-like ornamentation in the Southeastern Europe and surroundings during VII-V Millennia BCE	5
Arsen Harutyunyan, Vahe Sargsyan, Hayk Gyulamiryan (<i>Yerevan</i>) The Tradition of Epigraphy as a Foundation of State Strategy in the Armenian Highlands	27
Николай Николаев (<i>Кропивницкий</i>), Лилия Цыганенко (<i>Измаил</i>) Новые памятники малой эпиграфики Северного Причерноморья	41
Kateryna Savelieva (<i>Kiev</i>) Private places of worship in Tyras during Roman times	48
Gheorghe Postică, Ion Tentiuc (<i>Chişinău</i>) The money-weight economy in the Carpathian-Dniester area in the 9th-11th centuries (archaeological contributions)	63
Mariia Videiko (<i>Kiev</i>) Topografia și arheologia oraşului Trepol de pe Nipru în secolele XI-XIII	93

MATERIALE ŞI CERCETĂRI DE TEREN – МАТЕРИАЛЫ И ПОЛЕВЫЕ ИССЛЕДОВАНИЯ – PAPERS AND SURVEYS

Najaf Museibli (<i>Baku</i>) Child graves at Galayeri settlement of the Leilatepe culture)	110
Natalia Ovcearov, Vlad Vornic, Sergiu Matveev, Sergiu Popovici (<i>Chişinău</i>) O aşezare cu urme de locuire din eneolitic și perioada romană târzie descoperită la Calaraşovca (r-nul Ocnița)	123
Sergiu Popovici (<i>Chişinău</i>), Mariana Popovici (<i>Iași</i>), Sergei Agulnikov (<i>Chişinău</i>), Vasilica-Monica Groza, Ozana-Maria Ciorpac-Petraru (<i>Iași</i>) Tumulul 23 de la Congaz	138
Vitalii Hutsal (<i>Kamianets-Podilskii</i>), Oleksandr Mohylov, Yuliia Ushkova (<i>Kiev</i>) Bronze Age burial mounds on Husykova Hill in the Zbruch region	160
Игорь Бруяко (<i>Одесса</i>) Жилые сооружения на поселении Картал II (эпоха раннего гальштата)	180
Сергей Скорый (<i>Киев</i>), Александр Супруненко (<i>Полтава</i>) Неординарная находка раннескифского времени на юге Лесостепного Левобережного Поднепровья	202
Vasile Iarmulschi (<i>Berlin/Chişinău</i>), Vlad Vornic (<i>Chişinău</i>) O fibulă din bronz de tip Nauheim descoperită la Gura Bâcului (raionul Anenii Noi, Republica Moldova)	208

DISCUȚII – ДИСКУССИИ – DISCUSSIONS

Эльнур Лятиф оглу Гасанов (*Гянджа*)

Исследование историко-археологических переселений города Гянджи
на основе изучения ремесленных образцов215

CERCETĂRI INTERDISCIPLINARE – МЕЖДИСЦИПЛИНАРНЫЕ
ИССЛЕДОВАНИЯ – INTERDISCIPLINARY SURVEYS

Guram Chkhatarashvili (*Batumi*), James A. Davenport, Michael D. Glascock (*Missouri*),
Hülya Çalışkan Akgül (*Karadeniz*)

Spread of obsidian and mobility pattern of humans in the South-Eastern Black Sea Coast226

Дмитрий Кириченко, Анар Абдуллаев (*Баку*)

О двух случаях травматических повреждений на черепках из Азербайджана
(эпоха античности)238

IN HONOREM

To the anniversary of Professor S.A. Skoryi

(Oleksandr Mohylov, *Iași*)252

LISTA ABREVIERILOR – СПИСОК СОКРАЩЕНИЙ – LIST OF ABBREVIATION256

INFORMAȚII ȘI CONDIȚIILE DE EDITARE A REVISTEI ARHEOLOGICE257

ИНФОРМАЦИЯ И УСЛОВИЯ ИЗДАНИЯ АРХЕОЛОГИЧЕСКОГО ЖУРНАЛА258

INFORMATION AND CONDITION OF PUBLICATION IN THE ARCHAEOLOGICAL
MAGAZINE259

Gheorghe Postică, Ion Tentiuc

The money-weight economy in the Carpathian-Dniester area in the 9th-11th centuries (archaeological contributions)

Key words: Early Middle Ages, Carpatho-Dniester space, the money-weight economy, hoard, torques, dirhams, cut silver, balance scales, weights.

Cuvinte cheie: evul mediu timpuriu, spațiul carpato-nistrean, economia banilor cântăriți, tezaure, colane, dirhemi, argint tăiat, cântar-balanță, greutate.

Gheorghe Postică, Ion Tentiuc

The money-weight economy in the Carpathian-Dniester area in the 9th-11th centuries (archaeological contributions)

The archaeological and numismatic finds highlight to a considerable extent the level of development of the Romanian medieval communities of the end of the 1st millennium – the beginning of the 2nd millennium. Of special importance for assessing the economic condition of the region are hoards of tools and weapons, as well as monetary or mixed hoards. Their composition offers special possibilities for the reconstruction of the socio-economic, political and cultural realities of the period when they were hidden. One of the features of the European economy of the 9th-11th centuries was the use of money made from precious metals as a means of exchange. Coins, ingots, collars or silver jewelry served as money. The main factor was the weight of the objects, which was tested on small scales. This is confirmed by the discovery of segmented artefacts in the so-called cut silver hoards (silver objects divided into pieces of a certain weight) (Hacksilver). An economic system in which the function of money as an equivalent in trade transactions was performed by coins, ingots, collars, and jewelry made of precious metals, which were weighed during the exchange process, researchers call a money-weight economy (Gewichtsgeldwirtschaft). Archaeological sources allow us to trace the transition of Romanian communities from a natural economy of the autarkic household to the monetary economy of commodity-money relations, when silver acted as a medium of exchange. To the south and east of the Carpathians, artefacts related to commodity-money exchange (Islamic and/or Byzantine coins, ingots, silver collars, some of which were cut into pieces, weights and scales) were discovered in settlements, in hoards or as isolated finds at the sites of Bucov, Slon, Alcedar, Cunicea, Cureșnița, Echimăuți.

Gheorghe Postică, Ion Tentiuc

Economia banilor cântăriți în spațiul Carpato-Nistrean în secolele IX-XI (contribuții arheologice)

Vestigiile arheologice și numismatice scot în evidență într-o măsură considerabilă nivelul de dezvoltare a comunităților medievale românești de la sfârșitul mileniului I – începutul mileniului al II-lea. De o importanță aparte pentru aprecierea stadiului economic sunt depozitele de unelte și arme și tezaurele monetare sau mixte. Structura lor oferă posibilități deosebite pentru reconstituirea realităților social-economice, politice și culturale ale perioadei când au fost tănuite. Una dintre trăsăturile economiei europene din secolele IX-XI era utilizarea în procesul schimbului a banilor din metal nobil. În calitate de bani serveau monedele, lingourile, colanele sau podoabele din argint. Aprecierea banilor pentru schimb se făcea în funcție de greutatea pieselor, verificată cu ajutorul balanței pentru cântare mici. Fenomenul este confirmat de identificarea artefactelor segmentate în componența așa-numitelor *Tezaure cu argint* tăiat (segmentat prin tăiere) (Hacksilver). Sistemul economic în care banii, reprezentați prin monede, lingouri, colane, piese de podoabă din metal nobil, utilizați în calitate de echivalent în tranzacțiile comerciale, erau cântăriți în procesul de schimb, este definit de cercetători drept „economia banilor cântăriți” („Gewichtsgeldwirtschaft”). Sursele arheologice surprind trecerea comunităților românești de la economia naturală a gospodăriei autarhice la economia monetară a relațiilor marfă-bani, când schimbul se efectua prin intermediul banilor, iar calitatea de mijloc de schimb era asigurată de argintul monetar cântărit. La sud și la est de Carpați artefacte privind schimbul bani-marfă (monede islamice și/sau bizantine, lingouri, colane de argint (unele) segmentate prin tăiere, ponduri și balanțe) au fost descoperite în așezări, tezaure, depozite sau izolat la Bucov, Slon, Alcedar, Cunicea, Cureșnița, Echimăuți.

Introduction

No written information has been preserved regarding the economic and social life of the Romanian communities of the Carpathian-Dniester area during the period of the end of the 1st mil-

lennium – the beginning of the 2nd millennium. Thus, archaeological sources are the most convincing for the reconstruction of the life and socio-economic relations of this population in the 8th-11th centuries. Archaeological investiga-

tions carried out in recent decades has provided researchers with important materials that allow, to a certain extent, to assess the level of development of Romanian medieval communities east of the Carpathians, and to identify the features of their agricultural, pastoral, craft and trading activities. On the other hand, archaeological evidence suggests that at the turn of the two millennia the socio-economic, political and cultural processes in which the local communities of the region were involved were in full agreement with similar processes in Central, Northern and Western Europe. This was the time when the autarkic economy, based on natural exchange, began to be drawn into new types of relationships using money. So, the natural exchange of *goods for goods* gradually gave way to *commodity-money relations*.

Special historical research proves that exchange relations in Western Europe in the last quarter of the first millennium were based on the *monetary economics*, known as “Munzgeldwirtschaft” or “Silver economy” [Schneeweiss 2013, 237]. At the same time, a similar phenomenon in Central Europe is called the *money-weight economics* “Gewichtsgeldwirtschaft”. According to some estimates, the border between the two economic systems ran along the Elbe River basin: in the western part, the *monetary economics* operated, and in the eastern part, the intrinsic value of silver money used in trade exchange was checked using small balance scales with two bronze weighing dishes [Schneeweiss 2013, 237-238]. In this region, as well as in Northern Europe, money used in commercial exchange was represented by coins, ingots, silver bars, some of which were divided into parts by notches, etc.

Aspects of the socio-economic and political development of the early medieval communities of the northern Lower Danube territories are widely covered in Romanian historiography. An important assessment is given to the production relations and processes that led to the acceleration of social and property differentiation, of the factors that accelerated the emergence of the embryos of feudal relations within village communities. Researchers defined the nature of the economy of the Romanian communities of this period as “transformation economy” [Pascu *et al.* 2010, 194-225]. It was found that intensive plowing of virgin lands and uprooting of forests in conditions

of the Medieval Warm Period boosted the development of agriculture and crafts. The demand for iron agricultural tools stimulated the development of iron metallurgy, which, in turn, stimulated local and regional economic exchange.

During the early Middle Ages, the main directions of trade of the Eastern Carpathian Romanians were oriented towards the Byzantine Empire [Preda 1975, 229-233; Teodor 1981, 59-73; Spinei 1994, 122; Vilcu, Isvoranu 2015, 97-107].

Archaeological investigations, however, confirm the existence of a continuous commercial exchange, represented by various Byzantine imports. But the military-political, economic and religious problems that Constantinople faced in the last quarter of the first millennium led to the presence of Byzantine goods and coins east of the Carpathians being significantly reduced compared to the previous period [Teodor 1981; Musteață 2014].

The economy of the Byzantine Empire at the end of the 8th century and the beginning of the 9th century, after a period of socio-economic crisis, had an ascending character, caused by the restart of money circulation, strong monetization of the economy and an increase in the volume of currency on the market [Custurea 2000, 112]. Excessive taxation and the rigid organization of the internal and external trade of the empire caused uprisings within the country and discontent of foreign merchants interested in trade with Constantinople. This, in our opinion, explains the successive raids of the Scandinavians and Kievan Rus on the empire in 860, 911, 940 and 1043. They ended with the conclusion of treaties between the parties, which indicates the economic nature¹ of the claims [Brătianu 1940, 32] and not territorial conquests, as some researchers tried to claim [Azbelev 1958, 166-170]. For understanding the level of development of the Byzantine economy in this period, the collection of laws *Basilika* and the imperial edict *Book of the Eparch* are important [Siuziumov 1958]. The economic recovery associated with the increase in handicraft production and the dynamism of international trade required the updating

1. An example is the war declared by Tsar Simeon of Bulgaria (893-927) who in 894, being dissatisfied with the fact that the market of the Bulgarians with the Byzantines was transferred from Constantinople to Thessaloniki, began a war with the Empire [Brătianu 1940, 32]. Among the causes of the “trade war” (894-896) is the imposition of very high trade taxes [Nasledova 1956, 61-84].

of Justinian law (*Corpus Iuris Civilis*). To meet the realities of the late 9th and early 10th centuries, the Justinian code of laws, quasi-functional during the crisis, was revised in the reign of Emperor Basil I the Macedonian (867-886), the process completed by Leo VI the Philosopher (886-912). The imperial edict the Book of the Eparch for the first time established strict legislative rules for the activities of craft guilds and merchant guilds. Their listing by the legislator allows us to understand the scale of trade and craft activities and the role of the state in regulating prices, import and export of goods of the empire [Siuziumov 1951, 11-41; Siuziumov 1958, 67-75]. These socio-economic phenomena reflect the general trends in the development of the European economy during this period.

Archaeological research shows that at the end of the 1st millennium and the beginning of the 2nd millennium, significant socio-economic and demographic growth took place in the regions east of the Carpathians. During this period, the number of settlements, especially "large and very large" [Hyncu 1972, 169; 1997; Teodor 1978, 102-107; Postică 2007, 100-103], increased sharply in the central and northern parts of the Carpathian-Dniester area. Some of them had fortification systems with defensive ditches and palisades located on earthen ramparts. Craft complexes were investigated in fortresses and their environs, on the outskirts of open settlements; these complexes represented workshops with bloomeries, transformed into real *suburbia* with special craft districts. The number of workshops for the manufacture of tools, weapons and armor of iron, ware of bronze, stone or bone, ornaments of non-ferrous metals increased. Craftsmen supplied the local population with agricultural tools, utensils for common or personal use. Excess produce was offered for exchange at the local or regional market. Other necessary goods were purchased at temporary or permanent fairs, stopping places, or exchange points located near land or river trade routes.

Archaeological explorations demonstrate that the main occupations of the medieval extra-Carpathian Romanian communities were related to agriculture and livestock breeding. A large number of discovered agricultural tools and their diversity indicate that local communities lived a sedentary life in the old rural habitation areas. The presence of craft activities is indicated by a sig-

nificant number of craft workshops. Among them, complexes related to the concentration and reduction of iron ore, forging of tools and household utensils stand out. Iron metallurgy in the 9th-11th centuries played a special role in the development of the region's economy, determining the course of production and the evolution of trade. Research has revealed in the extra-Carpathian regions dozens of furnaces for the reduction of iron ore, blacksmith workshops and craft centers, hoards of tools and weapons, hoards of coins with silver jewelry or clothing accessories, and other complexes with remains of local production or import. In the field of commodity exchange, the discovery of objects of Byzantine, Scandinavian or Eastern origin, dating from the 8th to 11th centuries, along large waterways east of the Carpathians allows us to reconstruct not only the level of economic development of local communities, but also the ways of carrying out economic exchange and the directions of trade routes of that period.

Researchers have found that trade exchange, evidenced by hundreds of hoards of tens of thousands of silver coins, especially Kufic dirhams, in Central-Northern and Eastern Europe, was quite extensive in the 9th and 10th centuries. The phenomena occurring in the Eurasian space accelerated socio-economic and demographic, military-political and politogenesis European processes, involving the Romanian extra-Carpathian communities in this activity. Written and archaeological sources from the end of the 1st millennium and the beginning of the 2nd millennium clearly highlight the dynamics of regional and transcontinental economic ties.

Western, Byzantine, Arab-Persian, Scandinavian and Old Russian sources reflect the complexity of trade relations, the directions of flows and the diversity of goods, the forms and characteristics of contacts between different regions of Eurasia, communication routes, waterways and land routes that connected Central and Northern Europe with the regions of the Arab East and along which people and goods, ideas and technological innovations moved. An important role in long-distance trade was played by Arab and Scandinavian merchants, the latter known in written sources of the 9th-10th centuries as the population of "Rhos" (*Annales Bertiniani*), "Pōç", "Rüs" (*Khurradhbih*) or "Rusios" (*Liutprand*). Liutprand of

Cremona specifies: “Rusios, quod alio nos nomine Normanos appellamus” (=Russians, whom we otherwise call Normans) [Ducene 2018, 132].

The Byzantine scholar Emperor Constantinus VII Porphyrogenitus, in his work *De Administrando Imperio* written in the middle of the 10th century mentions the particularities of exchange relations on the trade routes transited by the Scandinavians through the Slavic space, along the Dnieper. According to the Byzantine emperor, the Slavs made boats/monoxyla for the Nordic people in the winter to sell them in the summer to the Scandinavians/merchants who went with caravans along the Dnieper to Constantinople [Constantinus Porphyrogenetus 8, 5-22, 9, 78-101]. Liutprand of Cremona, diplomat, Lombard historian and bishop of Cremona as chancellor of the king of Italy Berengar II in 949 visited the court of Emperor Constantinus VII Porphyrogenitus, and in 968 the court of Emperor Nicephorus II Phocas, in Constantinople. In the work *Antapodosis* he gives the most vivid description of the capital of the Byzantine empire. Among other things, he draws attention to the population found here, which the Byzantines call “Rūs” (=Pōusios), and in the west it appears under the name of “Normans” or “people of the north” [Liutprand of Cremona 1996, 131].

Among the written sources on interregional and transcontinental trade exchange in the 9th century, the most eloquent are the accounts of the Arab scholar Ibn Khurradadhib (ca. 820-912) in his “Book of Roads and Kingdoms”. As a high-ranking official of the state, responsible for the activity of the posts and the intelligence service of the Caliphate, he describes with great knowledge the trade routes that crossed the Middle East in the second half of the 9th century. This author is one of the first to mention the merchants called Rūs (=Scandinavians) coming from the north of the continent. To get to Baghdad, the ancient Scandinavians used captive Slavs as translators. The Persian geographer Ibn al-Faqih at the end of the 9th century – beginning of the 10th century, in his work “The Book of Lands” (=Mukhtasar Kitab al-Buldan), states that the Rūs people originate from the Slavic north, from where they bring ermine, fox and beaver furs for sale. Another author, Ibn Rustah, in his work on geography “Al-A’lac an-nafisa”, written around the beginning of the 10th century,

mentions that the Rūs people have no arable land and feed on what they bring from the lands of the Slavs [Novosel’tsev 1986, 400-404]. This information also appears in the Persian anonymous source “Hudud al-Alam” from the 980s [Ducene 2018, 133]. Important information is provided by Ibn Fadlan, who, at the head of the embassy of the Abbasid Caliph Al-Muqtadir (895-932), made a trip to the Volga Bulgars in 922. Here, on the Volga, he met Scandinavian merchants and attended the funeral of a Nordic chieftain, which he described with great inspiration. The author describes an incident in which one of the Scandinavians prays for a meeting with a rich buyer in order to sell his goods well. Another author, Gardizi, in addition to information taken from older sources of the 9th and 10th centuries, including Ibn Khurradadhib’s “Book of Roads and Kingdoms”, which he reproduced in his work *Zayn al-Akhbar* (*The Beauty of Chronicles*) written in 1049-1053, states that the Russians (=Scandinavians) sell their goods only for dirhams, so the Bulgars (on the Volga) use/mint coins to trade with them [See: Barto’ld 1897; Barto’ld 1998; Kitab 1892, 145; Ducene 2018, 132-133]. An Old Russian source (PVL, I) describes “the Route from the Varangians to the Greeks and from the Greeks to the Varangians”, which ran from the Black Sea along the Dnieper to the Varangian Sea (=Baltic) in both directions.

An old trade route also ran along the Dniester. Scandinavian artefacts from the Viking period found east of the Carpathians, as well as the mention of the Vlachs on the mid-11th century rune stone from Sjonhem, confirm the use of the East Carpathian route in the 9th-10th centuries. Western and Romanian researchers identify the Vlachs from the rune stone with the Romanian population of the Carpathian-Dniester area [Metzenthin 1941, 12-13; Jonsson, Wessen 1962, 262-268; Spinei 1973, 61; Mel’nikova 2002, 298].

Development of agriculture under climate change conditions

The changes that took place on the Eurasian continent in the period from the 9th to the 11th centuries influenced the paradigm of the evolution of human communities in the European space. Among the reasons that significantly contributed to the upward socio-economic development and important demographic and political

changes in Europe, including Central-Northern and Eastern Europe, as well as the Romanians in the region south and east of the Carpathians at the end of the 1st millennium – beginning of the 2nd millennium, researchers highlight climatic changes. The sharp warming associated with the “Little Climatic Optimum” of 800-1300 [Diaz *et al.* 2011; Trouet *et al.* 2009; Goosse *et al.* 2006; Fairbridge 2005] strongly stimulated the development of agriculture and crafts [Beeson *et al.* 2001; Bosker *et al.* 2013; Shevelenko 1992, 34-62]. Western Europe entered a phase of socio-economic, demographic and politogenetic advances that gave birth to the current civilization. The agricultural boom improved the quality of food products. As a result, Western and Central-Northern Europe experienced a surprising demographic growth [Wallerstein 1992, 40-41]. The growth of agriculture, crafts and trade, the penetration of technical innovations from the East, the upward trend in economic life led to a “true flourishing” or, according to some researchers, a real European “urban revolution” in the 9th-11th centuries [Braudel 1989, 109-112; Musset 1992, 85-88; Glaeser 2014; Gollin *et al.* 2016; Andersen *et al.* 2016; Toporov 1980, 3-57]. This was the period of the birth of most modern states in Western and Central Europe. In the circum-Carpathian space, the first mentions of the Romanians and their political entities at the regional level appear during this period [Spinei 1997, 3-17].

The climatic metamorphoses at the end of the 1st millennium and the beginning of the 2nd millennium resulted in large population movements and impressive social energies on the European continent and throughout the Eurasian space. In the northern and eastern regions of Eurasia, this manifested itself in significant movements of nomadic shepherds, as well as in the migration of sedentary farmers. Thus, from the east, along the old route of the vast Eurasian steppes, the last waves of Turanian nomads reached the north-western Black Sea region [Spinei 1985; 2009]. In the north of the European continent, the Scandinavians, experienced sailors and good traders, skilled craftsmen and fearless warriors, explored the areas in the west and south of the continent [Heivud 2019] in search of rich lands, which were the subject of many legends in Germanic mythology [Sharov 1997, 95-106; Lecoutex 2010, 15-17].

The socio-economic, political and demographic processes that took place in the west and center of the continent were also felt in the Carpathian-Dniester region [Teodor 2003, 491-494]. In the area east of the Carpathians, a significant increase in the number of archaeological sites of the 9th-11th centuries has been recorded. The sizes of settlements are unusually large compared to earlier and later periods [Teodor 1978; Spinei 1994; Postică 2007, 22-26, 61-65; Tentiuc 2017, 39-43; Musteață 2018]. The socio-economic and demographic revival in Southeastern Europe, including the regions east of the Carpathians, is associated with the general political stability in the 8th-9th centuries, when the Khazar Khaganate emerged and consolidated its position in the Ponto-Caspian steppes, thus establishing the so-called “*Pax Khazarica*”. The Khazar state delayed the penetration of nomads to the west for about two hundred years, ensuring peace in the region [Spinei 1985, 45-47]. Climate warming during this period created favorable conditions for economic development and population growth.

The archaeological research undertaken in the last decades in the Carpathian-Dniester regions has revealed a significant number of features and artefacts that allow us to reconstruct the socio-economic, military-political, demographic and cultural aspects of Romanians' lives in the 9th-11th centuries. These findings have helped us to gain a much better understanding of the forms of life, main occupations, socio-economic level of development, and the relations of local Romance and Romanian communities with nomadic or resettled peoples in the region. The investigations have shown that at the turn of the 1st and 2nd millennia, in the 9th-11th centuries, strongly fortified settlements with ditches, earthen ramparts and wooden palisades appeared along large rivers (Dniester, Prut, Siret, etc.) and their tributaries, on elevated plateaus or in ravines located perpendicular to the flow of water. Numerous craft centers for metal processing and manufacturing tools and weapons were concentrated around the settlements, gradually turning into real proto-cities, economic, political, administrative and spiritual centers.

Along with the increase in the number and size of settlements, a significant improvement in the quality of life has been documented. This is

evidenced by the level of material culture and the large quantity, high quality and diversity of tools and utensils, including those made of metal. It greatly increases the number and variety of tools, weapons and military equipment made of high-quality iron, as well as products made of precious or non-ferrous metals – gold, silver or bronze, represented by utensils, attributes of clothing and worship, decorative objects, which have received unprecedented distribution in the region.

Iron metallurgy and forging workshops

The regions east of the Eastern Carpathians lack iron deposits. However, archaeological explorations have revealed dozens of early medieval sites where iron metallurgy was intensively practiced. Numerous iron ore reduction furnaces and ore concentration furnaces associated with forges were investigated here. Thus, more than 90 iron ore reduction furnaces, dozens of “wolf pits”, ore concentration furnaces are known in the Eastern Carpathian area. Craft workshops and furnaces for the reduction of iron ore were investigated at Alcedar (Soldănești district) and Echimăuți (Rezina district), Rudi-*Farfuria Turcească*, Rudi-*Roșcana* and Tătărauca Nouă-*Valea lui Ghermănoi* (Soroca district), Păhărnicieni-*Petruca*, Lucașeuca-*Cornul Blăjiei*, Trebujeni-*Scoc* and Ivancea-*sub Pădure* (Orhei district), Hansca (Ialoveni district), Calfa (Anenii Noi district), Bogatoc (Odesa district), Lozna-*Străteni* (Botoșani county), Borniș (Neamț county), Epureni and Dodești (Vaslui county) etc. Tens and hundreds of kilograms of iron ore and slag, iron blooms, blowers for blacksmith bellows, forging tools, finished or unfinished products, grindstones, and other remains have been found around these structures.

The furnaces associated with the craft workshops belong to the type of truncated-conical installations set up in sterile soil by vertical digging, with an access pit in the front. These furnaces are of the *Celto-Germanic* or *Slaný* type [Pleiner 1965, 24-25], with an opening in the upper part for loading fuel and ore, through which smoke was subsequently removed, and at the level of the hearth there was a side mouth where pipes of burnt clay were inserted for supplying oxygen for the combustion process and the subsequent removal of the iron bloom formed during the reduction of the ore. Thus, these constructions differ fundamental-

ly from the *Lodenicé* type furnaces with a hearth built on the surface of the ground, known in other areas of Europe [Pleiner 1965, 24-25].

Various categories of tools were found inside the craft workshops, as well as tool kits for processing base, non-ferrous and precious metals. Blacksmith tools were also found in tool and weapon hoards or as chance finds. They are represented by hammers and anvils, chisels of different sizes, forging and jeweler's tongs, wire dies, crucibles, casting molds, lumps or pieces of bronze or silver wire, etc. Some items were intended for internal use, others were made for regional or foreign exchange.

The lack of deposits rich in iron ores in the area to the east of the Carpathians raised the question of the origin of the ferruginous ores used by the blacksmiths in the region. Mineralogical research has demonstrated their sedimentary-alluvial nature [Tripșa *et al.* 1981, 175-178]. The presence of iron ores on the banks of the Dniester was described by Prince Dimitrie Cantemir who mentioned ore deposits near the Khotin fortress [Cantemir 1975, 52-53]. The most significant ferruginous deposits of pyroxene-magnetite-quartzite were recorded near the village of Vărăncău on the Dniester [Focșa, Roșca 2018, 73-86].

Finds at sites of the 9th-11th centuries, the set of forging and jewelry craft tools, clearly reflect the processes of social division of labor. During this period of time, there is a clear distinction between the activities of a blacksmith (who was both an armorer and a jeweler) and specialized crafts for making vessels on a potter's wheel, working stone and wood, bone and leather, fiber and fabric etc., G.B. Fedorov identified at least ten distinct crafts in the Carpathian-Dniester region of that period [Fedorov 1973, 46]. Examples include the pottery workshops and centres in Hansca, Molești, Durlești-*Valea Babei*, Durlești-*La Vie* (Ialoveni district) or those specialising in reducing iron and making metal tools and accessories (of iron, copper, silver and gold) in Hansca, Păhărnicieni-*Petruca*, Ivancea-*sub Pădure*, Echimăuți, Alcedar, Rudi-*Farfuria Turcească*, Rudi-*Roșcana*, Lozna (Botoșani county), Epureni (Vaslui county), Borniș (Neamț county) and others. It was found that the Echimăuți and Alcedar craft complexes produced iron agricultural tools (ploughs, ploughshares, axes, sickles and scythes),

weapons and armour, and utensils for domestic and personal use.

Some workshops were specialized in the production of decorative items of non-ferrous metals. It was found that the jewelry and armor workshops at Echimăuți were located inside the fortified settlements, while the furnaces, metallurgical complexes and blacksmith workshops were located outside the fortifications, in the “*suburbium*” [Fedorov 1953, 118; 1964, 91; Riabtseva, Tel’nov 2010, 293].

The grindstones found in Echimăuți, Alcedar, Trebujeni-Scoc, Ivancea-sub Pădure, Hansca (3 specimens), Molești etc. are also associated with the work of forging and jewelry workshops in the Carpathian-Dniester region. The activities of blacksmiths and jewelers (silversmiths and goldsmiths) in the region are confirmed by the presence in the complexes of crucibles, molds for casting pendants or jewelry, molds for casting ingots and the ingots themselves, dies and wires or lumps of wire made of silver or bronze, as well as weights and scales with two bronze plates. *Touchstones*² and *spheroidal vessels*, indispensable items for the activities of jewelers and merchants, are added to these categories of finds. Touchstones for precious metals (*Proberstein*) from the early Middle Ages were found mainly at sites located at the intersection of important trade routes, in silver jewelry craft complexes in Echimăuți, Păhărnicești-Petruca, Hansca etc. Their use has a long tradition in the region. The earliest objects of this kind were found in the early Iron Age complexes in Glinjeni și Saharna [Gol’tseva, Kaschuba 1995, 27, tabl. L:2,3; Kaschuba 2000, 321, fig. X/37, 38; fig. XXVIII/3, 5], Butuceni [Niculiță, Teodor, Zanoci 2002, fig. 64/6-10], as well as in sites of the first centuries of the new era, at Olănești and Mereni [Iarovoi 1990, 197, fig. 89/6; Postică, Sava 2023, 93, fig. 48/3, foto 18/9 etc.].

Among the archaeological finds directly related to craft activities, the production of decorative items and their gilding by amalgamation, the spheroidal vessel from Echimăuți stands out [Fedorov 1953, 114, fig. 47/1; 1959, fig. 19/3]. Found in a 10th-century waste pit, the vessel is 21.5 cm high, has a bottom diameter of 4.0 cm, a body diameter of 17.6 cm and a mouth diameter

of 8.1 cm. From a morphological point of view, it differs from other categories of vessels in its shape, clay and wall thickness. The vessel is spheroidal in shape, has a narrow neck and a very small lip diameter. Like the vast majority of vessels of this type, it has a conical bottom with a slight flattening³. Most researchers believe that these specially shaped vessels were intended for storing, transporting and trading mercury, which was used in jewelry workshops for gilding silver or bronze items by the amalgamation method [Barnea 1967, 80; Spinei 1970, 253-265]. The author of the research at Echimăuți, G.B. Fedorov, classified the container as a vessel belonging to nomads⁴.

Among the earliest spheroidal vessels in the Carpathian-Dniester area, the one from Nănești (Vrancea County) stands out [Spinei 1970, 253-264]. Several identical vessels were found at Dinogetia, Păcuiul lui Soare, Nufăru, Isaccea, Greci, Babadag, etc [Mănușcu-Adameșteanu 1984, 363-374]. In Bulgaria, spheroidal vessels were found at Silistra, Sofia, and Plisca [Stanchev, 1955, 203; Stancheva 1961, 26; Mihajlova 1987, 15-23]. The finds at Silistra date back to the 9th-11th centuries [Stancheva 1961, 22-27]. The vessels from Plisca, Nufăru, Dinogetia and Păcuiul lui Soare date back to the 11th-12th centuries [Mănușcu-Adameșteanu 1984, 365]. The container from Nănești, which has analogues in the northern Caucasus, dates back to the 11th-13th centuries [Spinei 1970, 253-264; 1994, 128].

In the Middle East, the earliest spheroidal vessels are attributed to the 9th century [Minkovich-Mustafeva 1959, 174-185]. It is believed that from this region, spheroidal vessels spread to

3. See, for example, the spheroidal vessel with a flattened bottom from Nufăru [Mănușcu-Adameșteanu 1984, Pl. VIII/1].

4. Another interpretation was proposed for the spheroidal container from Echimăuți. Researchers R. Rabinovich and Svetlana Riabtseva believe that the vessel is of West-Slavic origin. According to the authors, the container would have arrived in the region with a group of migrants from the Czechia and the Carpathian Basin [Rabinovich, Riabtseva 2016, 332]. This hypothesis is related to the idea of the ethnic origin of the Tivertsi from the Carpathian-Dniester area, considered to be the result of migratory groups from the central and west-Slavic area of Europe. The authors find analogies for it in the collection of vessels systematized by the Czech researcher Zdeněk Váňa [Váňa 1956, 105-147]. It should be noted that the spheroidal vessel in question finds no analogues in the ceramic forms of Central Europe.

2. See the conclusions reached by the researchers following the analysis of these remains [Ježek, Zavřel 2011, 125-160].

Constantinople⁵ and Central Asia⁶ in the 10th century. Sphero-conical vessels of the pre-Mongol period from the Lower Danube and the east of the Eastern Carpathians find analogues in the craft complexes of the cities of Bolgar and Bilyar on the Volga, as well as in the Middle East and the Caucasus [Nuretdinova 2011, 51-62].

The finding of silver or gilded bronze items, unfinished or in the process of completion, as well as those repaired, in the settlements of Echimăuți, Alcedar, Păhărnicieni-*Petruca*, Hansca, and others, proves that the jewelers of the Carpathian-Dniester area knew how to use mercury for gilding jewelry by the amalgamation method.

The development of crafts stimulated economic and trade exchange, which in turn contributed to the growth of handicraft production, which became dependent on market demand. At the initial stage, craftsmen were sellers of their own products. Along with the products of traditional agricultural and cattle breeding labor – wax, honey, skins, salt, etc., products of handicraft activity, blooms, iron bars, tools, weapons and military or horse equipment were increasingly used as an object of exchange. The growth of crafts makes *money* the standard and measure of value used in exchange relations. This is the period when money begins to play an increasingly important role in the economic life of human communities. Some researchers compare money to the “*blood that irrigates the economic system*” [Samuelson 1953, 88]. In this case, commercial roads are (commercial) arteries through which money circulates in the forms in which the market prints it. The development of agriculture in the conditions of favorable climate change led to the growth of crafts associated primarily with the processing of ores and metals for the manufacture of tools and weapons, jewelry and utensils. Economic exchange accelerated, stimulating internal, regional trade operations, including trans-European long-distance ones, the latter bringing the greatest profit.

5. In Constantinople, according to the 10th-century imperial edict the Book of the Eparch, the guild of jewelers interested in the use of mercury in their work was second in importance in the list of guilds after that of notaries [Vasiliev 2010, 346-347].

6. It is not yet very clear to us whether these containers reached the Lower Danube and the north of the Danube estuary from Byzantium at the same time as the borders of the empire were returned to its borders, or reached the Black Sea as part of the trade exchange of this period.

The nature and economic availability of early medieval Romanian communities are reflected in the number and structure of tool and weapon hoards, as well as coin or mixed hoards. Their composition objectively reflects the socio-economic, political and cultural realities of the period when they were hidden. In the Carpathian-Dniester region and in the Carpathian bend zone, no less than 15 tool and weapon hoards and 17 money or mixed hoards dating back to the 9th-11th centuries have been recorded. The absolute majority of money is represented by silver coins, Byzantine miliaresia and Arab dirhams.

Hoardings of tools and weapons

The accumulation and hiding of hoards are directly related to the socio-economic and military-political processes in which local Romanian communities were involved – economic growth, commodity exchange, monetary circulation, including the resumption of circulation on the old route from the Roman period, along Dniester and Vistula, which connected the south to the north of the continent and along which people and goods, ideas and technical innovations passed. The hoards discovered east of the Carpathians and in the area where the Carpathians bend at Bârlogu (Argeș), Curcani (Călărași), Budești, Dragosloveni, Gârbovăț, Radovanu, Răstoaca, Obreja etc. [Canache, Curta 1994, 174-221; Teodor 2004, 395-406], as well as the hoards from Coșna (Suceava county), Revna (Cernăuți reg.), Cărbuna (Ialoveni), Sadova (Călărași) and Voloave (Soroca) [Tentiuc, Bubulici 2020, 255-280], are part of a larger area of hoards discovered in Central-Northern and South-Eastern Europe [Curta 2011, 251-276]. The emergence of tool and weapon hoards was associated by researchers with the socio-economic and political realities of that period [Tentiuc 2019, 259-283].

To understand the socio-economic realities of the period under study, the Voloave (Soroca) hoard can be used as an example. Discovered in 2018, it contains craft blacksmith and jewelry tools – hammers, anvils and small pliers, steel files, mandrels, punches, a mold for casting ingots, balance scales with two bronze plates etc. [Tentiuc, Bubulici 2020, 253-280] Analogues to these can be found in the extra-Carpathian early medieval sites, in the blacksmith, weapon and jewelry workshops investigated at Echimăuți and Alcedar,

Hansca and Păhărnicieni-Petruca, Bucov-Tioca and Bucov-Rotari etc. The assemblage of tools that make up the Voloave hoard does not differ from those found in the trade and craft centers (early medieval *emporium*) of Northern Europe – at Birka, Haithabu/Hedeby, Skåne, Kaupang, Upparkka, Ianov Pomorsky-Truso, etc. These were engaged in long-distance trade with the Arab Caliphate and the Byzantine Empire, as well as along the Great Silk Road.

Forms and nature of trade exchange

At all times, human needs have been satisfied through the production and consumption of one's own products or through their exchange for the products of others. In this sense, exchange involves the alienation of the results of one's own production (pastoral, agricultural or handicraft) in exchange for the necessary goods, which may include money. The use of one's own products, self-consumption, and the satisfaction of consumer needs through exchange are prehistoric practices that coexisted and are still used today. These forms of satisfying human needs reflect the economic realities of the time, as revealed by archaeological research, as well as various ways of organizing and conducting economic activity. The first of these, self-consumption, reflects a *natural economy*, and the second represents the *exchange economy*. In the exchange economy, products are transformed into commodities, and money also has the quality of a commodity. Exchange carried out through money has led to the monetization of economic relations. Since *money*, along with *capital accumulation* and *specialization*, is one of the three basic pillars of the economy, it has influenced the whole of commercial transactions and the way the economy functions in different historical periods. One of the main functions of money is to be a medium of exchange. The transition from a natural economy to an exchange economy mediated by money was accomplished through the use of mutually accepted goods of value [Angelescu 2003, 31-37].

The socio-economic, political and climatic conditions of the late 1st and early 2nd millennia contributed to the revival and growth of the economy of the extra-Carpathian communities. Agriculture and livestock breeding in the territory to the east of the Carpathians remained the main occupations until the pre-modern period, the land being a source of subsistence, but also an object of

social relations between people. The pronounced warming of the weather with warm and frequent rains during the period of the “*Little Medieval Climatic Optimum*” (750/800-1250/1300) dynamized the development of agriculture through the gradual plowing of virgin lands and the deforestation [Neamțu 1975, 136; Spinei 1994, 116-117]. The increased need for highly productive iron agricultural tools – broad-bladed axes, scythes and ploughshares, sickles and scythes, etc. under the embargo imposed by the Byzantine Empire on the export of iron tools and weapons to the lands of the barbarians (*Corpus Iuris Civilis*, IV, 42, 1-1), stimulated the local development of iron metallurgy. In the Carpathian-Dniester region, the foundations of handicraft production were laid on the basis of its own deposits of iron ores of sedimentary-alluvial origin⁷ [Postică 2007, 155-162]. The rise of agriculture and the separation of handicraft activity from agricultural activity led to the emergence of specialized crafts in the late 9th – early 10th centuries, driving economic exchange.

The subject of exchange (internal and regional) were products of agricultural, pastoral, domestic or handicraft labor. Along with the traditional local products – wax, honey, salt, skins of domestic or wild animals – at the early stage of trade exchange (late 7th – mid-8th century), craftsmen detached from agricultural activities used as a means of exchange products made in forges – blooms or bars of copper or iron, tools, weapons and adornments. Economic growth and the dynamism of trade exchange, the penetration of Arab silver coins into the region made *monetary silver* in its various forms the main means of exchange in economic transactions.

Archaeological research records the transition of medieval Romanian communities from a *natural autarchic economy*, represented by *commodity-commodity* relations, to a *monetary economy* of *commodity-money* relations in the 9th-10th centuries. This was a period when the exchange of products was carried out more and more by means of money, and the quality of the medium of exchange was ensured by weighed monetary silver. Thus, the economic system in which money, rep-

7. The discovery of some pieces of iron ore, different from that of the mud ore, of sedimentary-alluvial origin, leads us to assume, as has been previously proven, that part of the ore could have been imported from the rich metalliferous regions of Central or Northern Europe [Postică 2007, 155-162].

resented by metal bars or blooms, pieces of jewelry or coins, ingots or collars/*torques* [see Hvoshshinskaia 2018, 182-189] made of silver, which were used as an equivalent in commercial transactions by weighing on scales in the process of exchange, is defined by researchers as a *money-weight economy* (=“*Gewichtsgeldwirtschaft*”) [Steuer 1987, 407-527; 2004, 72; Hårdt 1996, 13-383; Brather 1999, 179-197]. These forms of exchange were manifested in large areas of Central, Northern and Eastern Europe, as well as in the Middle East⁸.

The appearance of the first Arab coins in the Carpathian-Dniester region

Numismatic remains represented by money hoards are most important for reconstructing economic ties and assessing the role of coins in trade exchange. Their analysis allows us to understand the features of economic relations in certain periods of time, the mechanisms and processes that contributed to the aggravation of social and property differences, including the emergence of feudal elements in the Carpathian-Dniester area.

Research shows that in the last quarter of the first millennium and at the beginning of the second millennium, the most dynamic socio-political structures engaged in economic exchange on the old Eurasian routes were those of the Arabs and the Scandinavians. In these conditions, the Romanian communities to the south and east of the Carpathians, located between the two worlds, would inevitably be involved in the exchange processes carried out by the Scandinavians. Thus, in the 9th-10th centuries, categories of previously unknown items penetrated into the Carpathian-Dniester space: Kufic silver coins and monetary silver in the form of ingots, collars/*torques*, utensils, jewelry made of silver or of silver with gilding etc. These artefacts, according to specialists, were used as exchange currency in trade transactions, and this phenomenon was characteristic of much larger territories of Central-Eastern and Northern Europe.

8. For Western Europe, the transition in the 8th century from the bimetallic monetary system (issuance of gold and silver coins) to the monometallic monetary system (“silver economy” = issuance of silver coins) is qualified as a regression of the economy, which corresponds to the natural economy and the reduced values of the exchange of goods [Manolescu 1974, 31]. This monometallic monetary system reflects the character of the economy and the level of development of the communities in Eastern and Northern Europe at the end of the 1st millennium – the beginning of the 2nd millennium.

At least 552 Arab coins are known in the Carpathian-Dniester region, represented by 548 silver specimens (*dirhams*), or 99.28%, and 4 copper ones (*fulus*), or 0.72% (fig. 1). Of the total number of discovered Arab coins, 517 specimens, or 93.32%, were found in seven *coin hoards* or *mixed hoards*, another 37 coins, or 6.67%, were *isolated finds* (including copper coins). The discovered hoards, in addition to coins, contained various jewelry, clothing accessories and pendants. Scientists have identified several chronological stages or waves of penetration of Arab dirhams into Eastern and Northern Europe [see Fasmer 1933, 473-484; Ianina 1956, 189-207; Noonan 2004, 255-308; Kovalev 2001, 245-271; Kuleshov 2011, 46-48; 2015, 73-76]. Within these stages, the process of penetration of the Arab currency into the Carpathian-Dniester region took place [Boldureanu, Nicolae 2015, 113-116].

The earliest Arabic coins discovered in the Eastern Carpathian area are copper coins issued during the Umayyad dynasty (661-750). Two coins, found separately in Boșia (Iași County), were minted in 750 during the reign of Caliph Marwan II (744-750) [Iliescu 1957, 462-463]. Another coin, found in Suceava, is an anonymous fells from the period of 661-750 [Dejan 2015, 203-204, fig. 13]. A copper coin of the Samanids, issued by Nasr ibn Ahmad (914-943), was discovered during archaeological excavations in 1962 at the fortified settlement of Alcedar [Fedorov 1964, 81; Kropotkin 1971, 91]. A batch of copper Arabic coins, which remained unidentified, was discovered in the Akkerman fortress [Kleiman 1984, 66-74; Nudel'man 1985, 84; Ianov 2016, 91].

Silver dirhams were found separately at sites located on the Dniester, at Hlibovka (Ushitsa district, Khmelnytskyi region, Ukraine), Rudi-Farfuria Turcească (Soroca district), Temeleuți (Floresti district), Tsekinivka (Yampol district, Vinitsa region, Ukraine), Alcedar and Soldănesti (Soldănesti district) and in Akkerman (Bilhorod-Dnistrovskyi, Odessa region, Ukraine), as well as in the Prut River basin, in Șaptebani (Râșcani district), Iacobeni and Șcheia (Iași County).

Taking into account the mentioned numismatic finds, it can be assumed that the first Arab coins came to the territory to the east of the Carpathians in the period from the last quarter of the 8th century to the beginning of the 9th century. Considering the special role of the Normans in the wide circulation

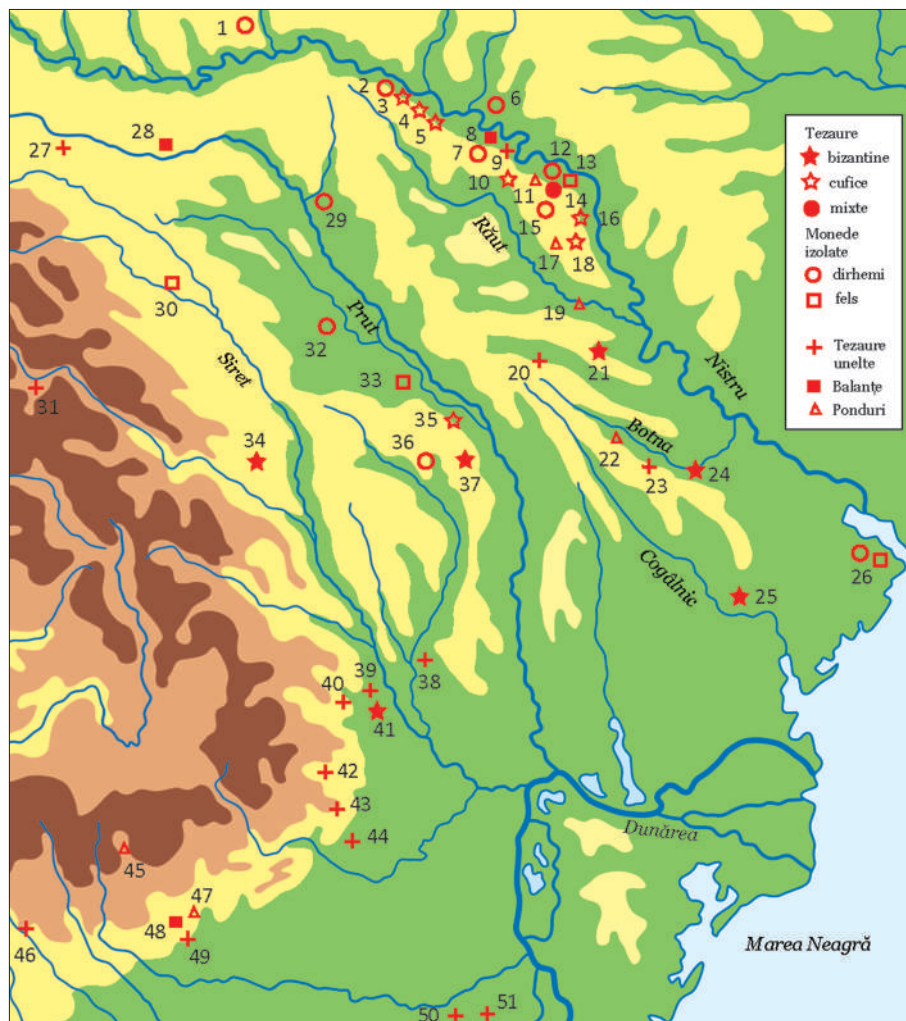


Fig. 1. Map of finds of coins, jewelry and trade accessories of the 9th-11th centuries in the Carpathian-Dniester area (coin hoards: Byzantine, Kufic, mixed; isolated coin finds: dirhams, fels, hordes of tools, scales, weights).

of Arab monetary silver, it can be stated with great confidence that the penetration of Arab coins to the Eastern Carpathian space was related to the travels of Scandinavian merchants from the Baltic Sea to the Black Sea, to Byzantium and Constantinople. At the same time, it is possible, as opined in the literature, that at least some of the Arab coins⁹ came to the Carpathian-Dniester region from the Black Sea along the Dniester waterway [Teodor 2003, 479].

Coin hoards containing Kufic dirhams and mixed hoards containing hacksilver

As mentioned above, 17 coin hoards or mixed hoards with cut silver pieces, dating back

to the 9th-11th centuries, are known in the Carpathian-Dniester region. They contain Byzantine coins, Arab dirhams, and silver jewelry.

Ten assemblages, or 58.82% of the total number of 17 known hoards, contain silver items and Byzantine coins. Of the Byzantine hoards, seven (or 70%) are *coin hoards*. They were discovered in Artzyz (Odessa region, Ukraine), Cleja (Bacău County), Ismail (Odessa region), Panciu (Vrancea County), Pașcani (Iași County), Reni (Odessa region), and Suvorov (Izmail, Odessa region). Three other hoards (or 30%), belonging to the category of *mixed hoards*, were found in Dolești (Iași County), Făurești (Chisinau Municipality) [Spinei 1982, 98] and Alcedar (2008) (Șoldănești district). The circulation of Byzantine coins in the regions east of the Carpathians has been thoroughly studied by researchers [Iliescu 1957, 461-466; Spinei 1975, 227-242; Musteață 2014;

9. Some researchers assume that copper coins (Byzantine or Arab) during the early period of trade links would have been used as weights for bronze two-plate balance scales [Zhukovskii 2019, 101].

Vilcu, Isvoranu 2015, 102-105]. The number of Byzantine coins discovered in the Carpathian-Dniester region today is 582 pieces [Musteață 2017, 10-12], of which 325 were found in hoards.

Seven hoards discovered east of the Carpathians (41.17%) contain early *Arab silver coins* (Kufic dirhams). Of these, two are *coin hoards* (28.57%) consisting exclusively of Arab silver coins, Kufic dirhams: the hoard from Holoșnița (Soroca district), discovered in 2022, contained about 150 coins, and the hoard from Rudi-*La Șanțuri* (Soroca district), discovered in 2021, contained about 300 Kufic coins¹⁰.

Five hoards with Islamic coins belong to the category of mixed hoards, in which jewelry or silver ingots were found along with coins. This group includes the hoards from Echimăuți (1951) – three coins, Răducăneni (1969) – seven coins, Rezina (2023) – 45 coins and the hoard from Rudi-*La Trei Cruci* (2007) – 10 coins. The mixed hoard from Alcedar (2008) contained both Arab coins (2 dirhams) and Byzantine coins (3 miliaresia). The only hoard discovered in 2007 in Cunicea (Florști district) contained exclusively silver jewelry (ingots, torques, lunulae, temple rings with cluster pendants, etc.). The fact that some hoards include, along with coins and jewelry, silver clothing accessories, scale weights and/or ingots, confirms their trade and economic nature. Some hoards contained pendants with Scandinavian animalistic ornamentation, made in the *Borre* or *Elling* styles [Riabtseva, Tel'nov 2010, 285-300; Bondar' 2021, 190-208].

Weights and scales for weighing commodity money

The nature of economic exchange and the forms that domestic, interregional and foreign trade took in the early Middle Ages, as well as the ability of Romanians¹¹ to connect to commercial exchange, are evidenced by *weights*. Four forms of early medieval weights have been identified in the Prut-Dniester

region: I. Flattened spherical (barrel-shaped) (*Kugelzonengewichte*); II. Cuboctahedral (*Kubooktaedergewichte*); III. Cylindrical; IV. Ellipsoidal.

Weights from the 9th-11th centuries were unearthed in Echimăuți, Alcedar, Păhărnicieni-Petruca and Hansca [Postică 2021, p. 139, fig. 49/3; Postică, Hincu 2023, p. 792, pl. 187/7-11]. Weights for small scales were made of bronze, iron (and copper) and lead (*Bleigewichte*).

A spherical iron weight wrapped in copper foil was part of the Alcedar hoard discovered in 2008. Two of its surfaces are flat. The object is covered with copper foil, has a height of 16.9 mm and a diameter of 20.8 mm. Its weight is 31.2 g. On one of the two flat surfaces of the weight, there were incised four circles joined with two lines arranged in the form of a *gammata cross* [Boldureanu 2010, 301-306]. The weight belongs to the *early type B1* according to the classification proposed by Heiko Steuer [Steuer 2004, 193-217] or to *type A* according to Ola Kyhlberg [Kyhlberg 1986, 152]. Weights of this kind date back to the period between the late 9th century and early 11th century [Zhukovskii 2018]. The assemblage of artefacts from the Alcedar hoard, in which the weight was found, including silver coins, made it possible to date it to the late 10th century.

Another weight, probably of the cuboctahedral type, made of bronze, intended for small trade transactions, was discovered as a result of archaeological research in Echimăuți in 1951. A weight for small scales was found here. Researcher G.B. Fedorov called the object “a weight of an ordinary type” (*vesovaja gir'ka obychnogo tipa*), without specifying, noting that its weight was 5.77 g. [Fedorov 1953, 124]. Probably, this is a *cuboctahedral* weight made of copper alloy [Hårdth 1976; Steuer 1987; Zhukovskii 2017, 177].

Objects used by merchants, jewelers and blacksmiths are often found at early medieval sites in Central-Northern and Eastern Europe. Heiko Steuer classified the cuboctahedral weights from Janov-Pomorski-*Truso* (Poland) as type A, and the spherical ones as type B [Steuer 2012, 185-290]. Ola Kyhlberg classified the cuboctahedral weights from Kaupang as type B [Kyhlberg 1986, 152], and the spherical ones as type A. The researchers note that the earliest cuboctahedral weights were found in assemblages from the end of the 9th century [Steuer 1987; Steuer 1997; Steuer 2004, 72,

10. Unpublished materials. The information about the silverware hoards discovered in the Middle Dniester valley in recent years, was collected during the archaeological research in Soroca in 2021 and 2023. We also thank the volunteer Mr. Grigore Păun for the information.

11. Probably in connection with these socio-economic and military-political processes, the names of Romanians are mentioned on the stela from Sijohem, Gotland [Spinei 1973, 57-81; 259-282], where they are accused of allegedly betraying the Vikings [Mel'nikova 2001, 297-399].

Abb. 10]. They represent fractions of the *Iraqi lira* weighing 409.5129 g or fractions of the Baghdad or Iraqi “ounce”, the weight of which varied in the 9th-10th centuries, amounting to 33.5578 g, 33.4729 g and 33.1050 g [Lowick 1972, 1-18].

A separate category of small weights for scales of this period are *lead weights*. Lead weights were found in Hansca and Păhărnicieni-Petruca [Postică 2021, 37, fig. 49/3]. Two weights were found in Hansca during excavations in 1971 and 1977. One of them has the shape of a cylinder¹² with a rounded top [Postică, Hîncu 2023, p. 792, Pl. 187/7-9]. The height of the weight is 1.5 cm, the diameter is 1.6 cm, the weight is 45.36 g. It is equipped with a longitudinal hole for fastening. The second weight has an ellipsoid shape¹³ with rounded edges [Postică, Hîncu 2023, p. 792, Pl. 187/10-11]. It is equipped with a hole for fastening. The diameter of the product is 2.5 cm, the height is 0.6 cm. The weight is 19.69 g. Illegible letter markings are carved on the surface.

Another ellipsoid lead weight was discovered in 1988 at the Păhărnicieni-Petruca settlement¹⁴. It has a hole for fastening. The item has a diameter of 1.8 cm, a height of 1.0 cm and a weight of 15.91 g. One of the surfaces has incised marks made after casting [Postică 2021, 49/3]. Similar but not identical lead weights were discovered at the Bukov-Tioca and Slon settlements (Prahova County). The Bukov-Tioca item, in the form of a lead sphere, has two flattened surfaces [Comşa 1978, 119, fig. 94/4]. An alphabetic sign was incised on one surface of the weight, and three vertical lines on the other. According to Maria Comşa, this item served as a weight for weighing small and precious things¹⁵, and dates back to the 10th century. A similar weight was discovered in the princely building no. 1 at the Slon-Prahova settlement [Comşa 1978, 119]. Analogues of lead, copper or iron weights can be found at Khazar Tamatarcha/Tmutarakan, at *Tsarino Gorodishche-Mayaki* (Donetsk region) [Komar 2010-2011, 136-140] attributed to the Alans, as well as on the sites of

Semenov and Izmer, which belonged to the Volga Bulgars [Komar 2010-2011, 137; Curta 2013, 305-330], and in the sites of Northern Europe [Gustin 2004, 89-96; Brather 2007, 451-471]. Alphabetic signs imitating ligature or Arabic signs were found on the surface of some weights in Supruty and Shestovitsa in Eastern Europe [Komar 2010-2011, 139-140].

Weights, like the balance scales with two bronze plates, are part of the trader's and/or goldsmith's toolkit. Bimetallic weights of spherical shape, wrapped in copper foil, and cuboctahedral weights are considered to be “official” or standard weights, as they were produced and protected by the political authorities of the Arab caliphates, and later those of Scandinavia. Lead weights are qualified as “unofficial” or traditional weights. In most cases, they are local products¹⁶. The most reliable in trade transactions using monetary silver in ingots or Kufic dirhams cut into pieces as a medium of exchange were the “standardized” weights of Oriental or Northern European production [Zhukovskii 2017, 65-101].

In the 9th-11th centuries, two categories of balance scales for small objects were used in North-Central and Eastern Europe: I. Scales with unequal arms (Roman type) (*Schnellwaage*) and II. Equal-arm scales with two bronze plates (*Feinwaage*). The Roman and Roman-Byzantine origin of these scales is beyond doubt. Scales for weighing small objects with equal arms, equipped with two bronze plates, are represented in the regions east of the Carpathians by two types: 1. Scales with arms made of a solid bronze rod, non-folding, with two bronze plates, made of the same metal (*Gleicharmige bronzene Waage*) and 2. Scales with folding arms, with two bronze plates (*Klappwaage*).

A balance scale of type I (*Gleicharmige bronzene Waage*) was found in 2018 in the hoard of blacksmith and jeweler's tools from Voloave (Sorooca district) [Tentiuc, Bubulici 2022, 279-311]. Another scale, with folding arms (*Klappwaage*)

12. It is kept in the NMHM collections: Accession No. FB 29040-8.

13. It is kept in the NMHM collections: Accession No. FB 28808-41.

14. NMHM collections: Accession No. FB 19512-49.

15. The author does not indicate the masses of the weights found at Bucov-Tioca and Slon.

16. The lack of precision of balance scales and the lack of trust in locally produced lead weights, as well as possible errors in trade transactions led to the establishment of the function of “weighman” in the medieval Romanian states with the emergence of political and administrative structures at the regional level. The weighman was the person responsible for weighing goods at customs or at city fairs/markets to determine their exact weight. This function existed in Romanian countries until the pre-modern period.

[Timoshshuk 1959, 256, fig.3/1], was discovered during archaeological excavations at Lencăuți-Cernăuți. It belongs to the type of scales for weighing small objects that appeared in Europe at the end of the 9th century – the beginning of the 10th century. Some researchers consider the folding scales to be the work of Arab craftsmen¹⁷. The author of the find B. Timoshshuk attributed the find from Lencăuți-Cernăuți to the 12th-13th centuries. The presence of artefacts from the 10th-11th centuries in this site, including a Viking axe from the 10th-11th centuries [Timoshshuk 1959, 250-257; Spinei 1994, fig. 7/8], unearthed at Lencăuți, and Kufic coins found nearby, at Hlibovka (Nova Ushitsa district, Khmelnytskyi region, Ukraine) [Maiarchak 2006, 35-36], suggests the existence of occupation layers from the 10th–11th centuries in Lencăuți-Cernăuți.

A fragmentary scale with an iron bar was found at the Bucov-Rotari settlement (Prahova County). The artifact belongs to the Roman-type unequal-arm scales, or *Schnellwaage*. This object was discovered in an assemblage attributed to the 10th century [Comșa 1978, 119, fig. 94].

River and land routes of Kufic dirhams penetration into the Carpathian-Dniester area

The persistence of some less clear aspects regarding the routes of penetration of Arab coins into the Carpathian-Dniester area, the phenomenon of their circulation, the mechanism of accumulation (capitalization), the reasons for hiding (thesaurization) coins and silver jewelry, have led to different interpretations of the presence of Arab dirhams in the monetary circulation of the region. In this regard, several hypotheses have been put forward regarding the directions and routes of penetration of Arab dirhams into this land: the westward movement of the bearers of the Saltovo-Mayaki culture (Alans and Khazars) [Kropotkin 1972, 197]; predatory raids of the locals [Nicolae 2001, 95-102; Boldureanu, Nicolae 201, 113-116]; import of the coin as a raw material for making jewelry [Rabinovich 1999, 263-275] or mainly for this purpose [Boldureanu, Riabtseva 2015, 26-33]

17. Sabit ibn Kurra (826-901), was translated into Latin in the twelfth century [Abbtouy 2006]. A special treatise on balance scales in the Arab East was written by Abdurrahman al-Khazini in 1121-1122, entitled *Kitab mizan al-hikma* (The Great Book of Scales) [Zhukovskii 2019, tom I, 68]. Another book on scales, of 6-7).

etc. The opinion of G. Fedorov, according to which the penetration of dirhams into the region was associated with the “strong influence of the Old Russian state”¹⁸, which already at the beginning of the 10th century included the territories of the forest-steppe of Moldova [Fedorov 1973, 49; Fedorov, Chebotarenko 1974, 8], has not found a response among researchers. On the other hand, G. Fedorov believed that Kufic coins could have been the result of direct trade contacts between the inhabitants of the lands located between the Dniester and the Prut with the Volga Bulgars [Fedorov 1974, 124]. This hypothesis was supported by numismatists V.V. Kropotkin and A.A. Nudel'man, who specified, however, that the inhabitants of fortified settlements on the Dniester maintained economic ties with the Khazar Khaganate and with Volga Bulgaria from the end of the 9th century or the beginning of the 10th century [Kropotkin 1971, 88-92; Kropotkin 1972, 197-198; Kropotkin 1978, 114; Nudel'man 1976, 17-18]. In the same context, V.L. Ianin believed that after the middle of the 10th century, Kufic coins were missing in Eastern and Western Europe, south of the Mohyliv line [Ianin 1956, 132]. This opinion was refuted by subsequent discoveries of Kufic coins in this region [Teodor 1985, 263-268].

Mapping of hoards and isolated finds of Kufic coins proves that they gravitate along large watercourses – the Dniester, the Prut, the Siret and the Răut. Their spread can be traced to the sources of the Dniester and the Upper Vistula, and their tributaries from the watershed of two water systems, the Black Sea and the Baltic. The area geographically correlates with Volynia and Ruthenia, with the regions of Lesser Poland and Red Ruthenia (Eastern Galicia), in the region of ancient Halič. Hordes of Kufic coins have been discovered here in Krylos (Halič), Graboveč (Bogorodicean r.), Nižniev (Tlumaci r.) (all in Ivano-Frankivsk region, Ukraine), Przemyśl on the San River, a right tributary of the Vistula (Lesser Poland) [Kropotkin 1971, 88-89, 91-92; Kropotkin 1972, 199-200], at Drohicin on the Western Bug [Czapkiewicz, Kmietowicz, 1960, 145-146] etc. Several isolated finds of Kufic coins have been recorded in the region of old Halič

18. According to the Soviet geopolitical conception, in the early medieval period the space east of the Carpathians and north of the mouth of the Danube would have been colonized and inhabited exclusively by Slavic tribes [see analysis of conceptions: Tentiuc 2019, 337-370].

[Kropotkin 1972, 197-202]. In the north of historical Maramureş, the Hust hoard from the Upper Tisza valley, found at the end of the 19th century [Popa 1970, 44-45], contains more than 400 Kufic coins, with the latest coin dating back to 291 AH (903/4 BC). Thus, finds on the Upper Dniester and the Upper Vistula at Nižnev (*tpq*¹⁹ 907/908), Graboveč (*tpq* 920s) and Krylos (*tpq* 935/936), at Hust on the Upper Tisza, of hordes of Kufic coins from 10th century, represented by the Abbasid and Samanid coins and their imitations [Kotlear 1971, 25], show that this area was a “turning point” for the communication between the Scandinavian and Baltic Sea zone and the regions of the Black Sea, the Balkans and Byzantium. These findings made A.A. Nudel'man to question G. Fedorov's hypothesis about the penetration of Kufic dirhams and to assume that Arab dirhams penetrated into the regions east of the Carpathians from the north, from Podolia [Nudel'man 1985, 84-89]. As for the functional use of Kufic dirhams, some researchers believe that Arab coins were brought to the regions east of the Carpathians from Poland or Northern Germany only to be used as raw material for the manufacture of jewelry [Rabinovich, Riabtseva 2007, 225]. As an example, the authors point out silver temple rings with cluster-shaped pendants²⁰, called the Echimăuți type. They are found in significant quantities in open and fortified settlements, cemeteries and hoards of the Carpathian-Dniester region. According to researchers, silver temple rings were made in the workshops of the Echimăuți [Fedorov 1953, 122; Fedorov 1974, 118-119; Dzis-Rajko 1959, 83] and Alcedar ringforts, of Arab coin silver [Rabinovici 1999, 263-275; Riabtseva 2010, 273-284]. The authors note the connection between the silver hoards unearthed in the hinterland of the Vistula, the Western Bug and the Pripyat and the

finds in Răducăneni, Echimăuți and Alcedar²¹, including the functioning of the trade route that connected the Black Sea, the Dniester and the Western Bug with the Vistula and the Baltic Sea²². This was reported by researchers Anuța Boldureanu and Svetlana Reabtseva in their article on mixed hoards and isolated coins from the 9th-11th centuries in the Carpathian-Dniester area [Boldureanu, Riabtseva 2015, 26-33]. The spread of silverware hoards with Kufic dirhams and isolated finds along large waterways, which are river or land trade routes, make it obvious that they penetrated the Carpathian-Dniester regions along the old transcontinental route of the Roman period, along the Vistula and the Dniester [Tentiuc 2017, 125], and were used in commercial exchange. In the early Middle Ages, this route connected the regions of Scandinavia and the Baltic Sea with the Black Sea region, Byzantium and Constantinople. Back in the 1950s, this trade route was nicknamed “the second route from the Varangians to the Greeks” [Pașuto 1950, 166-167]. The fact that in the 9th-11th centuries the safest and fastest routes remained waterways²³ (river and coastal-sea) is confirmed by written documentary sources of that time [Constantinus Porphyrogenetus; PVL].

Systematic archaeological excavations and fortuitous finds, the inclusion of new archaeological remains in scientific circulation have signifi-

19. *Tpq* = *Terminus post quem*.

20. G. Fedorov assumed that silver and copper as raw material for the ornaments that were made in Echimăuți and Alcedar, was imported from Transylvania [Fedorov 1974, 119]. Chemical analyzes allowed the researchers to establish that the temple rings with cluster-shaped pendants, as well as other jewelry made in the technique of filigree and granulation, were made of the silver of Kufic coins [see Eniosova *et al.* 2004, 26-34], including those from Echimăuți [Boldureanu, Riabtseva 2015, 32]. Among them there are umbo-shaped pendants, lunulae and rings made of 960 silver [Tentiuc, Bubulici 2021, 141-153]. According to the latest investigations, the fineness of Arab monetary silver decreases to 760 by the end of the 10th century [Kovalev 2012, 133-184].

21. In the Echimăuți ringfort, on the Dniester, the largest collection of temple rings with grape-shaped pendants in Eastern Europe, about 32 pieces, was discovered. Jewelry workshops and tools were also found here: chisels, a die, silver and copper wire, semi-finished products [Fedorov 1950, 123, 125].

22. The authors note the connection between the silverware hoards in Central Europe and the hoards found in South-Eastern Europe, at Răducăneni, Echimăuți and Alcedar, including the functioning of the trade route connecting the Black Sea-the Dniester and the Western Bug to the Vistula and the Baltic Sea, but they do not note the existence of the route by which the Nordics traveled to the south or the contribution of the Vikings to the socio-economic, political and demographic processes in Eastern Europe, attributing all the remains to the Slavic tribes. Temple rings with tassel pendants are assessed as “the contribution of the Slavs to the Scandinavian culture” [Rabinovich, Riabtseva 1997, 240], emphasizing that “on the territory of Moldova the Scandinavian component is completely absent” [Rabinovich, Riabtseva 2007, 225]. On this matter, see the opinion of Duczko [1985, 62] and Rabinovich [1999, 273].

23. Even the Danubian Bulgarians, located at immeasurably smaller distances compared to the merchants from Kiev or the Scandinavians, in trade with the Byzantines preferred to use the river trade routes [Ioanes Cameniatta, 496, 11-20, apud Nasledova 1956, 72-74].

cantly enriched the knowledge of the socio-economic, political and demographic phenomena in Eurasia in this period, including the flow of Arab silver coins of the 9th-11th centuries to the east of the Carpathians. The publication of hoards of Arab coins and cut silver items (*hacksilver*) discovered in Central-Eastern and Northern Europe, as well as in the Vistula, Western Bug and Pripjat river basins [Prokhnenko 2011, 291-299], contributed to a much more accurate understanding of the phenomenon of the circulation of dirhams in this part of Europe. The routes of penetration of monetary silver into different regions of Northern and Eastern Europe and the processes accompanying them have been identified. Analysis of money circulation, accumulation and thesaurization of silver coins, the framing of these phenomena in the general socio-economic, political, demographic and politogenetic processes in Eurasia of that period made it possible to reconstruct previously unknown aspects of the political and economic history of Central and Northern Europe, as well as of the Romanians from the regions to the east of the Eastern Carpathians.

Mapping of early medieval money finds in the Eastern Carpathian space outlines the distribution zones of the remains, including the area of prevalence of Byzantine coins and Kufic dirhams. D.Gh. Theodor believes that in the 9th-11th centuries the regions northeast of the Eastern Carpathians became the area of convergence of Arab and Byzantine trade [Teodor 1985, 263-268]. The hypothesis is confirmed by the discovery of remains of oriental origin in the region. The artefacts from the burial of a 7-8 year old child, discovered at Giurgiulești in 1997, are eloquent. Here, along with silver jewelry, represented by spherical buttons made in the granulation technique of the Byzantine tradition, Cowrie seashells (*Cypraea moneta*), typical of the Persian Gulf and the Indian Ocean, were found [Levițki, Haheu, Reabțeva 2001, 309-319]. The geography of the hoards indicates that in the southern and central parts of the Carpathian-Dniester area, predominantly Byzantine coins were in circulation, while in the central-northern and northeastern regions, Islamic coins prevailed. On the other hand, some researchers believe that the Arab dirhams and hoards found in the Middle and Upper Dniester basin could be associated with the penetration of the Pecheneg tribes into the region, who would

have destroyed the fortified settlements on the Dniester [Prokhnenko 2011, 291-299].

Following the systematization proposed by Richard Fasmer, researchers structured the flow of early Islamic coins to Europe into four chronological intervals²⁴. The first two periods (I, II) are represented by *Abbasid* coins of 750-833 and 834-905, while the other two (III, IV) reflect the circulation of *Samanid* and *Buyid* coins (905-938 and from 938 to the end of the 10th century). V.V. Kropotkin and A. Nudel'man believed that Kufic coins penetrated the regions east of the Carpathians quite late, in the third period of dirham circulation, and that they were imported from Volga Bulgaria through Kyiv. This hypothesis, long refuted by new discoveries, is still supported by some researchers [Valeev, Zeleneev 2021, 142].

Investigations in the Carpathian-Dniester area conducted in recent decades refute this opinion, expanding the chronological framework of the penetration of Kufic coins into the territory east of the Carpathians for the entire period of circulation of early Arabic coins in Europe [Boldureanu, Nicolae 2015, 113-116]. Thus, the first stage (750-905), divided into two periods: I. 750/800-825 and II. 825-905, includes the *Abbasid dirhams* from the mixed hoard from Răducăneni²⁵ [Teodor

24. Richard Fasmer identified four periods for the penetration of Kufic dirhams into Europe: I. 800-825 (Abbasid coins predominate, especially those from African mints); II. 825-905 (Abbasid coins minted in the Middle East are in circulation); III. 905-960 (Samanid coins predominate); IV. 960-1014 (Buyid issues circulate alongside Samanid coins) [Fasmer 1933, 473-484]. V. Yanin detailed this systematization, identifying the following periods: I. 800-833; II. 833-900; III. 900-938; and IV. 938 – end of the 10th century [Iannin 1956, 59]. See also the explanations of Roman Kovalev [Kovalev 2000, 25-64] and the details of Vyacheslav Kuleshov [Kuleshov 2015, 73-76].

25. The hoard includes 17 silver temple rings with cluster-shaped pendants, made using the filigree and granulation techniques of the Romano-Byzantine tradition, as well as their imitations made of bronze. Identical ornaments are known, as we have already mentioned, in the fortified settlements of Alcedar and Echimăuți, in the cemeteries of Brănești and Arsura, in the Cunicea hoard (Floresti district) (8 specimens), and others. Wl. Duczko believes that the Echimăuți/Volynian temple rings were the work of a Gotland jeweler who made them in Gnezdovo [Duczko 2004, 179-188]. However, the discovery of a limited number of such ornaments in Gnezdovo prompted researchers to consider them imported. At the same time, it was suggested that they were produced at the Echimăuți settlement [Novikova 1990, 107-114; Riabtsseva 2006, 147-152; Enisova 1998]. Miniature tools for making this type of jewelry were found in the Echimăuți and Alcedar jewelry workshops: hammers, chisels, small anvils, a die,

1980, 403-423]. Recovered partially, it consists of 59 pieces of jewelry and clothing accessories (rings, bracelets, earrings, beads), mainly made of silver. Among the items from Răducăneni, there are four ingots, a beautiful silver collar/torque and seven Kufic dirhams. The dirhams were minted between 757-806 in Madinat as-Salam (Baghdad), Kufa (the first capital of the caliphate), Zaranj in northeastern Iran and in Ash-Shash (Tashkent) [Nicolae, 2001, 99-101].

Taking into account the “youngest” coin (*tpq* around 806), numismatists believe that the Răducăneni hoard can be included in the second wave of Abbasid coins penetrating Europe, from 825 to 905 [Boldureanu, Nicolae 2015, 115]. At the same time, researcher Eugen Nicolae opts for the earliest possible dating of the Răducăneni hoard, since in Europe dirhams were quickly transformed into jewelry or other objects [Nicolae 2001, 96]. Based on this premise, it can be argued that the Răducăneni hoard could have been hidden in the first quarter of the 9th century²⁶, respectively, at the end of the first wave of Kufic coins penetrating Europe.

In the second stage, the most numerous coins in the Carpathian-Dniester region are those of the Samanids (905-938) and Buyids (939-1014). Thus, two hoards, from Echimăuți (1951) and from Alcedar (2008), contain *Samanid* and *Buyid* coins, chronologically assigned to the period of 905-960. The Echimăuți hoard²⁷, discovered in 1951, includ-

silver and bronze wire [Fedorov 1953, 123]. The Răducăneni hoard includes the entire spectrum of jewelry known in the Carpathian-Dniester region: lunulae, silver beads, bracelets and rings, collar, silver bars/ingots, temple rings with cluster-type pendants, etc., which confirms the researchers' assumptions about the participation of the Romanians of the Carpathian-Dniester region in long-distance trade, using trade routes that connected the north of the continent and the Baltic Sea with the regions of the Black Sea, Byzantium and Constantinople, starting from the second half of the 8th century and early 9th century.

26. For example, taking into account the latest coin, dated 893 AD, V.V. Kropotkin dates the hoard of Kufic coins discovered in 1902 near Novaya Lazarevka (Nikolaev region), in the Ingul River basin, to the end of the 9th century [Kropotkin 1972, 197].

27. The Echimăuți hoard was discovered in 1951 in square 15G of excavation VII at a depth of 20 cm. According to the Excavation Report, it included: 1. Three Kufic dirhams minted in Samarkand in the first half of the 10th century (one of them was wrapped in linen); 2. Two silver temple rings with a pendant in the form of a cluster with filigree and granulation; 3. Two fragments of temple rings of the same type; 4. Two whole bronze temple rings and one fragmentary one, imitating those made of silver; 5. Three bronze rings; 6. Two silver

ed three Samanid dirhams minted between 903 and 943 in Samarkand [Kropotkin 1971, 91], as well as silver or bronze ornaments, beads, a silver ingot, etc. 16 Kufic dirhams minted between 903 and 943 in Samarkand and Balkh also come from Echimăuți. They were found in different places of this hillfort on the Dniester [Nudel'man 1985, 86]. Dirhams were minted during the reign of the emirs Ismail ibn Ahmad in 291 AH (903-904 AD) and in 293 AH (905-906 AD); Ahmad ibn Ismail in 296 AH (908-909 AD), Nasr (II) ibn Ahmad in 314 AH (926-927 AD) and in 322 AH (933-934 AD) [Nudel'man 1976, 89-90; 1985, 84-89]. Of one dirham cut into segments, minted during the reign of Emir Nasr (II) ibn Ahmad, only a quarter has been preserved (Kropotkin 1972, 201; Boldureanu, Nicolae 2015, 115, Pl. XXX/7). During archaeological excavations in Alcedar in 1962 and 1963, a Samanid copper coin with double perforation²⁸, issued by Nasr ibn Ahmad (914-943), and an imitation [Fedorov 1968, 86] of a Samanid dirham, minted by the Volga Bulgars, with the name of Abdallah ibn Mikhail (366 AH or 947/948 AD) were discovered. Also, from Alcedar comes a beautiful collar/torque made of a massive rod, with filigree decoration, made of 750 silver [Fedorov 1959, 400, fig. 17/1; Fedorov 1960, 30-40; Niculiță 2018, 228, nr. 171], which G. Fedorov considered a symbolic sign of power [Fedorov 1973, 45]. This piece is identical to the collar found in Răducăneni.

Kufic coins also penetrated into the Carpathian-Dniester region later than the mid-

temple rings with a smooth surface; 7. Two bronze bracelets with brought together ends; 8. A silver ingot 3.5 cm long and weighing 9.27 g (actual weight 9.35 g) [Boldureanu, Nicolae 2015, 113-115, fig. XXX/8]; 9. Bronze wire; 10. Five carnelian beads; 11. Three glass paste beads; 12. Five lemon-shaped beads; 13. Ornamental bone plate. See G.B. Fedorov, Report on the work of the Slavic-Dniester expedition of the Institute of Material Culture of the USSR Academy of Sciences and the Moldavian Branch of the USSR Academy of Sciences for 1951. Moscow 1952, 111 pp. and 101 photos. Archive of the NMHN, Accession No. 495, p. 11. Insufficient field documentation from this period does not allow us to reconstruct the context of the discovery of the remaining 16 Kufic coins found at Echimăuți. la Echimăuți.

28. The assumption that all perforated coins with one, two or more holes were used exclusively as pendants has been questioned by researchers. D.Gh. Teodor mentions that in order to facilitate use and transportation, the owner of a large number of coins, before melting them down and making a collar/torque, wore them in bundles [Teodor 2003, 477]. Perhaps the model was Chinese coins with a special hole for tying and wearing in this way [Romgard 2016, 229-242].

dle of the 10th century. They are represented by coins from the Alcedar hoard of 2008 [Riabtseva, Tel'nov 2010, 285-300; Boldureanu 2010, 301-306] and a Buyid dirham minted for the emir Adud al-Dawla (949-983) in Arrajan between 949/950 and 973/974, during the reign of Caliph al-Muti (946-974); the coin was found separately in Iacobeni (Iasi County) [Nicolae 2001, 95]. The Alcedar hoard is of particular importance for understanding the socio-economic processes, as well as the role of commercial exchange in the life of local Romanian communities in the Carpathian-Dniester region at the end of the 1st and beginning of the 2nd millennium. In addition to adornments, the hoard contained three Byzantine and two Arabic silver coins. The Byzantine silver coins date back to the period of John Tzimiskes (969-976). The Buyid dirham from the hoard was minted in 349 AH (=960-961 AD), and the second Arab coin is an imitation of an intentionally cut dirham [Boldureanu 2010, 301-306, fig.1; Boldureanu, Nicolae 2015, 115-116, pl. XXXI; Riabtseva, Tel'nov 2010, 285-300]. The structure of the Alcedar hoard²⁹ reflects the socio-economic realities of the last decades of the 10th century and the beginning of the 11th century. The latest find of this kind, a Kufic coin from Iacobeni (Iasi County), also dates back to this period. The piece is a Buyid dirham minted in 363 AH (973-974 AD) by Emir Adud al-Dawla, a ruler of Fars province, who resided in Shiraz during the time of Caliph al-Muti³⁰. The coin was intentionally cut [Nicolae 2001, 95-96].

The early medieval Arab coin hoards discovered in the Carpathian-Dniester region are part of a larger body of the remains analyzed and published by numismatists Thomas S. Noonan [Noonan 2004, 255-311] and Roman K. Kovalev [Kovalev 2002, 197-216]. The recently com-

29. The Alcedar hoard also included nine silver temple rings in the form of clusters made using filigree and granulation techniques, a gold lunula, silver beads, a silver gilded pendant with a Scandinavian animalistic pattern made in the Borre style with elements of the Elling style, a small silver ingot segmented by cutting, and an iron barrel-shaped weight covered with copper foil, weighing 31.2 g. Several unpublished hoards of silver objects with unstudied Kufic coins have been discovered in the Middle Dniester basin in the last decade. Some of the coins were intentionally cut. Hoards from Cunicea, Holoșnița, Rudi-La Șanțuri, Rudi-La Trei Cruci, etc. should be mentioned.

30. Several other monetary hoards of Kufic dirhams, recently discovered in the Middle Dniester region, contain the same categories of pieces.

pleted catalogue by Roman K. Kovalev and Alexis C. Kaelin includes data on 1,656 dirham hoards from the vast Afro-Eurasian spaces. Altogether, they contain nearly half a million Arabic silver coins (486,956 pieces). In Europe, the authors report 1,348 hoards containing 395,371 dirhams, or more than 81% of all known Kufic coins. In Central and Southeastern Europe, which conventionally include Romania, Hungary, and the Czech and Slovak Republics, only nine hoards containing 824 coins, or 0.17% of the total number of known coins, have been found [Kovalev, Kaelin 2007, 560-580].

A large number of hoards of Kufic dirhams and cut silver items found in Scandinavia, especially on the island of Gotland in the Baltic Sea, have made it possible to reconstruct the route traveled by Arab coins and the routes of penetration of oriental silver. According to researchers, closer to the last quarter of the 8th century, the Vikings, or Rus, from the north of the continent, established trade relations with the Arab world through the Khazar Khaganate. By 770-780, Kufic coins had penetrated into the northern part of the European continent [Noonan 2004, 257; Duczko 2004, 62]. At the same time, Scandinavian finds in the Carpathian-Dniester area, which was a transit region for Scandinavian merchants and warriors on their way to Byzantium and Constantinople, contextualize the route of penetration of Kufic dirhams into the region: Baltic Sea – Vistula – Dniester – Black Sea. This route was neither the shortest nor the safest due to the struggle between different political formations of the Western and Eastern Slavs for control over a section of the road located on the watershed of two water systems, of the Black and Baltic Seas, in the area of old Halič.

The hoards of Kufic coins and silver jewelry found in the Carpathian-Dniester region are part of a larger number of silverware hoards, more than 2,000, known in Central-Northern and Eastern Europe. They include tens of thousands of oriental coins [Hardt 1976; 1996; Steuer 1987; 1997; 2004, 59-88; Losinski 1988, Brather 1997; 2007, 451-471; Metcalf 1997; Kilger 2008; Pedersen 2008, 119-195], being an expression of a unique economic phenomenon in Europe in terms of its scale – the import of impressive amounts of monetary silver from the Arab Caliphates in the 9th-10th centuries. American numismatist Thomas

Noonan calculated that in the 10th century, silver coins weighing more than 370 tons, or about 3.7 tons annually, were imported from the Arab Caliphates to Northern and Eastern Europe. Tens of thousands of dirhams have been found in hoards in northern Russia and in the Scandinavian countries [Noonan 2004, 255-308].

The hoards include, along with coins, pieces of jewelry, clothing accessories, pendants, ingots, silver collars, and so on. In some cases, they contain weights and small balance scales with two bronze plates. Several stages or waves of penetration of Islamic dirhams into the Carpathian-Dniester area have been identified [Boldureanu, Nicolae, 2015, 113-116]. These stages correspond to the dynamics of the circulation of Kufic coins in Eastern and Northern Europe. Each of these stages reflects the peculiarities of monetary circulation, which allowed Richard Fasmer to identify the directions of penetration and connections with specific socio-economic phenomena [Fasmer 1933, 473-474; Ianina 1956, 180-197; Noonan 2004, 255; Kovalev 2000, 25-64; Kuleshov 2015, 73-76].

The spread of the Arab silver coins through trade is beyond doubt. The premises of long-distance trade has been noted to have roots in pre-Islamic times [Nicolae 2001, 98; Kazanskii 2010, 17-127]. This trade was related to the natural phenomenon known as the “Medieval Climatic Minimum” of the 5th-7th centuries (c. 450-650) and the general cooling trends of the climate in Eurasia. The cooling of the climate increased the demand for furs. The furs of animals such as sable, ermine, weasel, gray squirrel, fox, marten, beaver as goods were in great demand at the courts in Constantinople, the Sassanid Iran, etc., and were repeatedly mentioned by Arab authors (al-Gayhani, Ibn Fadlan) [Zimoni 2014, 38]. This explains the significant presence of Byzantine coins and Sassanid silverware in the northern steppes of Southern Russia [Darkevich 1976, 153; Nicolae 2001, 95-102; Kazanskii 2010 112-113].

The Eurasian trade routes of the late 1st millennium and early 2nd millennium were described by Arab travelers and merchants, as well as Byzantine authors. The trade links between the Baltic and Caspian regions along the Volga were described by the Arab traveler Ibn Fadlan. At the head of the embassy of the Baghdad Caliph, he visited the Volga Bulgars in 922. Ibn Fadlan left a truthful and

objective description of the realities in the region, including the northern merchants. The author was impressed by the physical appearance of the *Rūs* (=Scandinavians). They have blond hair, and from a physical point of view, “more perfect people do not exist” [Kovalevskii 1956, 78]. Another trade route connecting the north of the continent with the south was the route along the Dnieper. It was described by the Byzantine Emperor Constantine Porphyrogenitus. Also, depending on the political stability in the regions north of the Black and Caspian Seas, the old route the Roman period, along the Dniester and Vistula to Northern Europe, was used.

In recent years, researchers have been trying to categorize imports entering the Carpathian-Dniester area within the trade exchanges with the Byzantine Empire (*Byzantine imports*), highlighting those from Northern Europe (*Scandinavian artefacts*) and those from the Arab East (*Oriental artefacts*). In recent years, systematic archaeological investigations and random finds in the regions north of the Lower Danube and east of the Eastern Carpathians have brought to light remains of a clearly Scandinavian nature. They date back to the 9th-11th centuries and represent tools, weapons and armor, jewelry, and amulets. Among them there are pendants with typical Scandinavian ornamentation [Tentiuc, Bubulici 2021, 141-153] and amulets with *animalistic patterns of obviously Nordic origin* [Riabtseva, Tel'nov 2010, 291-291, fig. 1/13; Tentiuc, Bubulici 2021, 141-153; Bondar' 2021, 190-208; Bondar' 2022, 150-160].

Within hoards and among isolated finds there is a separate category of remains representing the pieces of jewelry and coins intentionally segmented by cutting. In specialized literature, such assemblages are called *cut silver or hacksilver* (in German) [Steuer 1987, 405-527, Noonan 2004, 255-309]. The most eloquent in this regard is the hoard from Alcedar, discovered in 2008. The hoard contains 21 pieces of jewelry, including a small silver ingot, segmented by cutting, as well as an iron weight of a spherical shape³¹, resembling a barrel, covered with copper foil, weighing 31.2 g. Along with these, the hoard also included three Byzantine silver coins of John Tzimiskes (969-976) and two Kufic dirhams, one of which was a bizarre imitation of a dirham

31. The presence of instruments used by merchants in some hoards (Echimăuți, Răducăneni, Alcedar, etc.) demonstrates their economic-commercial character.

(specially cut), and the second was a dirham minted in the city of Ram Hurmuz in 349 AH (960-961 AD) by the emirs Mu'izz ad-Da'ula and Rukn ad-Da'ula, rulers of the provinces of Khuzestan and Kirman, and by the Caliph al-Muti [Boldureanu, Nicolae 2015, 115-116]. The hoard also included a gilded silver cult item with a Scandinavian animal ornament with intertwined ribbons and stems, dating back to the Viking Age, typical of Norse traditions. Other coins, ingots and intentionally segmented silver collars were also found in the hoards of Alcedar, Cunicea, Echimăuți, Răducăneni and Rezina (2022), and also isolated in Iacobeni (Iasi County). Among the imports that are undoubtedly of Eastern origin, we mention the Cowrie seashells unearthed in the grave of a girl from Giurgiulesti [Levițki, Haheu, Riabțeva 2001, 309-319], which come from the Persian Gulf and the Indian Ocean. Some researchers believe that the barrel-shaped iron weights wrapped in bronze foil and the balance scales with folding arms are the work of craftsmen from the Arab East [Abattouy 2006, 1-25].

The deliberate segmentation of silver coins, a phenomenon characteristic of the 10th century, is directly related to small-scale trade operations [Boldureanu, Nicolae 2015, 113-116]. Some researchers believe that this practice was not alien to the Islamic East either, where specially cut into pieces or perforated coins are found in hoards [Lowick 1975, 118-119; Nicolae 2001, 96, 97]. The same applies to ingots (Răducăneni, Echimăuți) and collars (Cunicea, Răducăneni).

Among the categories of archaeological remains that contribute to the reconstruction of forms of trade exchange in Central-Northern and Eastern Europe, as well as in the extra-Carpathian regions, the tools used by merchants and/or craftsmen and jewelers are of indisputable importance [Tentiuc 2022, 111-112]. These are weights and small balance scales with two bronze plates.

Conclusions

The resumption of the use of old transcontinental routes, the growing role of crafts and trade in economic life led to the appearance of roadside inns where travelers could rest or temporary military camps, which were gradually transformed, with the help of the local Romanian population, into strong fortified settlements with ditches, earthen ramparts and palisades. They gradually

became real pre-urban nuclei or were surrounded by *suburbia* and “craftsmen’s quarters”.

Archaeological sources record the transition of medieval Romanian communities from an autarkic *natural economy* based on commodity-commodity relations to a *monetary economy* based on commodity-money relations. In the new conjuncture, the exchange of products was carried out by means of money, and weighed monetary silver served as a medium of exchange

Thus, the economic system in which money represented by objects or fragments of objects made of silver (torques, jewelry, coins, ingots, etc.) used as an equivalent in trade transactions is defined as a *money-weight economy* (*Gewichtsgeldwirtschaft*) [Steuer 1987, 407-527; 2004, 72]. These economic processes led to the acceleration of economic and social stratification within rural communities, to the emergence of pre-urban nuclei and regional political-administrative structures.

Silver coins, ingots, collars/torques, whole or intentionally cut into pieces, which were found isolated or in hoards at Echimăuți, Alcedar, Cunicea, Răducăneni, Holoșnița, Iacobeni (Iasi county), Rudi-*La Șanturi*, etc., confirm that the processes accompanying the commodity-money economic exchange, including the phenomenon of hacksilver, widespread in Central and Northern Europe, also covered the Romanian communities of the Carpathian-Dniester area. Here, the means of exchange in transactions were Arab silver coins and monetary silver (ingots, collars/torques³²,

32. Attention was drawn to the perforated Kufic dirhams, which, transformed into jewelry, could easily be reused as currency with intrinsic value. In this sense, the mention of the Arab traveler Ibn Fadlan about the Scandinavian/Viking women he saw during his journey to the Volga Bulgars in 922 is important. Beautifully dressed, they wore around their necks, depending on the social status and the wealth of their husbands, as a sign of prestige, one, two or more *tauks* [Kuleshov 2018, 42-49], made by melting down 10 thousand dirhams. The Arabic word *tauk* is interpreted by some translators as a *monisto* [see Ibn Fadlan 1939, 78-79; Kovalevskii 1956, 141-142], meaning *a string of coins*. In English translations of the passage, the word *tauk* has been used in the sense of a *neck-ring* [Lunde, Stone 2012, 46] or as a result of translating the Arabic word *tauk* as a torque or collar. We mention this in connection with the *torques* [Lunde, Stone 2012, 46]. The inaccuracy of A.P. Kovalevski's translation of this word was noted by A.L. Mongait [Mongait 1961, 111-112]. A recent analysis by researcher V.S. Kuleshov [Kuleshov 2018, 43-44 and note 2] shows artefacts made of massive silver bars discovered at Alcedar (see the collections of the National Museum of History of Moldova in Chisinau, Accession No. 7261), in the Răducăni hoard (kept in the collections of the Museum

jewelry, etc.), widely used in local, interregional or transcontinental commercial transactions.

In our opinion, in the 9th-10th/11th centuries, the transcontinental route along the Dniester was controlled by Norse merchants and warriors. They used Kufic silver coins for trade with Constantinople. Some of the coins were used for commercial exchange with the Romanian population on the Dniester and Prut. Some categories of silver jewelry could be transported to the north. There are reasons to believe that warriors from the Romanian squads³³ were involved in military-political and economic processes in the region [Tentiuc 2017, 125-130; Tentiuc 2019, 116-119]. The participation of the Romanians in the Battle of the Alta River in 1019, in a coalition with other peoples, for the Kiev throne after the death of Vladimir the Great (1015), is documented by written sources of that time [Spinei 1973, 65-66; Spinei 1994, 97-98]. Some researchers are of the opinion that at some point, Arab merchants entered the region³⁴, whose interests intersected with those of the settled Vikings, assimilated or in the process of assimilation, and of the local Romanic people [Teodor 1985, 263-268; Teodor 2003, 478; Teodor 2008, 171-172].

After the fall of the Umayyad dynasty, the Abbasid Caliphate (750-1055/1258) focused its

efforts on reorganizing the political, administrative and economic structure of the state [Lombard 2014, 57-65]. An important aspect was the support of long-distance trade and control over the numerous branches at the western end of the Great Silk Road. These were captured after the Battle of Talas (751), when the armies of the Tang Empire were defeated [Bol'shakov 1980, 132-135] and the process of Sinicization of the region was put to an end. The struggle for control of the markets along the caravan routes was waged between the Tahirids (820-872) and Saffarids (867-903) on one side, and the Samanids (819-999) and Buyids (Buwayhids) on the other. The latter ruled in Baghdad from 945 to 1012. The Samanid state, the suzerain of the Abbasid Caliphate, with its capital in Bukhara, was founded in the 8th century by four brothers who were governors of disparate regions united in 892 by Emir Ismail Samani, with a claim to Persian, pre-Sasanian roots. On the other hand, the silver crisis in the Carolingian Empire, the discovery of alternative routes to the Great Silk Road, as well as the special interest of the Vikings in the white metal contributed to the connection of the ancient Scandinavians to the great transcontinental routes, where the role of the "turning circle" belonged to the Khazar Khaganate and the Bulgar Khaganate on the Volga [Curta 2013, 303-330].

of History of Moldova in Iasi, Accession No. 9846), in the Rudi-La Trei Cruci hoard (Sorocea district), as well as four torques from the Cunicea hoard (Floresti district) (unpublished). The collars from Alcedar and Rădăcăneni have the same shape, the same fastening system, diameter (each 190 mm) and weight (454 g). The slightly different weight of the Rădăcăneni collar (385 g) can be explained by the loss/breaking off of its small fragment [see Teodor 1980, 413]. Researchers Roman Kovalev and Aleksiks Kaelin [2007, 560-580] note that of the approximately 125 million Kufic dirhams exported to Central-Northern and Eastern Europe in the 10th century, less than half a million have been found (486,956 coins, to be exact). The rest were probably melted down and turned into jewelry and collars, a phenomenon that Ibn Fadlan mentions in his notes.

33. Armed detachments of Vlach warriors from the eastern Carpathians participated in the struggle for power between the Kiev princes Yaroslav and Svyatopolk (Battle of the Alta, near Kiev, in 1019) at the beginning of the 11th century, after the death of Vladimir of Kiev in 1015. The Vlachs of this period are mentioned in Scandinavian sources, such as the *Eymundar þáttur hrings*, and in Old Russian chronicles [Spinei 1994, 97-99].

34. In this sense, different opinions have been expressed regarding the etymology of the toponym *Alcedar*, the name of the most important fortified circular settlement on the Dniester, in which an Arabic consonant sound was found.

Bibliography

- Abattouy 2006:** M. Abattouy, *The Arabic Tradition of Mechanics. The Birth of the Science of Weights*. Foundation of a Science, Technology and Civilisation, 2006, 1-25.
- Androshuk 2008:** F.A. Androshuk, *Drevlianskaia zemlia v mezhtse regional'nykh kontaktakh IX-X vv. Starodavnii Iskorosten' i slov'ians'ki gradi*. t. 1, (Korosten' 2008), 6-19 // Ф.А. Андрощук, *Древлянская земля в межрегиональных контактах IX-X вв. Стародавний Искоростень і слов'янські гради*. т. 1, (Коростень 2008), 6-19.
- Angelescu et al. 2003:** C. Angelescu, D. Ciucur, D. Marin, I. Gavrilă, P.T. Ghiță, C. Popescu, C. Târhoacă. In: (F. Erhan red.), *Economia. Ediția a șasea*. (București 2003).
- Andersen et al. 2016:** P. Andersen, J. Sandholt, C. Volmar-Skovsgaard, *The heavy plow and the agricultura revolution in Medieval Europe*. *Journal of Development Economics* 118 (C), 133-149.
- Azbelev 1958:** S.N. Azbelev, *Sovershalis' li sukhopotnye pokhody na Konstantinopol'*. *Vestnik Leningradskogo universiteta. Serii istorii, iazyka i literatury*, № 8, Вып. 2, 1958, 166-170 // С.Н. Азбелев, *Совершались ли сухопутные походы на Константинополь*. *Вестник Ленинградского университета. Серия истории, языка и литературы*, № 8, Вып. 2, 1958, 166-170.
- Barnea 1967:** I. Barnea, *Meșteșugurile locuitorilor din așezarea feudală*, In: (Gh. Ștefan et al. ed.), *Dinogetia. Așezarea feudală timpurie de la Bisericița-Garvăn*. (București 1967).
- Bartołd 1897:** V.V. Bartołd, *Otchet o poezdke v Sredniuiu Aziiu v 1893-1894 gg.* (SPb 1897) // В.В. Бартольд, *Отчет о поездке в Среднюю Азию в 1893-1894 гг.* (СПб 1897).
- Bartołd 1898:** V.V. Bartołd, *Turkestan v epokhu mongol'skogo nashestviia*, ch. 1, (Spb 1898) // В.В. Бартольд, *Туркестан в эпоху монгольского нашествия*, ч. 1, (СПб 1898).
- Bauer 2014:** N.P. Bauer, *Istoriia drevnerusskikh denezhnykh sistem (IX v. – 1535 g.)*. (Moskva 2014) // Н.П. Байер, *История древнерусских денежных систем (IX в. – 1535 г.)*. (Москва 2014).
- Beeson et alii. 2001:** Patricia E. Beeson, D.N. De Jong, W. Troesken, *Population growth in U.S. Counties, 1840-1990*. *Regional Science and Economics*, 31 (6), 2001, 669-699.
- Boldurianu 2010:** A. Boldurianu, *Vizantiiskie i islamskie monety iz Alchedarskogo klada*. *Stratum plus* 5, 2010, 301-306 // А. Болдуряну, *Византийские и исламские монеты из Алчедарского клада*. *Stratum plus* 5, 2010, 301-306.
- Boldureanu, Nicolae 2015:** Ana Boldureanu, Eugen Nicolae, In: (A. Boldureanu, E. Nicolae coordonatori), *Mone-da în Republica Moldova*, (Chișinau, 2015), 113-116.
- Boldurianu, Riabtseva 2015:** A. Boldurianu, S. Riabtseva, *Denezhno-veshshevye klady i otdel'nye nakhodki monet v pamiatnikakh Karpato-Dnestrovskogo regiona IX- nachala XI vv. Epoha vikingov v Vostochnoi Evrope v pamiatnikakh numizmatiki VIII-XI vv. II Mezhdunarodnaia numizmaticheskaia konferentsiia*. *Materialy dokladov i soobshenii*, (Sankt-Peterburg 2015), 108-115 // А. Болдуряну, С. Рябцева, *Денежно-вещевые клады и отдельные находки монет в памятниках Карпато-Днестровского региона IX-начала XI вв. Эпоха викингов в Восточной Европе в памятниках нумизматики VIII-XI вв. II Международная нумизматическая конференция. Материалы докладов и сообщений*, (Санкт-Петербург 2015), 108-115.
- Boľshakov 1980:** O.G. Boľshakov, *K istorii Talaskoi bitvy (751 g.)*. In: (D.A. Oľderoge), *Strany i narody Vostoka XXII*, (Moskva 1980), 132-135 // О.Г. Большаков, *К истории Талаской битвы (751 г.)*. В сб.: (Д.А.Ольдероге), *Страны и народы Востока XXII*, (Москва 1980), 132-135.
- Bondar' 2021:** I.A. Bondar', *Novyi skandinavskii amulet v zverinom stile i runicheskoi nadpis'iu v kontekste drevnegermanskoj mifologicheskoi sistemy mira*. *Skandinavskaja filologija*, t. 19, вып. 1, 2021, 150-168 // И. А. Бондарь, *Новый скандинавский амулет в зверином стиле и рунической надписью в контексте древнегерманской мифологической системы мира*. *Скандинавская филология*, т. 19, вып. 1, 2021, 150-168.
- Bondar' 2022:** I. Bondar', *Runicheskaja nadpis' novogo skandinavskogo zoomorfno go amuleta rannesrednevekovogo vremeni, obnaružennogo na Srednem Dnestre v Moldavii*. *Skandinavskaja filologija*, tom 20, вып. 1, 2022, 150-165 // И. Бондарь, *Руническая надпись нового скандинавского зооморфного амулета раннесредневекового времени, обнаруженного на Среднем Днестре в Молдавии*. *Скандинавская филология*, том 20, вып. 1, 2022, 150-165.
- Bosker et al. 2013:** M. Bosker, E. Buringh, J. Liuten van Zanden, *From Baghdad to London: unraveling urban development in Europe, the Middle East, and North Africa, 800-1800*. In: *The Review of Economics and Statistics*, 95, 4, (October 2013), 1418-1437.
- Brather 1999:** S. Brather, *Frumittelalterliche Dirham-Schatz – und Einzelfunde im sudlichen Ostseeraum. Die Anfange der Gewichtsgeldwirtschaft bei den Westslawen*. *Archaeologie als Sozialgeschichte. Festschrift fur Heiko*

Steuer zum 60. Geburtstag. Bd 8 Ragden West, 1999, 179-197.

Brather 2007: S. Brather, Counted and weighed silver: the fragmentation of coins in early medieval East Central Europe. Post-Roman Towns, Trade and settlement in Europe and Byzantium. Ed. Ioachim Henning; Wolfgang Iohann. Vol. I, The Heirs of the Roman West, 451-471.

Brather 2010: S. Brather, Silver, Weights and Scales around the Baltic 8th to 11th Centuries. Trade and Communication Networks of the First Millennium AD in the Northern Part of Central Europe (Stuttgart 2007), 143-164.

Brather 2012: S. Brather, M. F Jagodzinski (ed), Der wikingerzeitliche Seehandelsplatz von Janow (Truso). Geophysikalische, Archaopedologische und archaologische untersuchungtn. 2004-2008 (Bonn 2012).

Braudel 1989: Fernand Braudel, Timpul lumii, Trad. și prefata de Adrian Riza. (București 1989).

Brătianu 1940: Gh. I. Brătianu, Le commerce bulgare dans l'empire byzantine et le monopole de l'empereur Leon VI a Thessalonique. Известие на Българското историческо дружество, XVI-XVIII, сборникъ в память на проф. Петъръ Никовъ (София, 1940), 30-36.

Canache, Curta 1994: A. Canache, Fl. Curta, Depozite de unelte și arme medieval timpurii de pe teritoriul României. Musaios, IV, partea I, 174-221.

Cantemir 1975: Dimitrie Cantemir, Desrierea Moldovei (Chișinău, 1975).

Comșa 1978: Maria Comsa, Cultura materiala veche româneasca (Asezarile din secolele VIII-X de la Bucov-Ploiesti). (Bucuresti 1978).

Constantinus Porphyrogenetus 1967: Constantinus Porphyrogenetus, De administrando imperio. Ed. Gy. Moravcsik et R.J.H. Jenkins. (Washington 1967).

Curta 2011: F. Curta, New Remarks on Early Medieval Hoards of Iron Implements and Weapon. In: J. Machacek, S. Ungermann (eds.), Fruhgeschichtliche Zentralort in Mitteleuropa. Internationale Konferenz und Kolleg der Alexander von Humboldtstiftung zum 50. Jahrestag des Beginns archeologischer Ausgrabungen in Pohansko bei Breclav. Studien zur Archaologie Europas 14, (Bonn 2011), 251-276.

Curta 2013: F. Curta, Markets in Tenth-Century al-Andalus and Volga Bulgaria: Contrasting Views of Trade in Muslim Europe. Society for the Medieval Mediterranean. Vol. 25, Nr. 3, 305-330.

Custurea 2000: G. Custurea, Circulația monedei bizantine în Dobrogea (sec. IX-XI). (Constanța 2000).

Custurea 2002: G. Custurea, Ponduri antice și medievale descoperite în Dobrogea. Pontica, 35, 439-443.

Darkevich 1976: V.P. Darkevich, Svetskoe iskusstvo Vizantii. Proizvedeniia vizantiiskogo khudozhestvennoe remeslo v Vostochnoi Evropy X-XII veka. (Moskva 1976) // В.П. Даркевич, Светское искусство Византии. Произведения византийского художественное ремесло в Восточной Европы X-XII века. (Москва 1976).

Dejan 2015: M. Dejan, Elemente răsăritene în ținuturile extracarpatice (secolele VI-X). (Suceava 2015).

Diaz et al. 2011: H.F. Diaz, R. Trigo, V.K. Hughes, M.E. Mann, E. Xoplaki, D. Darriopedro, Spatila and temporal characteristics of climate in medieval times revisited. Buletin of the American Meteorological Society, 92,11, 2011, 1487-1500.

Ducene 2018: J.-C. Ducene, L'Europe et les geographes arabes du Moyene Age. (Paris 2018).

Duczko 1985: W. Duczko, The filigree and granulation work of the Viking Period. An analysis of the material from Bjorko. Birka. Untersuchungen und Studien. V, (Stockholm 1985).

Duczko 2004: W. Duczko, Viking Rus. Studies on the Presence of Scandinavians in Eastern Europe / Series The Northern World. Vol. 12, Brill (Leiden, Boston 2004).

Dzis-Rajko 1959: G.O. Dzis-Rajko, Iuvelirni virobi slov'ian Podnistrov'ia [Za materialami Odes'kogo arheologichnogo muzeiu]. Pratsi Odes'kogo un-tu, 1959, t. 149 (Ser. ist. nauk), Vip. 7, (Arheologichnii zbirnik), ch. I, 81-87 // Г. О. Дзис-Райко, Ювелірні вироби слов'ян Подністров'я [За матеріалами Одеського археологічного музею]. Праці Одеського ун-ту, 1959, т. 149 (Сер. іст. наук), Вип. 7, (Археологічний збірник), ч. I, 81-87.

Eniosova at all. 2004: N.V. Eniosova, R.A. Mitoian, T.G. Saraiava, Srebro v metaloobrabotke Iuzhnoi Rusi v IX-XI vv. Starodavnii Iskorosten' i slov'ianski gradi VIII-X st., (Kiiiv 2004), 26-34 // Н.В. Ениосова, Р.А. Митоян, Т.Г. Сараяева, Серебро в металлообработке Южной Руси в IX-XI вв. Стародавний Искоростень і слов'янські гради VIII-X ст., (Київ 2004), 26-34.

Fairbridge 2005: R.W. Fairbridge, Medieval Warm Period or „little Climatic Optimum”. In: (J.E. Oliver ed.), Encyclopedia of World Climatology. Encilopedia of Earth Sciences Series, (Dardrecht 2005), 482-484.

Fedorov 1952: G.B. Fedorov, Otchet o rabote slaviano-dnestrovskoi ekspeditsii Instituta Materialnoi Kul'tury AN SSSR i Moldavskogo filiala AN SSSR za 1951 g., (Moskva 1952), Arhiva MNIM, Nr. inv. 495 // Г.Б. Федоров, Отчет о работе славяно-днестровской экспедиции Института Материальной Культуры АН СССР и Молдавского филиала АН СССР за 1951 г., (Москва 1952), Arhiva MNIM, Nr. inv. 495.

Fedorov 1953: G.B. Fedorov, Gorodishe Ekimautsy (Raboty Slaviano-Dnestrovskoi ekspeditsii v 1951 g.). Kratkie

- soobsheniia Instituta Istorii i Material'noi Kul'tury, Vyp. 50, 1953, 104-126 // Г.Б. Федоров, Городище Екимаяцы (Работы Славяно-Днестровской экспедиции в 1951 г.). Краткие сообщения Института Истории и Материальной Культуры, вып. 50, 1953, 104-126.
- Fedorov 1959:** G.B. Fedorov, Rezultatele și problemele principale ale cercetărilor arheologice din sud-vestul U.R.S.S., refveritoare la primul mileniu al e.n. Studii și cercetări de itsorie veche, X/2, 1959, 371-408.
- Fedorov 1964:** G.B. Fedorov, Raboty Prutsko-Dnestrovskoi ekspeditsii v 1960-1961 gg. KSIA, vyp. 99, 77-88 // Г.Б. Федоров, Работы Прутско-Днестровской экспедиции в 1960-1961 гг. КСИА, вып. 99, 77-88.
- Fedorov 1966:** G.B. Fedorov, Posad Ekimauskogo poseleniia. Kul'tura Drevnei Rusi, (Moskva 1966), 272-277 // Г.Б. Федоров, Посад Екимаяцкого поселения. Культура Древней Руси, (Москва 1966), 272-277.
- Fedorov 1973:** G.B. Fedorov, Genezis i razvitie feodalizma u drevnerusskogo naseleniia Dnestrovsko-Prutskogo mezhdurech'ia v IX-XII vv. (po arheologicheskim dannym). In: Iugo-Vostochnaia Evropa v epokhu feodalizma, (Kishinev 1973), 40-52 // Г.Б. Федоров, Генезис и развитие феодализма у древнерусского населения Днестровско-Прутского междуречья в IX-XII вв. (по археологическим данным). В сб: Юго-Восточная Европа в эпоху феодализма, (Кишинев 1973), 40-52.
- Fedorov 1974:** G.B. Fedorov, Drevnerusskaia kul'tura Podnestrov'ia (X-XII vv.). Drevniaia kul'tura Moldavii (Kishinev 1974) // Г.Б. Федоров, Древнерусская культура Поднестровья (X-XII вв.). Древняя культура Молдавии (Кишинев 1974).
- Fedorov, Chebotarenko 1974:** G.B. Fedorov, G.F. Chebotarenko, Pamiatniki drevnix slavian (VI-XIII vv.). Arheologicheskaia karta Moldavskoi SSR, vyp. 6, (Kishinev 1974) // Г.Б. Федоров, Г.Ф. Чеботаренко, Памятники древних славян (VI-XIII вв.). Археологическая карта Молдавской ССР, вып. 6, (Кишинев 1974).
- Focșa, Roșca 2018:** V. Focșa, G. Roșca, Protecția resurselor minerale, în: Anuarul IES – 2017, Protecția mediului în Republica Moldova (Chișinău 2018), 73-86.
- Glaeser 2014:** E.L. Glaeser, A World of cities: the causes and consequences of urbanisation in poorer countries. Journal of the European Economic Association, 12 (5), 2014, 1154-1199.
- Gollin et alii. 2016:** D. Gollin, R. Jedwab, D. Vollrath, Urbanization with and without industrialization. Journal of Economic Growth. March, 21 (1), 2016, 35-70.
- Gol'tseva, Kashuba 1995:** N.V. Gol'tseva, M.T. Kashuba, Glinzhen' II. Mnogosloynyi pamiatnik Srednego Podnestrov'ia. (Tiraspol' 1995) // Н.В. Гольцева, М.Т. Кашуба, Глинжень II. Многослойный памятник Среднего Поднестровья. (Тирасполь 1995).
- Goosse et alii. 2006:** H. Goosse, O. Arzel, J. Luterbscher, M.E.Mann, H.Renssen, N. Riedwyl, A. Timmerman, E. Xoplaki, H.Wanner, The origin of the European „Medieval Warm Period”, Climate of the Past, 2, 2006, 99-113.
- Gustin 2015:** Ingrid Gustin, Trade and Trust in the Baltic sea area during the Viking Age. Maritime Societies of the Viking and Medieval World. London and New York, 2015, 25-40.
- Hårdt 1976:** B. Hårdt, Wikingerzeitliche Depotfunde aus Sudschweden: Probleme und Analysen. (Lund: Liber-Laromedel/Gleerup 1976).
- Hårdt 1996:** B. Hårdt, Silver in the Viking Age: a Regional-Economic Study. (Stockholm: Alquist & Wiksell International 1996).
- Hårdt 2008:** B. Hårdt, Hacksilver and Ingots, Means of Exchange. Kaupan Excavation Project. Publication Serie, v. 1, (Aarhus University Press 2008), 95-115.
- Heivud 2019:** D. Heivud, Liudi Severa. Istoriia vikinkov, (Moskva 2019), 793-1241 // Д. Хейвуд, Люди Севера. История викингов, (Москва 2019), 793-1241.
- Hyncu 1972:** I.G. Hyncu, Arheologicheskie issledovaniia na posedanii Limbar'-Keprerii X-XIV vv. v 1968-1969 gg. Arheologicheskie issledovaniia v Moldavii v 1968-1968 gg., (Kishinev 1972), 159-183 // И.Г. Хынку, Археологические исследования на поседении Лимбарь-Кэпрэрия X-XIV вв. в 1968-1969 гг. Археологические исследования в Молдавии в 1968-1968 гг., (Кишинев 1972), 159-183.
- Hvoshshinskaia 2018:** N.V. Hvoshshinskaia, K interpretatsii kladov serebrianykh griven v Vostochnoi Evrope. Arheologicheskie vesti, 24, 2018, 182-189 // Н.В. Хвошинская, К интерпретации кладов серебряных гривен в Восточной Европе. Археологические вести, 24, 2018, 182-189.
- Ibn Fadlan 1939:** Akhmed Ibn Fadlan, Puteshestvie Ibn-Fadlana na Volgu / Per. i kommentarii pod red. I.Iu. Krachkovskogo. (Moskva-Leningrad 1939) // Ахмед Ибн Фадлан, Путешествие Ибн-Фадлана на Волгу / Пер. и комментарий под ред. И. Ю. Крачковского. (Москва-Ленинград 1939).
- Iliescu 1957:** O. Iliescu, Însemnări privitoare la descoperiri monetare. Studii și Cercetări de Numismatică, I, 1957, 462-463.
- Ježek, Zavřel 2011:** Martin Ježek, Jan Zavřel, Probierensteine als Prüfstein der Archäologie Nachweis und Kontexte

- einrs Hilfsmittelse im Mittelalter. Zeitschrift fur Archaologie des Mittelalters. Jahrgang 39, 2011, 125-160.
- Ianin 1956:** V.L. Ianin, Denezhno-vesovye sistemy domongol'skoi Rusi. (Moskva 1956) // В.Л. Янин, Денежно-весовые системы домонгольской Руси. (Москва 1956).
- Ianina 1956:** S.A. Ianina, Nerevskii klad kuficheskikh monet X veka. Materialy i issledovaniia po arkheologii SSSR, 55, 1956, 180-207 // С.А. Янина, Неревский клад куфических монет X века. Материалы и исследования по археологии СССР, 55, 1956, 180-207.
- Ianov 2016:** D.M. Ianov, Sribni ta zoloti islams'ki moneti v kolektsiui Bilgorod-Dnistrov's'kogo kraeznavchogo muzeiu. Arkheologiya, 1, 2016, 89-92 // Д.М. Янов, Срібні та золоті ісламські монети в колекції Білгород-Дністровського краєзнавчого музею. Археологія, 1, 2016, 89-92.
- Jonsson, Wessen 1962:** B.F. Jonsson, E. Wessen, Gotlands runinskrifter. (Stockholm 1962), 262-268.
- Iarovoi 1990:** E.V. Iarovoi, Kurgany eneolita-epokhi bronzy Nizhnego Podnestrov'ia. (Kishinev 1990) // Е.В. Яровой, Курганы энеолита-эпохи бронзы Нижнего Поднестровья. (Кишинев 1990).
- Kashuba 2000:** M.T. Kashuba, Rannee zhelezo v lesostepi mezhdru Dnestrom i Siretom (kul'tura Koziiia-Sakharna). Stratum plus, 3, 2000, 241-488 // М.Т. Кашуба, Раннее железо в лесостепи между Днестром и Сиретом (культура Козия-Сахарна). Stratum plus, 3, 2000, 241-488.
- Kazanskii 2010:** M.M. Kazanskii, Skandinavskaia mekhovaia trgovlia i „Vostochnyi mir v epokhu pereseleniia narodov”. Stratum plus, 4, 2010, 17-127 // М.М. Казанский, Скандинавская меховая торговля и Восточный мир в эпоху переселения народов. Stratum plus, 4, 2010, 17-127.
- Kilger 2008:** Ch. Kilger, Kaupang from Afar: Aspects og the Intepretation of Dirhem Finds in Northern and Eastern Europevbetween the Late 8th and Early10th Centuries. Means of exchange. Dealing with Silver in the Viking Age. Aarhus, 2008, 199-252.
- Kitab 1892:** Kitab al-A'lak an-Nafisa auctore Abu Ali Ahmed Ibn Omar Ibn-Rosteh et Kitab al-Boldan auctore Ahmed Ibn Abi-Jakub ibn-Wadhah al-Katib al-Jakubi. Bibliotheca Geographorum Arabikorum. Lugdu ni Batavorum. Vol. 7, 1892, 145.
- Kleiman 1984:** I.B. Kleiman, O raskopkakh Tiry v 1940 g. Novye arheologicheskie issledovaniia na Odeschine, (Kiev 1984), 66-74 // И.Б. Клейман, О раскопках Тире в 1940 г. Новые археологические исследования на Одессине, (Киев 1984), 66-74.
- Komar 2010-2011:** A.V. Komar, Drevnerusskaia denezhno-vesovaia sistema X v. Na perekrestke putei: khazarskii tupik. Khazarskii al'manakh, tom 9, 2010-2011, 131-184 // А.В. Комар, Древнерусская денежно-весовая система X в. На перекрестке путей: хазарский тупик. Хазарский альманах, том 9, 2010-2011, 131-184.
- Korzukhina 1954:** G.F. Korzukhina, Russkie klady IX-XIII vv. (Moskva-Leningrad 1954) // Г.Ф. Корзухина, Русские клады IX-XIII вв. (Москва-Ленинград 1954).
- Kotliar 1971:** N.F. Kotliar, Denezhnoe obrashenie na territorii Ukrainy epokhi feodalizma. (Kiev 1971) // Н.Ф. Котляр, Денежное обращение на территории Украины эпохи феодализма. (Киев 1971).
- Kropotkin 1971:** V.V. Kropotkin, Novye nakhodki sasanidskikh i kuficheskikh monet v Vostochnoi Evrope. Numizmatika i sfragistika, IX, (Moskva 1971), 76-97 // В.В. Кропоткин, Новые находки сасанидских и куфических монет в Восточной Европе. В сб.: Нумизматика и сфрагистика, IX, (Москва 1971), 76-97.
- Kropotkin 1972:** V.V. Kropotkin, Vremia i puti proniknoveniia kuficheskikh monet v Srednee Podunav'e. Problemy arheologii i drevnei istorii ugrov, (Moskva 1972), 197-202 // В.В. Кропоткин, Время и пути проникновения куфических монет в Среднее Подунавье. В сб.: Проблемы археологии и древней истории угров, (Москва 1972), 197-202.
- Kovalev 2002:** R.K. Kovalev, Dirham Mint Output of Samanid Samarq and its Connection to the Beginnings of Trade with Northern Europe (10 th century). Histoir et Mesure. Monnaie et espace, 17/3-4, 2002, 197-216.
- Kovalev, Kaelin 2007:** R.K. Kovalev, A.C. Kaelin, Circulation of Arab Silver in Medieval Afro-Eurasia: Preliminary Observations. History Compas 5/2, 2007, 560-580.
- Kovalevskii 1956:** A.P. Kovalevskii, Kniga Akhmeda Ibn-Fadlana o ego puteshestvii na Volgu v 921-922 gg. (Har'kov 1956) // А.П. Ковалевский, Книга Ахмеда Ибн-Фадлана о его путешествии на Волгу в 921-922 гг. (Харьков 1956).
- Kuleshov 2011:** Viach. S. Kuleshov, Khronologiya obrasheniia islamskikh monet v Vostochnoi Evrope (VIII-IX v.). XIV Vserossiiskaia numizmaticheskaia konferentsiia, Sankt-Peterburg-Repino, 18-23 apreliia 2011 goda. Tezisy dokladov i soobshenii, (Sankt-Peterburg 2011), 46-48 // Вяч. С. Кулешов, Хронология обращения исламских монет в Восточной Европе (VIII-IX в.). XIV Всероссийская нумизматическая конференция, Санкт-Петербург-Репино, 18-23 апреля 2011 года. Тезисы докладов и сообщений, (Санкт-Петербург 2011), 46-48.
- Kuleshov 2015:** Viach. S. Kuleshova, khronologiya obrasheniia islamskikh monet v Vostochnoi Evrope (konets IX-

- XI v.). Numizmaticheskie chteniia gosudarstvennogo Istoricheskogo muzeia 2015 goda. Pamiati N.A. Frolovoi (24. 01. 1936-20.10.2015), Moskva, 30 noiabria – 1 dekabria 2015 g. Materialy dokladov i soobshenii, (Moskva 2015), 73-76 // Вяч. С. Кулешова, Хронология обращения исламских монет в Восточной Европе (конец IX-XI в.). Нумизматические чтения государственного Исторического музея 2015 года. Памяти Н.А. Фроловой (24. 01. 1936-20.10.2015), Москва, 30 ноября – 1 декабря 2015 г. Материалы докладов и сообщения, (Москва 2015), 73-76.
- Kuleshov 2018:** V.S. Kuleshov, Zakavkaz'e, Vizantiia i Angliia vstrechaiutsia v Korele: o monetakh iz ozherel'ia s mysa Ristinieni v Hiitola. Numizmaticheskie chteniia Gosudarstvennogo Istoricheskogo muzeia 2018 goda (Moskva 2018), 42–46 // В.С. Кулешов, Закавказье, Византия и Англия встречаются в Кореле: о монетах из ожерелья с мыса Ристиниени в Хийтола. Нумизматические чтения Государственного Исторического музея 2018 года (Москва 2018), 42–46.
- Kyhlberg 1986:** O. Kyhlberg, Late Roman and Byzantine Solidi. An archaeological analysis of coins and hoards. Excavations at Helgö, X, 13-126.
- Lecoutex 2010:** C. Lecoutex, Dicționar de mitologie germanică (București, 2010).
- Losinski 1988:** W. Losinski, Chronologia naplywu najstarszej monety arabskiej na terytorium Europy. Slavia Antiqua, tom XXXI, 1998.
- Levițki, Haheu, Reabteva 2001:** O. Levitki, V. Haheu, S. Reabteva, Bijuterii din secolele X-XI de la Giurgulesti, jud. Cahul. Memoria Antiquitatis, XXII, 2001, 309-319.
- Lozovan 1963:** E. Lozovan, Vikings et Valaques au Moyen Age. Revue internationale d'onomastique, 15, 2, 1963, 107-126.
- Lombard 2014:** M. Lombard. L'Islam dans sa première grandeur (VIIIe—XIe siècles). (Paris 2014).
- Lowick 1972:** N. Lowick, Handel Samanidow ze wschodnia i srokowa Evropa. Slavia Antiqua, 19, 1972, 1-19.
- Lowick 1975:** N. Lowick, An Early Tenth Century Hoard from Isfahan. Numismatic Chronical, 7th series, XV, (London 1975).
- Lunde, Stone 2012:** Paul Lunde, Caroline Stone, Ibn Fadlān and the Land of Darkness. Arab Travellers in the Far North. (Londres 2012).
- Manolescu 1974:** R. Manolescu, Societatea feudală în Europa apuseană (București, 1974).
- Maiarchak 2006:** S. Maiarchak, Arkheologichni pam'iatki IX-XIII st. Livoberezhzhia Seredn'ogo Podnistrov'ia. (Kam'ianets'-Pdil's'kii 2006) // С. Майрчак, Археологічні пам'ятки IX–XIII ст. Лівобережжя Середнього Подністров'я. (Кам'янець-Пдільський 2006).
- Mănucu-Adameșteanu 1984:** Gh. Mănucu-Adamtșteanu, Din nou despre vasele sferoconice în lumina descoperirilor din nordul Dobrogei. Peuce, 9, 1984, 363-374.
- Mel'nikova 2001:** E.A. Mel'nikova, Skandinavskie runicheskie nadpisi. Novye nakhodki i interpretatsii. (Moskva 2001) // E.A. Мельникова, Скандинавские рунические надписи. Новые находки и интерпретации. (Москва 2001).
- Mel'nikova 2002:** E.A. Mel'nikova, Pokhod Ingvara v shvedskikh runicheskikh nadpisiakh; Prilozhenie: Shvedskie runicheskie pamiatniki v chest' uchastnikov pokhoda Ingvara. G.V. Glazyrina, Saga ob Ingvare Puteshestvennike, Tekst, perevod, kommentarii, (Moskva 2002), 169-190, 382-421 // E.A. Мельникова, Поход Ингвара в шведских рунических надписях; Приложение: Шведские рунические памятники в честь участников похода Ингвара. Г.В. Глазырина, Сага об Ингваре Путешественнике, Текст, перевод, комментарий, (Москва 2002), 169-190, 382-421.
- Metcalf 1972:** D.M. Metcalf, Metal contents of medieval coins. In: Methods of chemical and metallurgical investigation of ancient coinage. (London 1972).
- Minkevich-Mustafaeva 1959:** N. V. Minkevich-Mustafaeva, Raskopki na gorodskoi stene Orenkala v 1953-1954 rr. MIA, 67, 1959, 174-185 // Н.В. Минкевич-Мустафаева. Раскопки на городской стене Оренкала в 1953-1954 гг. МИА, 67, 1959, 174-185.
- Mihailova 1987:** T. Mihailova, Sferokonusy ot Pliska. Arheologia, 1, 1987, 15-23 // Т. Михайлова, Сфероконусы от Плиска. Археология, 1, 1987, 15-23.
- Metzenthin 1941:** Esther M. Metzenthin, Die Länder- und Völkernamen im altisländischen Schrifttum (Bryn Mawr 1941).
- Mongait 1961:** A.L. Mongait, Riazanskaia zemlia. (Moskva 1961) // А.Л. Монгайт, Рязанская земля. (Москва 1961).
- Musteață 2007:** S. Musteață, Răspândirea monedei islamice timpurii la nordul Dunării de Jos în sec. VIII-X. Monedă și comerț în sud-estul Europei I. Bibliotheca Bruckenthal IX, (Sibiu 2007), 165-182.

- Musteață 2014:** S. Musteață, Moneda bizantină în regiunile Carpato-Nistrene în secolele VI-X. (Chișinău 2014).
- Musteață 2018:** S. Musteață, Nomads and Natives beyond the Danube and the Black Sea, 700-900 CE. (Leeds 2018).
- Musset 1992:** L. Musset, Invaziile. Al doilea asalt asupra Europei creștine (secolele VII-XI). Vol. II, (Trad. de O. Cristea), (București 1992).
- Nasledova 1956:** R.A. Nasledova, Remeslo i trgovlia Fessaloniki kontsa IX – nachala X v. po dannym Ioanna Kameniatiy. Vizantiiskii vremennik, VIII, 1956, 61-84 // А. Наследова, Ремесло и торговля Фессалоники конца IX – начала X в. по данным Иоанна Камениаты. Византийский временник, VIII, 1956, 61-84.
- Neamțu 1975:** V. Neamtu, La technique de la production cerealiere en Valachie et en Moldavie jusqu'au XVIII siecle. (București 1975).
- Nicolae 2001:** E. Nicolae, Un dirhem din secolul al X-lea descoperit la Iacobeni, com. Vladeni, jud. Iasi. Simpozion de numismatica dedicat implinirii a patru secole de la prima unire a romanilor sub Mihai Viteazul. Chisinau, 28-30 mai 2000. Comunicari, studii și note, (București 2001), 95-102.
- Niculiță 2018:** A. Niculiță, Piese de giuvaergie antică din colecțiile Muzeului Național de Istorie a Moldovei. Catalog. (Chișinău 2018).
- Niculiță, Teodor, Zanoci 2002:** Ion Niculiță, Silvia Teodor, Aurel Zanoci, Butuceni, Monografie arheologică. (București 2002).
- Novosel'tsev 2000:** A.P. Novosel'tsev, Arabskie istochniki ob obshestvennom stroe vostochnykh slavian IX – pervoi poloviny X v. (poliud'e). Drevneishie gosudarstva Vostochnoi Evropy 1998, (Moskva 2000), 400-404 // А.П. Новосельцев, Арабские источники об общественном строе восточных славян IX – первой половины X в. (полудье). Древнейшие государства Восточной Европы 1998, (Москва 2000), 400-404.
- Noonan 2000-2001:** T.S. Noonan, Volga Bulgharia's Tenth-Century Trade with Samanid Central Asia. Archivum Eurasiae Medii Aevi, 11, 2000-2001, 140-218.
- Noonan 2004:** T.S. Nunan, Torgovlia Volzhskoi Bulgarii s samanidskoi Srednei Aziei. Arkheologiya, istoriia, numizmatika, etnografiia Vostochnoi Evropy. Sbornik statei pamiati prof. I.V. Dubova. (Spb 2004) // Т.С. Нунан, Торговля Волжской Булгарии с саманидской Средней Азией. Археология, история, нумизматика, этнография Восточной Европы. Сборник статей памяти проф. И.В. Дубова. (СПб 2004).
- Noonan, Kovalev 2003:** Tomas S. Nunan, Roman K. Kovalev, Bol'shoi klad dirkhemov epokhi vikingov naidenyi v 2000 g. v g. Kozelske, Kaluzhskoi obl. Arkheologicheskie vesti, 10, 2003, 149-163 // Томас С. Нунан, Роман К. Ковалев, Большой клад дирхемов эпохи викингов найденный в 2000 г. в г. Козелске, Калужской обл. Археологические вести, 10, 2003, 149-163.
- Noonan, Kovalev 2003:** Thomas S.Noonan, Roman K. Kovalev, Bolshoi klad dirkhemov nach epokhi vikingov naidennyi v 2000 v g.Kozelske, Kaluzhskoi obl. Arkheologicheskie vesti, 10, 2003, 149-163.
- Novikova 1990:** E.Iu. Novikova, O ser'gakh „ekimautckogo tipa”. Problemy arkheologii Evrazii (po materialam GIM), Trudy GIM, 74, 1990, 107-114 // Е.Ю. Новикова, О серьгах «екимауцкого типа». Проблемы археологии Евразии (по материалам ГИМ), Труды ГИМ, 74, 1990, 107-114.
- Nudel'man 1974:** A.A. Nudel'man, Topografiia kladov i nakhodok edinichnykh monet. (Kishinev 1974) // А.А. Нудельман, Топография кладов и находок единичных монет. (Кишинев 1974).
- Nudel'man 1985:** A.A. Nudel'man, Ocherki istorii monetnogo obrasheniia v Dnestrovsko-Prutskom regione (s drevneishikh vremen do obrazovaniia feodal'nogo Moldavskogo gosudarstva). (Kishinev, 1985) // А.А. Нудельман, Очерки истории монетного обращения в Днестровско-Прутском регионе (с древнейших времен до образования феодального Молдавского государства). (Кишинев 1985).
- Nuretdinova 2022:** A.R. Nuretdinova, Sferokonicheskie sosudy Srednego Povolzh'ia X – nachala XIV v. (Kazan' 2022) // А.Р. Нуретдинова, Сфероконические сосуды Среднего Поволжья X – начала XIV в. (Казань 2022).
- Papacostea 2000:** Ș. Papacostea, Drumurile comerciale internaționale și geneza statelor românești în viziunea lui Nicolae Iorga și în istoriografia zilelor noastre. Studii și materiale de istorie medie, vol. XVIII, 2022, 45-56.
- Panaiteșcu 1994:** P.P. Panaiteșcu, Drumul comercial al Poloniei la Marea Neagră în Evul Mediu. In.: P.P. Panaiteșcu, Interpretări românești, (București 1994), 83-98.
- Paraschiv-Talmațchi, Talmațchi 2013:** C. Paraschiv-Talmațchi, G. Talmațchi, Comerțul la Gurile Dunării în secolele IX-XII. Un stadiu al cercetirilor. Pontica, XLVI, 2013, 263-291.
- Pascu et al. 2010:** St. Pascu, St. Olteanu, D.Gh. Teodor, O. Iliescu, Dinamica structurilor demo-economice (rețeaua demografică, structurile teritoriale, indeletnicirile agrare, creșterea animalelor, exploatarea bogățiilor miniere, „economia de transformare”, circulația marfurilor și a banilor), In: Istoria romanilor, III, Genezele romanesti, coord. acad. R. Theodorescu, V. Spinei, Ed Enciclopedica, (București 2010), 157-225.
- Pashuto 1950:** V.E. Pashuto, Ocherki po istorii Galitsko-Volynskoi Rusi. (Moskva 1950) // В.Е. Пашуто, Очерки

- по истории Галицко-Волынской Руси. (Москва 1950).
- Pedersen 2008:** U. Pedersen, Weights and Balances. Means of Exchange. Kaupang. Excavation Project. Publication Serie, v. 2, (Aarhus 2008), 119-195.
- Pleiner 1965:** R. Pleiner, Die Eisenverhüttung in der Germania Magna zur römischen Kaiserzeit. (Berlin 1965).
- Pop 1938:** S. Pop, Sinonimele cuvântului târg în lumina geografiei lingvistice. Revista geografică română, 1, 1938, 49-56.
- Postică 2007:** Gh. Postică, Civilizația medievală timpurie din spațiul pruto-nistean (secolele V-XIII). (București 2007).
- Postică 2021:** Gh. Postică, Așezarea medievală timpurie de la Păhărnicieni-„Petruca” din codrii Orheiului. (Chișinău 2021).
- Postică, Hîncu 2023:** Gh. Postică, I. Hîncu, Hansca. Așezarea medievală timpurie din Codrii Lăpușnei. (Chișinău 2023).
- Postică, Sava 2023:** G. Postică, E. Sava, Așezările preistorice și antice târzii de la Mereni. (Chișinău 2023).
- Preda 1975:** C. Preda, The Byzantin coins – an expression of the relations between the Empire and populations north of the Danube in the 6th – 13th centuries. Relations between the autochthonous population and migratory populations on the territory of Romania, (București 1975), 229-233.
- Prokhnenko 2011:** I. Prokhnenko, К вопросу о гибели Екимеутского городища. Tyragetia, s.n., vol. V [XX], nr. 1, 2011, 291-299 // И. Прохненко, К вопросу о гибели Екимэуцкого городища. Tyragetia, s.n., vol. V [XX], nr. 1, 2011, 291-299.
- PVL:** Povest' vremennykh let (Podgotovka teksta, perevod i kommentarii O.V. Tvorogova), I, (SPb 1997) // Повесть временных лет (Подготовка текста, перевод и комментарии О.В. Творогова), I, (СПб 1997).
- Rabinovich 1999:** R.A. Rabinovich, Dirkhemy na territorii Moldovy: kul'turno-istoricheskii kontekst. Stratum plus, 6, 1999, 263-275 // Р.А. Рабинович, Дирхемы на территории Молдовы: культурно-исторический контекст. Stratum plus, 6, 1999, 263-275.
- Rabinovich, Riabtseva 1997:** R.A. Rabinovich, S.S. Riabtseva, Iuvelirnye ukrasheniia s zern'iu iz Karpato-Podnestrov'ia v kontekste kul'turno-istoricheskikh protsessov X-XI vv. Stratum plus, 1997, 236-245 // Р.А. Рабинович, С.С. Рябцева, Ювелирные украшения с зернью из Карпато-Поднепровья в контексте культурно-исторических процессов X-XI вв. Stratum plus, 1997, 236-245.
- Rabinovich, Riabtseva 2016:** R. Rabinovich, S. Riabtseva, O sootnoshenii drevnostei Luka-Raikovetskoii kul'tury i pamiatnikov tipa Ekimautsy-Alchedar v Pruto-Dnestrovskom regione. Od Bachórza do Światowida ze Zbrucza. Tworzenie się słowiańskiej Europy w ujęciu źródłoznawczym. Księga jubileuszowa Profesora Michała Parczewskiego, (Kraków/Rzeszów 2016), 323-341 // Р. Рабинович, С. Рябцева, О соотношении древностей Лука-Райковецкой культуры и памятников типа Екимавцы-Алчедар в Пруто-Днестровском регионе. Od Bachórza do Światowida ze Zbrucza. Tworzenie się słowiańskiej Europy w ujęciu źródłoznawczym. Księga jubileuszowa Profesora Michała Parczewskiego, (Kraków/Rzeszów 2016), 323-341.
- Riabtseva 2006:** S.S. Riabtseva, Iuvelirnye ukrasheniia Pruto-Dnestrovskogo mezhdurech'ia v kontekste etnokul'turnykh sviazei regiona. Revista Arheologică, vol. II, 1-2, 2006, 143-168 // С.С. Рябцева, Ювелирные украшения Пруто-Днестровского междуречья в контексте этнокультурных связей региона. Revista Arheologică, vol. II, 1-2, 2006, 143-168.
- Riabtseva, Rabinovich 2007:** S.S. Riabtseva, R.A. Rabinovich, K voprosu o roli vengerskogo faktora v Karpato-Dnestrovskikh zemliakh v IX-X vv. Revista Arheologică, III, 1-2, 2007, 195-230 // С.С. Рябцева, Р.А. Рабинович, К вопросу о роли венгерского фактора в Карпато-Днестровских землях в IX-X вв. Revista Arheologică, III, 1-2, 2007, 195-230.
- Riabtseva, Tel'nov 2010:** S.S. Riabtseva, N.P. Tel'nov, Alchedarskii klad i tsentry iuvelirnogo proizvodstva Vostochnoi Evropy kontsa IX – nachala XI vv. Stratum plus, 5, 2010, 285-300 // С.С. Рябцева, Н.П. Тельнов, Алчедарский клад и центры ювелирного производства Восточной Европы конца IX – начала XI вв. Stratum plus, 5, 2010, 285-300.
- Romgard 2016:** J. Romgard, Did the Viking trade with China? On a controversial passage in IbnKhordahbeh's Boor of Itineraries and Kingdoms. Fornvannen. Journal of Swedish antiquarian research., 111, 229-242.
- Samuelson 1953:** P.A. Samuelson, L'Economie., tom I. Ed. Libr. Armand Colin. (Paris 1953).
- Schneeweiss 2013:** J. Schneeweiss, Munz- und Gewichtsgeldwirtschaft an der westlichen Peripherie der slawischen Welt. Economies, Monetisation and Society in the West Slavic Lands. 800-1200 AD. Ed by M. Bogucki and M.Rebkowski, (Szezecin 2013), 237-266.
- Siuziumov 1951:** M.И. Siuziumov, Remeslo i torgovlia v Konstantinopole v nachale X veka. Vizantiiskii vremenik, tom IV, 1951, 11-41 // М.Я. Сюзюмов, Ремесло и торговля в Константинополе в начале X века. Византийский

временник, том IV, 1951, 11-41.

Siuziumov 1958: M.Ia. Siuziumov, Vasiliki kak istochnik dlia vnutrennei istorii Vizantii. Vizantiiskii vremennik, tom XIV, 1958, 67-75 // М.Я. Сюзюмов, Василики как источник для внутренней истории Византии. Византийский временник, том XIV, 1958, 67-75

Spinei 1970: V. Spinei, Unele considerații cu privire la descoperirile arheologice din Moldova din secolul al XII-lea până în prima jumătate a secolului al XIV-lea. Studii și cercetări de istorie veche, XXI, 1, 1970, 253-265.

Spinei 1973: V. Spinei, Informații despre vlahi în izvoarele medievale nordice. Istudii și cercetări de istorie veche, I, 24, 1973, 57-81; II, 24, 1973, 259-282.

Spinei 1982: V. Spinei, Moldova în secolele XI-XIV. Ed. Științifică și Enciclopedică. (București 1982).

Spinei 1985: V. Spinei, Realități etnice și politice în Moldova meridională în secolele X-XIII. Români și turanici. (Iași 1985).

Spinei 1994: V. Spinei, Moldova în secolele XI-XIV. (Chișinău 1994).

Stanchev 1955: St. Stanchev, Razkopki i novi otkritii materiapi s Pliska prez 1948 g. Izvestiia, XX, 1955, 191-218 // Ст. Станчев, Разкопки и нови откритии материapi с Плиска през 1948 г. Известия, XX, 1955, 191-218.

Stancheva 1961: M. Stancheva, Kamenni kalpi za sferokonusi ot Sofiia. Arheologiya, III, 1961, 22-27 // М. Станчева, Каменни калпи за сфероконуси от София. Археология, III, 1961, 22-27.

Steuer 1987: H. Steuer, Gewichtsgeldwirtschaften im fruhgeschichtlichen Europe. Feinwagen und Gewichte als Quellen zur Wahrungsgeschichte. In: (K. Duwel, H. Jahnkun, H. Siems and D. Timple eds.), Untersuchungen zu Handel und Verkehr der vor- und fruhgeschichtlichen Zeit in Mittel- und Nordeuropa, bd IV: Der Handel der Karolingers und Wikingerzeit, (Gottingen 1987), 495-527.

Steuer 1997: H. Steuer, Waagen und Gewichte aus dem mittelalterlichen Schlesvig: Funde des 11. bis 13. Jahrhunderts aus Europa als Quellen zur Handels- und Wahrungsgeschichte. (Köln 1997).

Sharov 1997: O.V. Sharov, Gibel' Ermanarikha: istoriia i epos. Stratum: struktury i katastrofy. Sbornik simvolicheskoi indoevropeskoi istorii, (Sankt-Peterburg 1997), 95-106 // О.В. Шаров, Гибель Эрманариха: история и эпос. Stratum: структуры и катастрофы. Сборник символической индоевропейской истории, (Санкт-Петербург 1997), 95-106.

Shevelenko 1992: A.Ia. Shevelenko, Prirodnye usloviia, etnodemograficheskie protsessy, razvitie proizvoditel'nykh sil. In: (E.V. Gutnova, Z.V. Udal'tsova otv. red.), Istoriia Evropy, II, Srednevekovaia Evropa, (Moskva 1992), 34-62 // А.Я. Шевеленко, Природные условия, этнодемографические процессы, развитие производительных сил. В сб.: (Е.В. Гутнова, З.В. Удалцова отв. ред.), История Европы, II, Средневековая Европа, (Москва 1992), 34-62.

Tănase 2010: Daniela Tănase, Prelucrarea metalelor în lumea barbară la Dunărea Mijlocie și Inferioară în secolele VI-VII. (București 2010).

Tentiuc 2017: I. Tentiuc, Populația din Moldova Centrală în secolele X-XIII. (Chișinău 2017).

Tentiuc 2019: I. Tentiuc, Cu privire la pătrunderea, staționarea și raporturile enclavelor vikinge cu populația românească din spațiul Carpato-Nistean în secolele IX-XI. Miscellanea Historica et Arheologica in honorem Professoris Ionel Cândea septuagenarii, (București-Brăila 2019), 89-121.

Tentiuc 2022: I. Tentiuc, Piese din inventarul negustorului din secolele IX-XI descoperite la Est de Carpați. Arheologie interdisciplinară: metode, studii, rezultate, (Chișinău 2022), 111-112.

Tentiuc, Bubulici 2020: I. Tentiuc, V. Bubulici, Early Medieval Hoard of foring and Jewellery tools found at Voloave, Soroca district. Tyragetia, s.n., vol. XIV, [XXIV], nr.1, 2020, 255-280.

Tentiuc, Bubulici 2021: I. Tentiuc, V. Bubulici, Considerații privind pandantivele scandinave cu decor animalier sau în formă de scut semisferic din secolele X-XI descoperite pe Nistrul Mijlociu. Acta Musei Tutovensii: Istorie veche și arheologie, XVII, 2021, 141-153.

Tentiuc, Bubulici 2022: I. Tentiuc, V. Bubulici, Un depozit cu unelte de făurărie-juvaiergerie din perioada medievală timpurie descoperit la Voloave-Soroca. Medias Res Antiquorum Miscellanea in honorem annos LXV peragentis Professoris Costel Chiriac oblata, (Cluj-Napoca 2022), 279-312.

Tentiuc, Munteanu 2022: I. Tentiuc, V. Munteanu, The connections of Eastern Carpatian space with the Viking World: a new sword scabbard chape from the Early Medieval ages discovered in Moldova. Est Modus in rebus. Essays Presented to Professor Mihai Barbulescu, (Cluj-Napoca 2022), 427-455.

Teodor 1978: D.Gh. Teodor, Teritoriul est-carpatic în veacurile V-XI e. n. Contribuții arheologice și istorice la problema formării poporului roman. (Iasi 1978).

Teodor 1981: D.Gh. Teodor. Romanitatea carpato-dunăreană și Bizanțul în veacurile V-XI e.n. (Iași 1981).

Teodor 1984: D Gh. Teodor, Continuitatea populației autohtone la est de Carpați. Așezările din secolele VI-XI e.n. de la Dodești-Vaslui. (Iași 1984).

- Teodor 1985:** D.Gh. Teodor Legăturile economice între regiunile de la răsărit de Carpați și Orientul arab în secolele IX-X e.n. Anuarul Institutului de Istorie și Arheologie „A. D. Xenopol” XXII, 1, 1985, 263-268.
- Teodor 1996:** D.Gh. Teodor, Meșteșugurile la nordul Dunării de Jos în secolele IV-XI d. Ch. (Iași 1996).
- Teodor 2004:** D.Gh. Teodor, Depozitul de unelte și arme medievale timpurii de la Gârbovăț, jud. Galați. Memoria Antiquitatis, XXIV, 2004, 395-406.
- Tripsa et al. 1981:** I. Tripsa, A. Alexandrescu, I. Barbu, O. Hatarascu, St. Olteanu, Din istoria metalurgiei românești. (București 1981).
- Trouet et al. 2009:** V. Trouet, J. Esper, N.E. Graham, A. Baker, J.D. Scourse, D.C. Frank, Persistent positive North Atlantic Oscillation mode dominated the medieval climate anomaly. Science, 324, 2009, 78-80.
- Timoshshuk 1959:** B.A. Timoshshuk, Lenkovetskoe drevnerusskoe gorodishshe. Sovetskia Arkheologia, 4, 1959, 250-257 // Б.А. Тимошук, Ленковецкое древнерусское городище. Советская Археология, 4, 1959, 250-257.
- Toporov 1980:** V.N. Toporov, Vilnius, Wilno, Vil'njus: Gorod i mif: Balto-slavianskie etnoiazykovye kontakty, (Moskva 1980), 3-57 // В.Н. Топоров, Vilnius, Wilno, Vil'njus: Город и миф. Балто-славянские этноязыковые контакты, (Москва 1980), 3-57.
- Valeev, Zeleneev 2021:** R.M. Valeev, Iu.A. Zeleneev, Musul'manskii monetny kak tovar i sredstvo platezha Povolzh'ia v VIII-XI vv. Povolzhskaiia arkheologia, № 4 (38), 2021, 137-150 // Р.М. Валеев, Ю.А. Зеленеев, Мусульманские монеты как товар и средство платежа Поволжья в VIII-XI вв. Поволжская археология, № 4 (38), 2021, 137-150.
- Váňa 1956:** Z. Váňa, Lahvovité tvary v západoslovanské keramice. Památky archeologické, 47, 1, 105-147.
- Vasiliev 2010:** A.A. Vasiliev, Istoria Imperiului bizantin. (Trad. și note I-A Tudosie, V.-A. Caraba, S.-L. Nazaru). (București 2010).
- Fasmer 1933:** R.R. Fasmer, Ob izdanií novoi topografii nakhodok kuficheskikh monet v Vostochnoi Evrope. Izvestiia Akademii nauk SSSR. Otdelenie obshchestvennykh nauk, 6-7, (Leningrad 1933), 473-474 // Р.Р. Фасмер, Об издании новой топографии находок куваческих монет в Восточной Европе. В сб: Известия Академии наук СССР. Отделение общественных наук, 6-7, (Ленинград 1933), 473-474.
- Vilcu, Isvoranu 2015:** A. Vilcu, Th. Isvoranu, Monedele bizantine. In: (A. Boldureanu, E. Nicolae coord.), Moneda din Republica Moldova, (Chișinău 2015), 97-107.
- Wallerstein 1992:** I. Wallerstein, Sistemul mondial modern. Vol. I-II. (Trad. de D. Abraham, I. Bădescu și M. Ghibernea), (București 1992).
- Zimoni 2014:** Istvan Zimoni, Medieval Nomads in Eastern Europe: Collected Studies. (București 2014).
- Zhukovskii 2017:** M.O. Zhukovskii, Rannesrednevekovye nabory vesovykh girek Vostochnoi Evropy. Drevneishie gosudarstva Vostochnoi Evropy. Ekonomicheskie sistemy Evrazii v ranee srednevekov'e. (Moskva 2017) // М.О. Жуковский, Раннесредневековые наборы весовых гирек Восточной Европы. Древнейшие государства Восточной Европы. Экономические системы Евразии в раннее средневековье. (Москва 2017).
- Zhukovskii 2018:** M.O. Zhukovskii, Instrumenty dlia vzveshivaniia s graffiti iz raskopok Novgoroda. Arheologicheskie vesti, 34, 2018, 198-206 // М.О. Жуковский, Инструменты для взвешивания с граффити из раскопок Новгорода. Археологические вести, 34, 2018, 198-206.

Gheorghe Postică, dr. hab., prof. univ., Muzeul Național de Istorie a Moldovei, Chișinău, e-mail: gpostica@gmail.com, ORCID:0000-0002-2609-1575.

Ion Tentiuc, dr., conf. univ., Muzeul Național de Istorie a Moldovei, Chișinău, e-mail: tentiucion2016@gmail.com, ORCID:0000-0002-3126-6499.