

*Mariela Inkova*

## A MEDIEVAL SABRE AND A KNIFE FROM THE EXHIBITION OF THE NATIONAL MUSEUM OF HISTORY IN SOFIA<sup>1</sup>

Abstract:

M. Inkova, A medieval sabre and a knife from the exhibition of the National Museum of History in Sofia, AMM IX: 63-88

The article deals with two artefacts from the collection of The National Museum of History in Sofia, i.e. a sabre and a dagger which were found in the region of Shumen. Both of them are characterized by rich ornamentation, executed with applying of silver and gold. Most probably they are products of islamic workshops manufacturing at the request of the elites of nomadic peoples which inhabited the Great Steppe. In the period of Middle Ages it was the tribe of Kipchaks and subsequently the Golden Horde, too. The artefacts might have appeared in the territory of Bulgaria in result of one of the Kipchaks rides in the 12<sup>th</sup> and 13<sup>th</sup> c. as well as in the course of its expansion of the basin of the river of Danube under the pressure of the Golden Horde in the 2<sup>nd</sup> half of the 13<sup>th</sup> and the beginning of the 14<sup>th</sup> c.

Key words: sabre, knife, metallographic examinations, Cumanians, Golden Horde

In 2004, the National Museum of History in Sofia (NMH) acquired<sup>2</sup> a sabre with two hoops for the straps to the scabbard and a knife with gold casing (Fig. 1), which, according to the information received, originate from the region of Shumen.

### **The sabre**

Unlike the previously found sabres from the Lower Danube area, this one is extremely well-preserved<sup>3</sup>. The grip and the blade lie on an axis (Fig. 2:1-3). The tang has elongated trapezoidal shape and rectangular cross-section. There are two rivet openings on the axis running lengthwise of the tang – one partially and the other completely preserved. The distance between the two heads of the survived rivet is 2.3 cm, which suggests the thickness of the grip of the sabre. Dimensions: length – 8.9 cm, average width – 1.8 cm, width at the base – 2.12 cm, length of the preserved rivet – 2.5 cm.

The cross guard is in form of straight, simple bar with a rhomboid widening in the middle, which is decorated with a plastic edge. The symmetrical shoulders are of rounded, rectangular cross-section. There is a hollow bed in the center of the guard, with an ellipsoid opening for the blade. The latter is made of iron and coated with a silver-gilt leaf foil. Dimensions of the guard: length – 10.27 cm, maximum thickness – 2.35 cm, width of the rhomboid-shaped section – 1.41 cm.

The blade of the sabre is almost straight, slightly curved by 11 mm in the middle, measured according to the method of Sv. Pletnyova. Dimensions: length – 81.1 cm, width (beneath the soldered plate) – 3.25 cm, thickness of the back – 0.74 cm. More than two thirds of its length is a single-edge blade, and the 25.6 cm long spear point – double-edged. On both sides of the blade and beneath the guard, a “T”-shaped iron plate is soldered (sub-guard thickness 1.1 cm) providing

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<sup>1</sup> The report was presented at the international archaeological conference *The European steppes and the Lower Danube in the Middle Ages – 7<sup>th</sup>-14<sup>th</sup> century* held in Dobrich-Balchik in September 2006 and had to be published in the next release of the Dobrudzha journal. Despite six years of waiting, the organizers of the conference – the Regional Museum of History in Dobrich, failed so far to issue the submitted papers.

<sup>2</sup> I take the opportunity to express my gratitude to Mr. V. Bozhkov for the donation.

<sup>3</sup> The conservation and the restoration of the commented exhibits was carried out by Prof. V. Inkova and K. Draganova in the laboratory to the “Thrace” foundation.



Fig. 1. Sabre and knife from the Shumen region. Photo by R. Kolev.

Ryc. 1. Szabla i nóż odkryte w regionie Szumen. Fot. R. Kolev.

the compact and more stable attachment of the scabbard. This *ricasso*-collar is a comma-like fashioned and this shape is particularly well expressed on the one side. The entire plate and the

opposite sections, measuring 12.6 x 1.25 cm, are gilded in a manner identical to that of the guard (Fig. 2:4-5). Their inner field is decorated on both sides with floral trailers, from the undulating curves of which tendrils grow and end with two- or three-leaved palmettes. The composition is rendered through lines of dots, the peripheral of which are particularly distinct. Because of the corrosion products of the iron caught on the golden surface, in some places the configuration is unclear and its reading – uncertain.

The total length of the sabre is 90 cm.

The blade bears traces of a wooden scabbard (Fig. 3:1), which also include two hoops for the shoulder or waist straps (Fig. 3:2-3). They have an open oval shape, obtained in the free bending of a rectangular iron plate. The two ends of the plate form a circle, in the middle of which, there is a hole for an iron axle of rectangular cross-section. The one end of the axle is riveted to the plate, while the other one shapes a circle, through which passes a ring for the shoulder/waist belts. Here again the surface of the oval hoops displays traces of golden-coloured metallization. Dimensions of the hoops: length – 5.5 cm, width – 1.98 cm, thickness of the plate – 0.11 cm, width of the plate – 0.92 cm, length of the axle – 1.73 cm, outer diameter of the ring – 1.9 cm, inner diameter of the ring – 1.28 cm; length – 5.81 cm, width – 1.84 cm, thickness of the plate – 0.21 cm, width of the plate – 1.21 cm, length of the axle – 1.9 cm, outer diameter of the ring – 1.91 cm, inner diameter of the ring – 1.21 cm.

In comparison to the sabre, the knife is extremely corroded, and only separate elements of the handle have survived. The blade and the tang of the handle lie on the same axis (Fig. 4:1-3). The handle has oval cross-section, and a hollow iron piece with elongated conical shape both envelopes and extends the tang (Fig. 4:4-5). At both ends of the handle there are gold casings of flattened cylindrical shape, whose decoration is presented by four opposite arch-like cuttings. The casing is two-side sloping towards the blade and ends with a shaped edge. The butt casing of the knife is again double-side canted this time on the crosswise axis. Attached to thus shaped edge of the butt casing is a loop for suspension (most probably with a leather strap), currently deformed. At the bottom of the butt casing a bone fragment is preserved, modeled on its form. This fact suggests that the knife handle was made of bone. The structure of the bone, however, was heavily damaged during its processing and subsequent polishing and particularly because of the strong erosion resulting from the penetration of corrosion products of iron. According

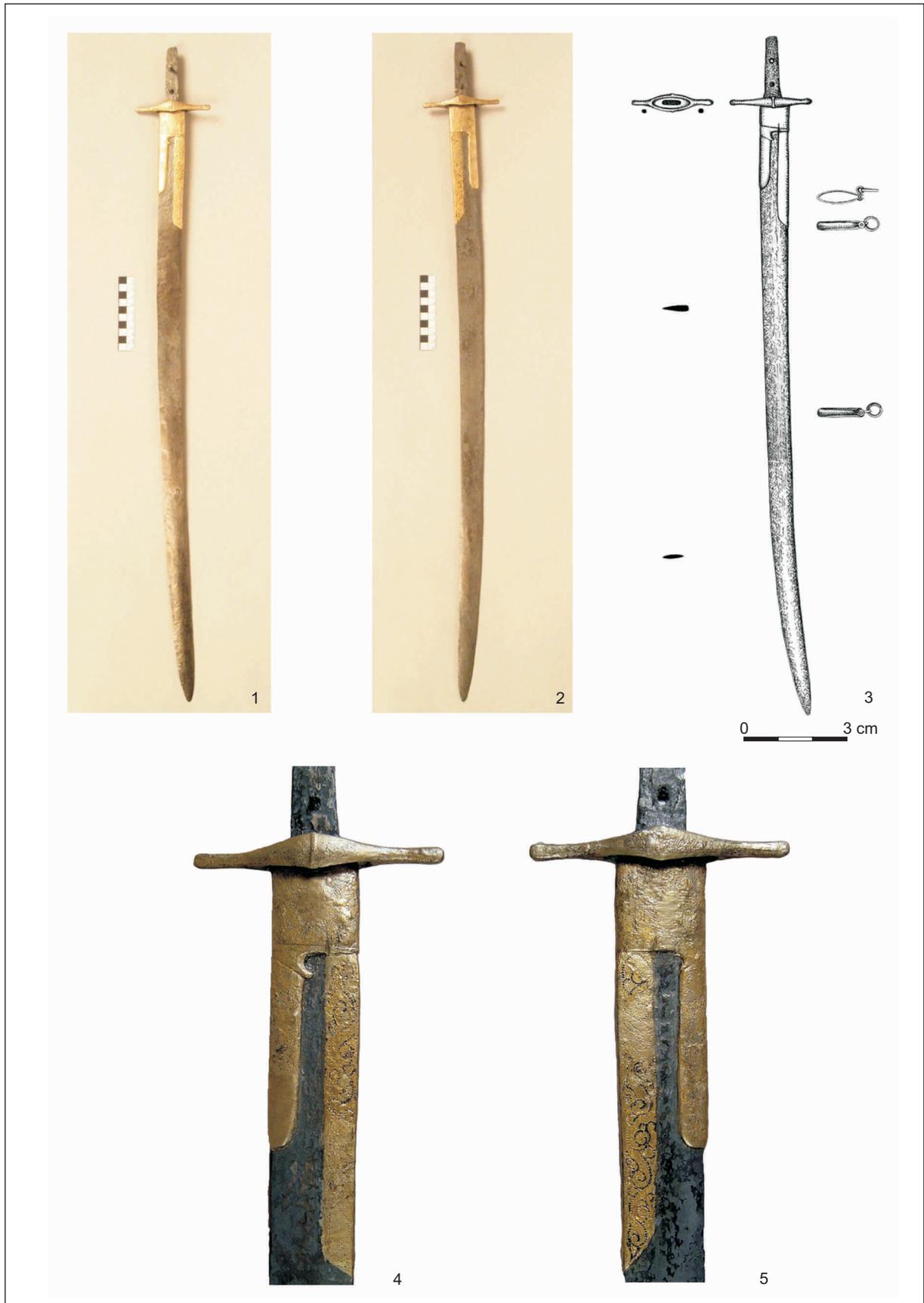


Fig. 2. Sabre: 1 – right side; 2 – left side; 3 – drawing; 4-5 – details (1-2 – photo by R. Kolev; 4-5 – photo by T. Dimitrov; 3 – drawing by St. Todorov).

Ryc. 2. Szabla: 1 – prawa strona; 2 – lewa strona; 3 – rysunek; 4-5 – detale (1-2 – fot. R. Kolev; 4-5 – fot. T. Dimitrov; 3 – ryc. St. Todorov).



Fig. 3. Sabre: 1 – traces of the wooden scabbard; 2-3 – hoops to the scabbard (1 – photo by V. Inkova; 2-3 – photo by T. Dimitrov).

Рис. 3. Шабля: 1 – слэды дреwnianej pochwy; 2-3 – рыфки од pochwy (1 – фот. V. Inkova; 2-3 – фот. T. Dimitrov).

to Dr. L. Ninov<sup>4</sup>, all morphological features for identification of its type have been removed, but judging by the size, the bone was probably from a cattle (ox). The knife blade is straight with a triangular cross-section and its cutting edge forms a symmetrical curve towards the point. Dimensions: total length – 17.6 cm, handle length reconstructed on the conical tang – 10.09 cm, length of blade – 7.55 cm, width of blade at the base – 1.32 cm; butt casing, length – 2.34 cm, diameter – 1.37 x 1.67 cm; casing at the blade; length – 2.15 cm, diameter – 1.35 x 1.65 cm.

Essential for the cultural and historical identification of this find, which is unique for the Lower Danube area, are not only the morphological features and stylistic characteristics of decoration but also the employed materials and manufacturing technology. Their comparative and analytical interpretation would eventually allow the formulation of traditions in arms production, whose work the weapons are, as well as assumptions to be made about the ethnic and cultural identity of their wielder and the historical context in which the weapons fell within the lands of the medieval Bulgarian state.

#### Technical and technological characteristics<sup>5</sup>

The radiographic research indicates no welding seams, which in its turn suggests that the blade was hammered from a single piece of iron or steel<sup>6</sup>. Clarifying the process design by metallographic analysis of cross-section requires a cut that at least for now we can not afford. At this stage, we established the way of attaching the hand guard to the top of the blade. To provide greater stability and durability, the connection between the guard and the blade is secured by local soldering (filling) with copper. Evidence for that are the copper corrosion products, stored in separate sections of the ellipsoid opening in the guard<sup>7</sup> (Fig. 5:1-2).

Particular attention will be paid to the technique of metallization and of decorating the hand guard, the section beneath the guard as well as of the hoops for the shoulder straps, the technique being the second characteristic of the here commented sabre. The microscopic observations

<sup>4</sup> I express my gratitude to Dr. L. Ninov for consultation.

<sup>5</sup> The technological research was conducted in the laboratory at the “Thrace” foundation. I take this opportunity to express my gratitude for the assistance of the staff.

<sup>6</sup> The elemental composition established by SEM-EDX analysis of a chip from the sabre blade indicates that carburized iron was employed. Not having the opportunity for a detailed comparison, given the origin of the blades and the morphological similarity, yet we shall note that archeo-metallographic examination of the sabres from the necropolis of Leninhabal in the Zakubane region (Adygea) shows that the basic part of their single-edged blade is of low carbon steel (or iron), achieved by cementation, while the two-edged part is of even higher level of carburization for greater hardness (Завьялов 2004, 84-84).

<sup>7</sup> Similar copper corrosion products were found on the sabre cross-guard from a grave in the valley of Kashkadarya River Basin (Uzbekistan), identified as Uzi. The researcher interpreted the fact as *deliberately adding copper to iron to increase its corrosion resistance* (Кабанов 1963, 3, 237). But it could again be the case for traces of local soldering with copper.

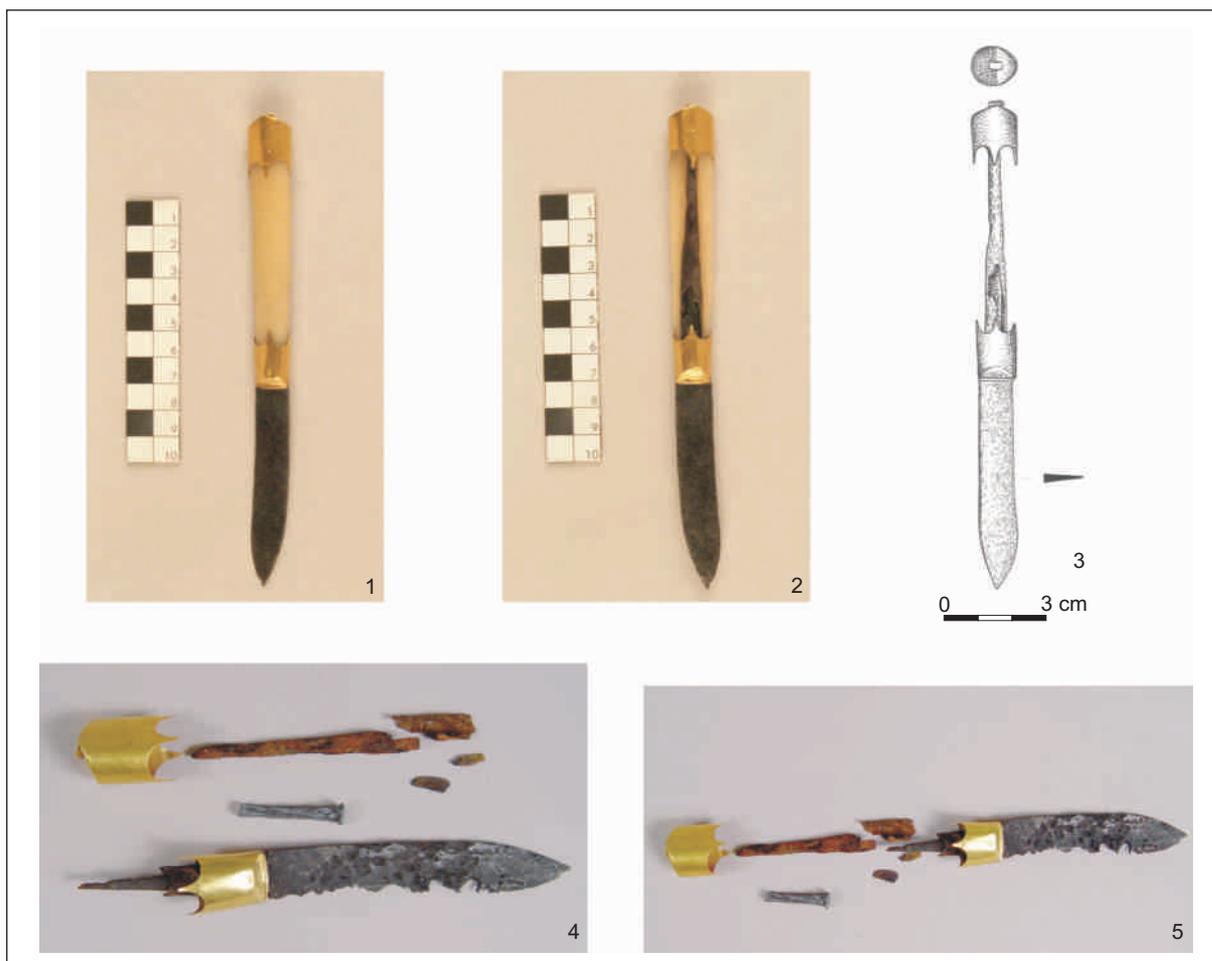


Fig. 4. Knife: 1 – right side; 2 – left side; 3 – drawing; 4-5 – artefact before restoration (1-2 – photo by R. Kolev; 3 – drawing by St. Todorov; 4-5 – photo by V. Inkova).

Ryc. 4. Nóż: 1 – prawa strona; 2 – lewa strona; 3 – rysunek; 4-5 – zabytek przed konserwacją (1-2 – fot. R. Kolev; 3 – ryc. St. Todorov; 4-5 – fot. V. Inkova).

before and during the conservation process established that these areas were covered with a thin silver-gilt leaf. The electron-microscopic examination and micro-probe analysis of cuttings from isolated fragments<sup>8</sup> allowed specifying the composition of the leaf, the way it was attached to the iron base and the employed techniques of gilding.

a. Characteristics of the metallizing layer – composition and structural features. Performed diffuse and point SEM-EDX analyses of cross-sectional cut of the samples show that the craftsman used a silver leaf of inhomogeneous structure (Table I; fig. 6:1) containing inclusions of Cu and Pb (Table II, analyses Nos. 1, 3-5, 7-17 and 4-5, 7, 9, 14, 17-18; fig. 6:2). The composition,

the location and the structural characteristics of the inclusions give grounds for the assumption that the leaf was hammered from a bar of cast inhomogeneous melt<sup>9</sup>. In the process of thinning, the pores and the inclusions were extended lengthwise in the form of stripes that determined its layered structure (Fig. 6:2). The thickness of the leaf varies from 30.8  $\mu\text{m}$  (in areas without incisions) to 75.4  $\mu\text{m}$  (with incisions) (Fig. 6:3).

b. The approach for applying the silver leaf on the iron base. The microscopic and tracological observations of the surfaces as well as the analysis of the prepared transverse cuts of the leaf (Fig. 6:1,3) indicate that the fixation of the leaf was performed mechanically – by hammering it onto the iron surface which had been previously hatched

<sup>8</sup> In order to study the technique of gilding on iron, there were prepared in the form of polished cross-sections several samples of metallizing layer in different state – with or without iron corrosion products.

<sup>9</sup> Prof. V. Inkova's conclusion: The presence of Au not only in the gilded surface layer, but also in the entire cross section of the cuts, even to the iron surface does not exclude the possibility to be present as an impurity in the silver (Table I-III, IV:2).



Fig. 5. Sabre – traces of copper corrosion products on the ellipsoid opening of the cross guard. *Photo by V. Inkova.*

Ryc. 5. Szabla – ślady produktów korozji miedzi w elipsoidalnym otworze jelca. *Fot. V. Inkova.*

with a chisel. The grid-like incisions have different depths – ranging from 44.6 to 75.4  $\mu\text{m}$  – and are detected on the obverse surface of the leaf (Fig. 6:3; 7:1-4). In the process of hammering the silver leaf into the grooves of the iron surface, the striped inclusions were not only drawn lengthwise, but were also wavy curved (Fig. 6:2).

c. Materials and technique of gilding. A very thin gold leaf was used – with a thickness of 393 to 516 nm (Fig. 8:1). Information about the nature of the connection was obtained by tracing the character and the extend of the diffusion processes which went in contact zone Au – Ag by point SEM-EDX scanning for Au, Hg and Ag along the entire cross-section of the samples (Fig. 9:1-3) and EDX mapping (Fig. 10:1-3). The results indicate the presence of Hg not only in the highlighted (in the backside scattered electrons) diffusion zone between the gold and the silver leaf, but also in the whole cross-section of the metallizing layer. This fact testifies to gilding with Hg. Of particular significance for clarifying the

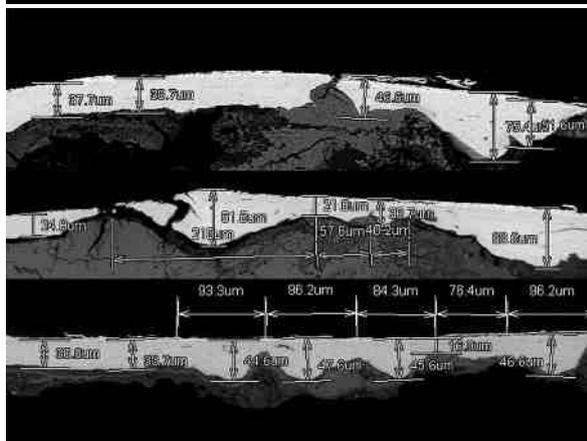
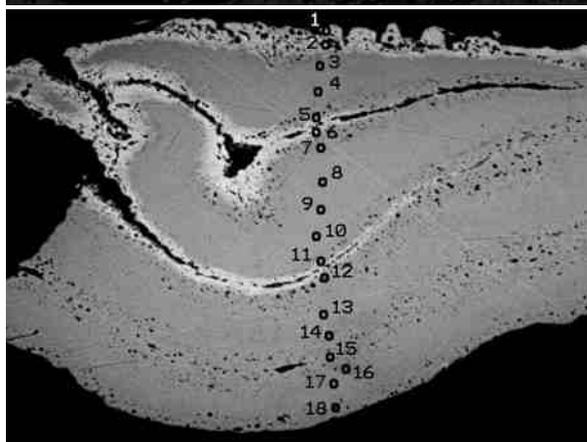
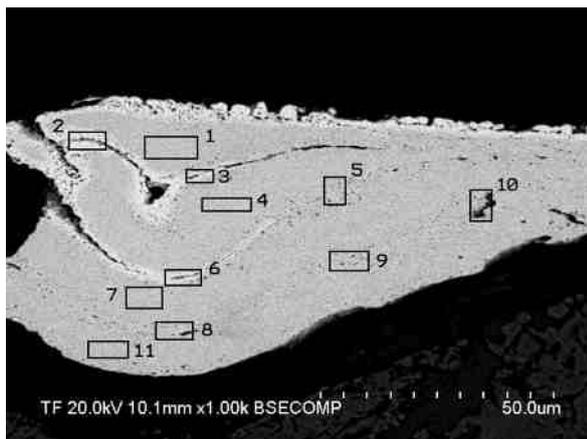


Fig. 6. Sabre: 1 – SEM images in back scattered electrons of cross-sectional sample of an incision with silvery, porous surface with micro-splittings SEM-EDX surface microanalyses, 2 – SEM-EDX point microanalyses, 3 – SEM images of cross-sectional samples from the silver coating – thickness of smooth and hatched areas.

Ryc. 6. Szabla: 1 – obrazy SEM we wstecznie rozproszonych elektronach z przekrojowej próbki nacięcia ze srebrzystą, porowatą powierzchnią z mikrorozszczepieniami SEM-EDX powierzchni mikroanalizy; 2 – punkt mikroanaliz SEM-EDX; 3 – obrazy SEM przekrojowych próbek srebrnej powłoki powierzchni – grubość obszarów gładkich i szrafiowanych.

technological aspect of the approach is the too high percentage of Hg, and particularly its increased concentration in areas with deep surface splits, in pores and cross tears of the silver leaf revealing

No.	Analyzed area in size at about 3-5 $\mu\text{m}$ in the cross section of the joint	Approximate area $\mu\text{m}$	Elemental composition in weight (%)									
			Au	Ag	Hg	Cu	Pb	Sn	Zn	Fe	O <sub>2</sub>	Sb
1	Comparatively "homogenous" non-porous layer	90	4.90	92.27	1.74	1.09	0.00	0.00	0.00	0.00	0.00	0.00
2	Longitudinal porous strip	60	5.05	63.40	31.03	0.42	0.00	0.00	0.00	0.00	0.00	0.00
3	Second area of analysis No 2 (right to the large pore)	50	5.95	74.08	16.91	2.97	0.00	0.00	0.00	0.00	0.00	0.00
4	Lower comparatively "homogenous" non-porous layer	50	4.46	89.90	3.10	1.98	0.57	0.00	0.00	0.00	0.00	0.00
5	Lower longitudinal strip with pores and inclusions	60	2.69	90.16	2.87	4.18	0.00	0.00	0.00	0.00	0.00	0.00
6	Area of the same strip with an elongated pore	60	4.33	76.58	16.86	2.13	0.00	0.00	0.00	0.00	0.00	0.00
7	Next lower comparatively "homogenous" non-porous layer	60	3.89	86.44	3.01	1.62	4.61	0.42	0.02	0.00	0.00	0.00
8	Next lower strip with pores and inclusions	60	2.98	92.47	0.66	2.78	0.00	1.01	0.00	0.00	0.00	0.00
9	Second area in the same strip	60	4.10	89.81	1.12	4.23	0.00	0.63	0.00	0.00	0.00	0.00
10	Area with a larger pore beneath this strip	60	7.47	82.07	3.27	3.33	0.17	3.59	0.00	0.00	0.00	0.00
11	The lowest comparatively non-porous strip	35	4.94	92.99	0.78	1.25	0.00	0.00	0.03	0.00	0.00	0.00

Table I. Chemical composition of the analyzed areas of cross-sectional sample of the incision with "silvery" porous surface, SEM-EDX.

Tabl. I. Skład chemiczny obszarów przekrojowej próbki z nacięcia ze srebrzystą porowatą powierzchnią z mikrorozszczepieniami, SEM-EDX.

the iron base of the sabre (Table II, analyses Nos. 1-3, 5-6, 9-12, 14-15; fig. 11; Table III, analyses Nos. 5-14). This suggests a process of gilding through pre-amalgamation of the surfaces of the already fixed silver leaf. On the other hand, the composition and the structure characteristics of the areas with still preserved gold layer indicate application of thin gold flakes in layers (Fig. 8:2), alternating with amalgamation. Pliny left us description of the gilding technique and in particular, on bronze with gold leaf and amalgamation of the surface (*Pliny L'Ancien* 2002, 51, XX, 64-65, 75, XXXII). Mixed technique of gilding with ready amalgam and a gold leaf is described by Theophilus in his substantial treatise *De Diversarum Artium Schedule (On Divers Arts)*, 12<sup>th</sup> c. (Theophilus 1933, ch. 116-117; ch 44, 117). Information on the use of that technique in the early Arab period is obtained from Arab sources. Al-Hamdani, who lived in the 1<sup>st</sup> half of the 10<sup>th</sup> c., described the following steps in applying the mixed gilding technique on silver objects: *first the silver objects are covered with mercury; second – they are coated with amalgam and heated, then the mercury evaporates and there the gold remains*. The same author informs us about the difficulties in gilding iron and steel when he enumerates products from another metal, sorting them according to their

aptitude to gilding. He puts silver and copper first and second in the list and iron and steel are only the third and fourth (Allan 1979, 14). In his treatise *Collected information about the knowledge of jewels (Mineralogy)* Biruni (973-1042) wrote that *iron objects such as body armour and helmets are gilded with gold amalgam* (Бируни 1963, 216). Detailed information on the employment of mixed gilding technique on silver, copper and brass items is found in Kashani's treatise *Wedding gifts of precious stones and rare perfumes*, which reflects the practice of the 13<sup>th</sup>-14<sup>th</sup> c.: *Mercury bleaches all metals, and dissolves gold and silver and when such objects are heated on the fire, the mercury burns out and the gold and silver remain*. The same author notes, however, the difficulties in gilding items of iron and the necessity to pre-treat them with "a drug": *Because mercury is flowing when heat comes, its particles separate and break the particles of gold, while with the iron these gold particles penetrate with difficulty, and it is necessary to pre-coat the iron with a drug* (Михалевич, Сайко 1975, 34).

The ornament on such gilt surface is applied by chasing with a swage, stamping dots. The iron corrosion products in the grooves of the pattern, detected by microscopic observation, indicate that this was the last step in completing the decoration.

No.	Studied area in dots* of about 3-5 $\mu\text{m}$ in between the cross section of the joint	Elemental composition in weight (%)									
		Au	Ag	Hg	Cu	Pb	Sn	Zn	Fe	As	Sb
1	In solid surface area	6.03	54.81	38.06	1.00	0.00	0.00	0.00	0.00	0.00	0.00
2	On the boundary of a highlighted area	7.19	51.01	40.02	0.47	0.00	0.70	0.51	0.00	0.00	0.00
3	3-4 $\mu\text{m}$ below this boundary	7.13	84.57	3.47	2.66	0.00	1.95	0.12	0.00	0.00	0.00
4	3-4 $\mu\text{m}$ under analysis No 3	0.46	94.68	0.00	2.00	2.76	0.00	0.00	0.00	0.00	0.00
5	In elongated, sometimes bright strip with pores, micro-splittings, black and white inclusions	3.61	80.65	3.92	7.59	2.65	1.48	0.00	0.00	0.00	0.00
6	In a very light layer under a splitting of this strip	6.75	66.48	25.45	0.77	0.00	0.00	0.45	0.00	0.00	0.00
7	Dark inclusion under the strip (4-5 $\mu\text{m}$ under analysis No 6)	0.00	95.54	0.00	2.09	2.27	0.00	0.00	0.00	0.00	0.00
8	In more "homogenous" grey layer 4-5 $\mu\text{m}$ under analysis No 7	5.21	92.95	0.00	1.74	0.00	0.00	0.00	0.00	0.00	0.00
9	4 $\mu\text{m}$ under analysis No 8 in the same layer	4.57	87.69	1.76	2.51	2.70	0.67	0.00	0.00	0.00	0.00
10	4 $\mu\text{m}$ under analysis No 9 in the same layer	6.06	88.79	1.46	3.14	0.00	0.45	0.00	0.00	0.00	0.00
11	Dark inclusion in a new, elongated and in places light strip with pores, micro-splittings, black and grey inclusions	10.76	78.80	6.21	1.51	0.00	1.89	0.74	0.00	0.00	0.00
12	Dark inclusion from the elongated strip	2.47	88.21	5.10	3.25	0.00	0.00	0.87	0.00	0.00	0.00
13	About 4 $\mu\text{m}$ in a lower "more homogenous" layer (grey)	9.11	87.43	0.16	2.71	0.00	0.00	0.48	0.00	0.00	0.00
14	About 3-4 $\mu\text{m}$ under analysis No 13 in contact with darker grey area (spot)	0.74	89.11	1.43	1.73	4.99	0.99	0.90	0.00	0.00	0.00
15	Dark inclusion in a new longitudinal strip with inclusions	5.34	91.93	1.16	1.02	0.00	0.00	0.46	0.00	0.00	0.00
16	In the centre of the dark grey area (spot)	5.62	89.89	0.00	1.43	0.79	0.00	0.19	0.00	0.00	0.00
17	In a colour the centre of the dark grey area (spot)	5.40	89.87	0.00	3.34	1.49	0.00	0.00	0.00	0.00	0.00
18	At the end of the splitting again in a sequence of inclusions	7.17	87.01	0.00	0.56	1.62	3.55	0.00	0.00	0.00	0.00

\* The area of the analyzed dots is in the range of 1  $\mu\text{m}^2$ .

Table II. Chemical composition of areas of cross-sectional sample of incisions with "silvery" porous surface with micro-splittings, SEM-EDX.

Tabl. II. Skład chemiczny obszarów przekrojowej próbki z nacięcia ze srebrzystą porowatą powierzchnią z mikrorozszczepieniami, SEM-EDX.

Based on the analyses and the observations the following conclusions can be made:

1. The connection between the iron surface and the silver leaf is mechanical – by hammering.
2. Gilding is carried out after the application of the silver leaf.
3. Gilding is made through previous amalgamation of the surface and subsequent overlaying of gold flakes. The splits and cracks in the structure of the leaf determine the penetration of Hg and its amalgam with the gold leaf at a depth close to the iron surface.

4. The ornament is chased after the leaf gilding

As noted above, the connection between the iron surface and the silver leaf is carried out by hammering. Due to the impossibility of direct diffusion bond between gold (silver) and iron,

the medieval craftsmen decorated their products mechanically (damascening) by overlaying thinned silver plates or by inlaying gold, silver or copper wire in the previously hatched surface of the iron item. The method of gilding is described in detail by Theophilus in his 11<sup>th</sup> c. treatise *On Divers Arts*: *If you have processed the iron and have made spurs or riders' other gear from it and want to decorate it with gold and silver, take the purest silver and forge it very thin with a hammer [...] When the spur is evenly processed with the file, put it on the hot embers until it becomes black. Get it in your left hand and rotate the disc in your right hand, draw it up to the steel and carefully cut out at length elsewhere, and then do it double – in the transverse direction. When this is done, break off of your own wish a piece of silver with the small pliers and put*

No.	Analyzed area in dots of about 3 $\mu\text{m}$ in between the cross section of the joint	Elemental composition in weight (%)							
		Au	Ag	Hg	Cu	Pb	Sn	Fe	Zn
1	The topmost isolated gilding leaf	89.14	4.73	0.00	0.13	0.68	0.33	0.00	0.00
2	Bent in area between a facing and substrate leaf	79.03	6.14	0.00	0.20	0.94	0.67	8.01	0.00
3	Lower isolated gilding leaf	89.52	9.44	0.00	0.13	0.00	0.81	0.00	0.10
4	Hollow under the isolated gilding leaves	38.33	23.85	0.00	1.01	0.00	0.00	31.81	0.00
5	Surface under the isolated leaves	0.00	25.31	74.60	0.46	0.00	0.00	0.00	0.00
6	In a "gilt" diffusion surface layer	7.39	24.70	67.44	0.46	0.00	0.00	0.00	0.00
7	In the diffusion layer with pores and inclusions	8.25	31.03	59.85	0.59	0.00	0.00	0.00	0.28
8	In the diffusion layer in a strip with inclusions	14.52	67.79	15.85	1.84	0.00	0.00	0.00	0.00
9	Sub-diffusion layer in a strip with inclusions	15.66	77.81	3.54	2.49	0.00	0.00	0.00	0.49
10	The sub-diffusion layer	13.36	61.90	22.67	1.06	0.93	0.00	0.00	0.08
11	The sub-diffusion layer	10.33	75.35	12.23	1.08	0.56	0.00	0.00	0.43
12	Above a strip with inclusions	8.60	87.23	1.36	2.03	0.78	0.00	0.00	0.00
13	In a strip with inclusions	16.87	68.69	13.69	0.70	0.00	0.00	0.00	0.00
14	In a strip with inclusions	11.89	54.86	3.32	0.40	1.34	0.00	23.19	0.00
15	In a strip with inclusions	8.52	56.23	0.00	0.67	0.00	0.00	29.34	0.24

Table III. SEM-EDX chemical composition of a cross sectional area between two incisions with preserved isolated gold leaf.

Tabl. III. Skład chemiczny obszarów przekrojowej próbki pomiędzy dwoma nacięciami z zachowanym wyodrębnionym złotym płatkem, SEM-EDX.

them on top. Press the ends of the silver with these pliers to connect. Once you accomplish this, put the spur again on the hot embers until it becomes black, then take it out with the pliers, carefully polish it with a long flat tool of steel. [...] If you want to gild the whole spur or part of it, so can you do it (Шаренков 1988, 367-368, гл. 91).

This technique is discussed by B. Ribakov, who indicates that the hatched and uneven iron surface allows for a better cohesion with the silver leaf (Рыбаков 1948, 323). Products decorated in this way – weapons or horse-trappings, most often are items with representative function, symbolizing the rank of their wielder. Among them we mention the sabre kept in Vienna (Fig. 12:1), (Hampel 1900, 681-692; Кирпичников 1965, 2, 268-276; *The Ancient...* 1996, 67-71, fig. 1-2), as well as the sabre found by I. Hoynovski in 1892, on the blades of which gilt copper plaques with carved ornament (Fig. 12:2) were "plated", according to G. Korzuhina's description (Корзухина 1950, XIII, 82-83, рис. 4-5). By the stylistic features

of decoration, the different researchers date the Viennese sabre in the wide range from the 2<sup>nd</sup> half of the 9<sup>th</sup> c. to the 10<sup>th</sup> c. The other sabre in Korzuhina's opinion dates back to the 11<sup>th</sup> c. As far as we know, the technique of gold leaf application is not yet studied in details, so these examples can not be reliable analogues of the technology commented here.

According to the macroshots the same technique – by hammering a thin silver-gilt plate onto a pre-hatched iron surface, was used in the decoration of the pommel and cross-guard of a sword from the period of the "conquest of Fatherland" kept in the National History Museum in Budapest (Fig. 12:3-4) (*The Ancient...* 1996, 367-368, fig. 1-2). Similar is also the mechanical connection between the silver leaf and the metal surface of a ceremonial battleaxe from the Volga area (or from the Vladimirska province) dated back to the 10<sup>th</sup> c. (Fig. 12:5) (Рыбаков 1948, 285, бел. 87). G. Korzuhina notes that the swords and spears from the 10<sup>th</sup>-11<sup>th</sup> c., found near Turaida

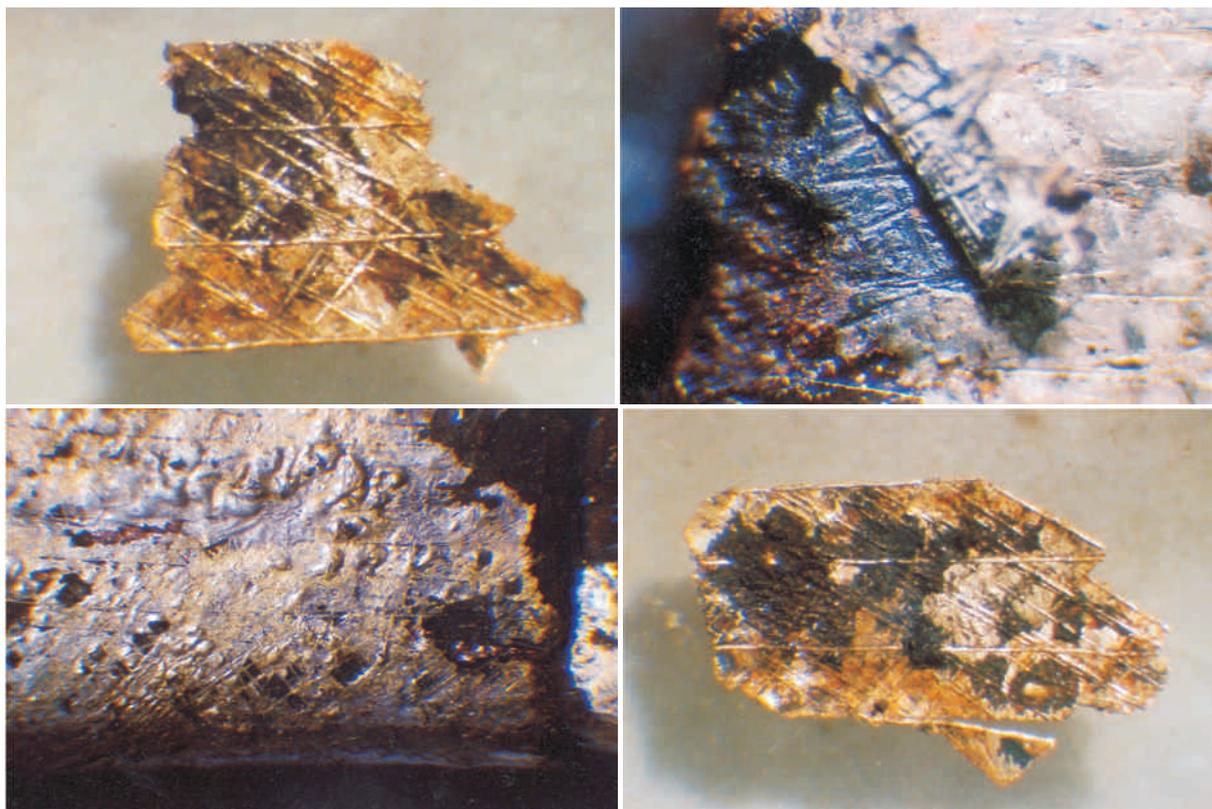


Fig. 7. Traces of incisions on the foil leaf and the iron surface. Photo by V. Inkova.

Ryc. 7. Ślady nacięć na złoceniach i żelaznej powierzchni. Fot. V. Inkova.

(Treiden) in Latvia, are decorated with silver damascening, (i.e. a silver leaf inlaid into a darkly oxidized hatched surface) (Корзухина 1950, 71). The same technology is used also in the manufacture of an iron helmet belonging, according to B. Ribakov, to Prince Yaroslav Vsevolodich from the 13<sup>th</sup> c., except that the silver leaf hammered onto the iron surface is overlaid with silver plates (Рыбаков 1948, 234-235).

In his study on the Old Russian arms, A. Kirpichnikov includes in the catalogue of lost sabres, an artefact whose blade is “coated” with gold. The sabre originates from Zelenki, mound of Balgani, Kiev region and is dated to the 12<sup>th</sup>-13<sup>th</sup> c. (Кирпичников 1966, 101, No. XXIII). Traces of gilding preserved in the sunken areas are recognized on the upper part of the blade of a sabre, discovered on the river bank of Malaya Tinagota, Tyumen province. Judging by the engraved ornament and inscription in Armenian, the gold band measures 20 x 1 cm and has engraved pattern and an Armenian lettering (Fig. 12:6). Both R. Djanpoladian and A. Kirpichnikov read „VAPRET CHACATUR” and interpreting it as a “title” and the forename of the

artisan i.e. as a manufacturing stamp, and identify the sabre as an Armenian product from the 12<sup>th</sup>-13<sup>th</sup> c. that fell through commercial routs in the area of Northern Urals (Djanpoladian, Kirpichnikov 1972, 15-19)<sup>10</sup>. Special emphasis deserves a sabre from the town of Nezhen, Chernigov province, the upper part of whose blade is decorated with a gold plate with schematized dotted trailers typical of the ancient Russian toreutics from the time of the Mongolian invasion (Fig. 12:7) (Кирпичников, Коваленко 1993, 2, 124-126, 132, рис. 281:2; Коваленко, Ситий 2004, 130-131, рис. 5:17). According to some Orientalists, a good wishing Kufic inscription along the cutting edge of the sabre is inlaid with gold, but B. Marshak interprets it as a pseudo-lettering imitating the Arab characters. We do not have more data on the gilding technique, but of particular importance to us is the conclusion of A. Kirpichnikov and V. Kovalenko. Based on the epigraphic Kufi-styled ornamentation and the morphological characteristics of the sabre, they suggest that it was made in some *highly skilled workshop in the Islamic world* from the 2<sup>nd</sup> half of the 12<sup>th</sup> – 13<sup>th</sup> c. The remaining inventory from

<sup>10</sup> I express my gratitude to my colleague D. Raboyanov for that literature.

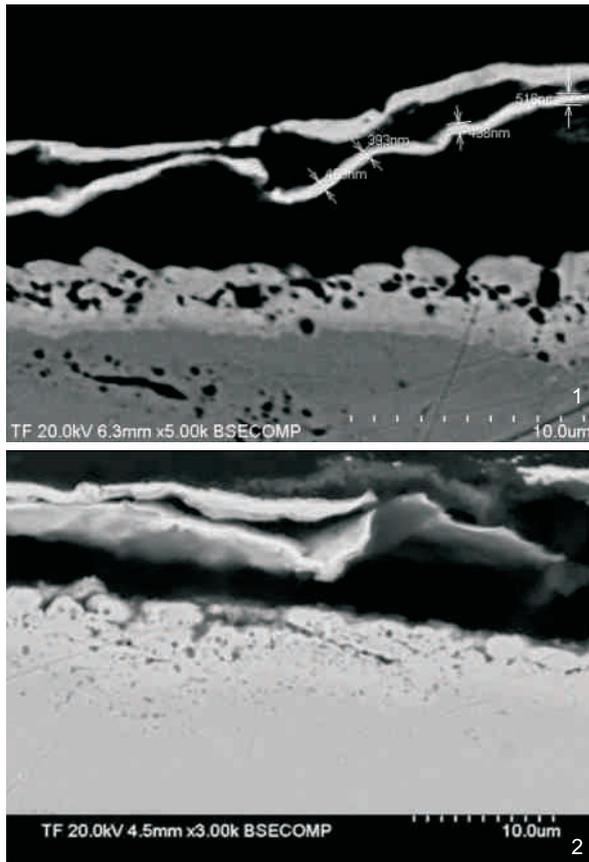


Fig. 8. SEM cross-sectional images of a sample of metallized layer with: 1 – isolated gold leaf – thickness; 2 – isolated gold flakes.

Ryc. 8. Przekrojowe obrazy SEM próbki metalizowanej warstwy: 1 – pojedynczym listkiem złota – grubość; 2 – pojedynczymi płatkami złota.

the grave in Nezhin consists of the protective and offensive weapons of a heavily armed nomadic warrior from the 2<sup>nd</sup> half of the 12<sup>th</sup> – the 40s of the 13<sup>th</sup> c. – arrowheads, bone plates for a composite bow, a part of braided armour, flint and steel and elements of horse armour – a bit (mouth-piece), details of a horse harness and stirrups applied with silver plates of geometric decoration.

Among the items, decorated with gold, we should mention the helmet from Mosku, Moldova, “plated” with a silver-gilt leaf (Fig. 12:8) (Spinei 1974, 25, No. 399, fig. 5-6; Diaconu 1978, 18). It was discovered accidentally in 1938 in a grave, for which we have no information if it was a mound burial. Among the grave inventory is a bit from a bridle, a sabre blade, and a fragment of a coin. The grave is dated back to the 11<sup>th</sup>-12<sup>th</sup> c. and is ethnically associated with the Cumans. The silver-gilt helmet from the village of Nikolskoe, Orlovsk province, dated from the 2<sup>nd</sup> half of the 13<sup>th</sup> c. (Горелик 2003, 3, 234, рис. 2:1, 235, 237), also falls within the same type. Both helmets were discovered in a territory, which in the 13<sup>th</sup> c.

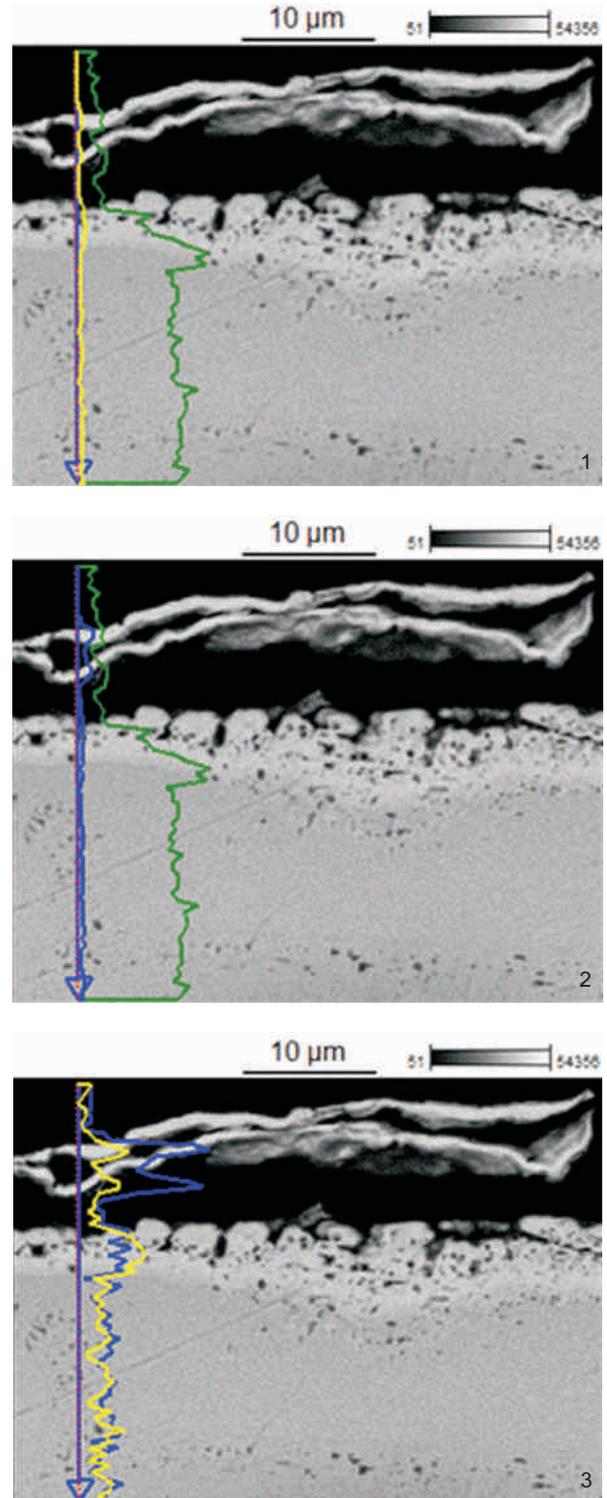


Fig. 9. SEM-EDX line scanning for Au, Hg and Ag in the whole section of the sample: 1 – Ag and Hg; 2 – Ag and Au; 3 – Au and Hg.

Ryc. 9. Krzywa SEM-EDX dla Au, Hg i Ag w całym przekroju próbki: 1 – Ag i Hg; 2 – Ag i Au; 3 – Au i Hg.

was part of the Ulus of Jochi (Kipchak Khanate) and M. Gorelik identifies them as belonging to the arms of the Golden Horde. The helmet with the gold damascening from a nomad’s grave in

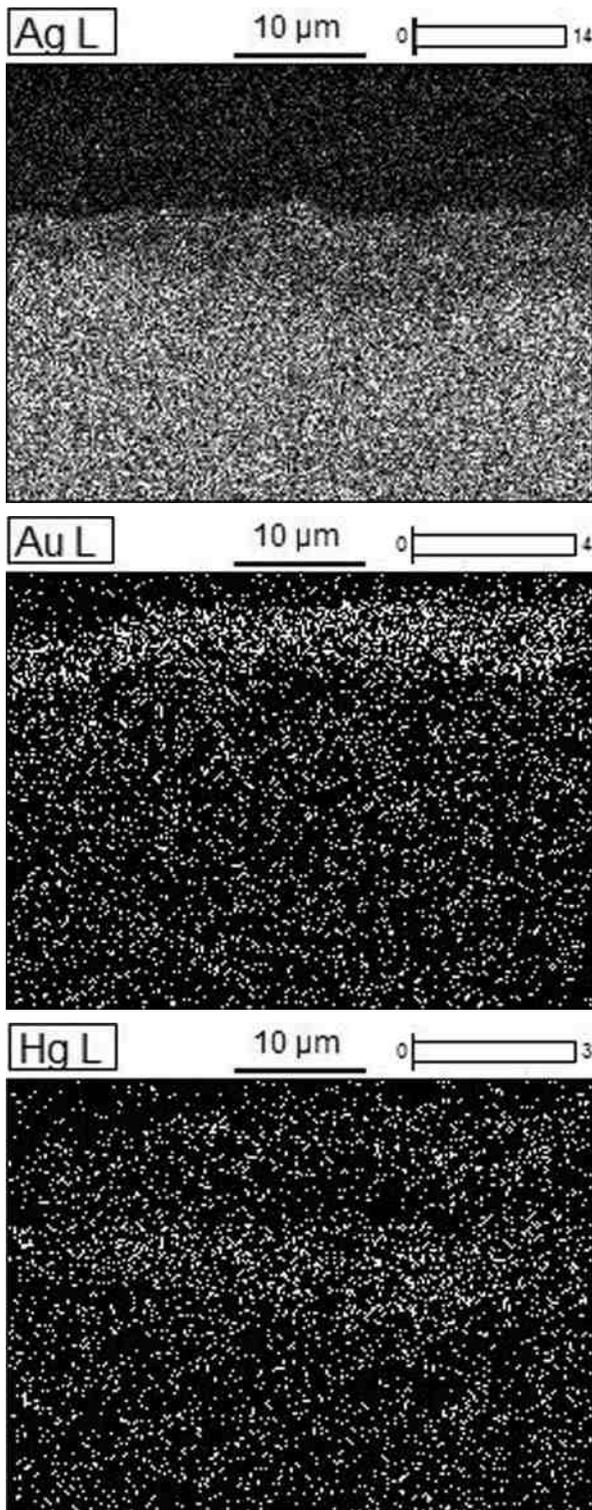


Fig. 10. EDX mapping on atomic weight.

Ryc. 10. Odzworowanie EDX masy atomowej.

Vatra Moldovitei, Rumanian Moldova follows the same model (*ibidem*, 3, 233). Noteworthy is the stirrup from the excavated in 1989 by N. Brandenburg in the mound, situated near the village of Babichi, Kiev province, the arch-like

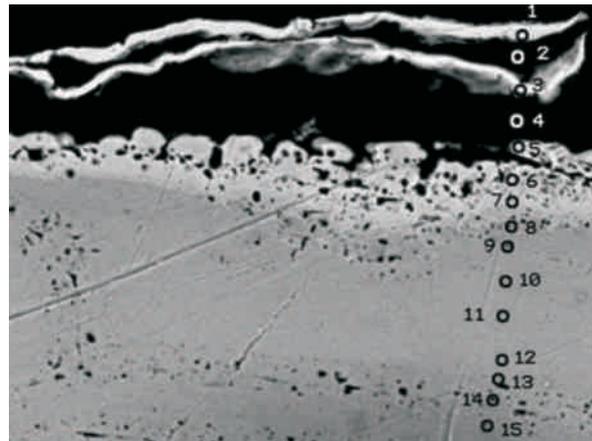


Fig. 11. SEM-EDX point analyses on cross-sectional sample of the metallized layer with isolated gold leaf.

Ryc. 11. Punkt SEM-EDX analiz przekrojowej próbki metalizowanej warstwy pojedynczym listkiem złota.

part of which is decorated with inlaid silver plate. (Fig. 12:9) (Плетнева 1973, 44, 94, табл. 46/5). Among the other items is a pair of large arch-like stirrups, a flint and steel, a metal bit, arrowheads and a fragment of an iron buckle. The grave in the burial mound is dated back to mid or 2<sup>nd</sup> half of the 12<sup>th</sup> c. and is related to the time of formation of the political alliance of the Black Klobuks involving the Pechenegs, Cumans and Turks. A cheek-piece for a horse bit (psalia) with a “silver-gilt plate” (Fig. 12:10), found in a settlement near the village of Petrushki, Chernigov province, is also associated with the late nomads of the same political alliance (Коваленко, Ситий 2004, 134-134, рис. 7:3). E. Kravchenko mentions traces of silver on the helmet from a grave found on the right bank of the Kalka river, Donetsk province (Кравченко 2003, 3, 123-129, рис. 2). Among the other inventory is an iron mask, a sabre and a stirrup. The circumstances of the burial (absence of mound and household items, etc.) associate the grave with the Tartar-Russian battle in 1223.

The objects, decorated with silver or copper wire, dominate among the medieval arms and armours known so far from the area of the Lower Danube. In fact, the inlay of wire in the pre-hatched iron surface is just a variation of the above described method. Decorated in this way are mostly stirrups, spurs and battle axes. Exceptions are a spur and an axe (Fig. 13) from the 11<sup>th</sup>-12<sup>th</sup> c. found in the fortress near Stana, Novi Pazar region, applied with silver plates (Йотов 2004, 98-99, обр. 54). Unfortunately, the technique of decoration has not hitherto been the subject of a study when published. Therefore we can only assume that most likely a similar approach was

employed in their making. With silver plates is also decorated the nock of a spearhead from Northeastern Bulgaria, rightly considered a work of the Scandinavian arms tradition of the 9<sup>th</sup>-10<sup>th</sup> c. (*ibidem*, 80-82, обр. 39:531).

The presented examples outline a quite broad chronological framework (from 9<sup>th</sup> to 14<sup>th</sup> c.) and territorial area of spreading of these prestigious gold-ornamented items, whose users had always been among the aristocratic elite of the steppe (nomadic) societies. In different periods these were Hungarians, Pechenegs, Cumans and Tatars. In the 12<sup>th</sup>-13<sup>th</sup> c., the armour of the noble warriors of the Golden Horde have similar decoration. Production centres of that elitist armament however, were most likely the highly developed cities of the North Black Sea costal region, the area of the Lower Volga, North Caucasus, and judging by the gold-inlaid inscriptions in Kufi style on some sabres – the Islamic workshops as well.

Quite limited are the parallels to the simple, chased floral decoration on the gilt parts of the sabre from the National Museum of History in Sofia (NMH). As seen from the graphic documentation, the parallels are exhausted with the stirrup from Babichi – a sequence of dots presents a trailer, whose tendrils end in volutes (Fig. 12:9). It can be assumed that the decoration on the inlaid silver leaf was performed with a swage, stamping dots.

### Morphology

The archaeometric properties and particularly the morphological features of the commented sabre are significant for the identification of the weapon – the shape of its blade, with the subordinate position of the grip, and the characteristics specifying the chronology details such as the hand guard and particularly the scabbard hoops for the shoulder belts. The fact that the spear point of the blade is two-edged suggests that the sabre was used both as a slashing and thrusting weapon. When developing a typology of sabres, the researchers choose different criteria. A. N. Kirpichnikov (Кирпичников 1966, 68) lays special emphasis on the guard and the pommel of the grip. Sv. Pletnyova (Плетнева 1973, 17-18) and G. A. Fyodorov-Davidov (Федоров-Давидов 1966, 22-23) consider as a basic feature the change of the main operational attributes of the blade – its curve, length and width. Despite the different approaches, they reach a shared conclusion that the evolution of sabres is towards thinning and gaining of weight, length and width.

Compared to the sabres from and after the 10<sup>th</sup> c., the sabre of the NMH differs in that the blade and the tang of the grip lie on the same axis (Fig. 14:1), i.e. the angle of the attack is small, which determines the slashing function of the weapon. On the other hand, due to the small curvature of the blade – 11 mm (measured according to the method of Sv. Pletnyova) – the sabre has a weak slashing effect. According to the classification of Pletnyova and because of the small cutting capacity of the sabre, that of the NMH could sooner be attributed to the sabres of division “B”, dated to the 1<sup>st</sup> half of the 12<sup>th</sup> c. It should also be noted that the division includes late nomadic sabres, distinguished by relatively greater than 1 m length.

In 2000, A. Evglevskiy and T. Potyomkina offer a new typology of the late nomadic sabres where the basic type-distinguishing features are those of the blade – the size of the curve, the area of maximum curve and proportion between length and width (Евглевский, Потёмкина 2000, I, 117-179). Each of the basic features is correlated with additional characteristics – types of guard, terminals of the grip and the scabbard, slope of the grip and shape of the cutting edge. The theoretical combination of the basic type-distinguishing characteristics gives 27 variants of sabres with certain chronological frameworks of occurrence, frequency and area of distribution for the period from the 2<sup>nd</sup> half of the 10<sup>th</sup> – 14<sup>th</sup> c. According to this typology, the sabre from the NMH belongs to variant No. 5, which includes sabres slightly curved in the middle of the blade, with average proportion between the length and width (or K1 Y2 П2), typical of the period: the 2<sup>nd</sup> half of the 12<sup>th</sup> – 14<sup>th</sup> c. Weapons of that type are found in the necropolis of Chernoklen in the zone of Kuban, Crimea and the Lower Don. The typology, developed by statistical methods for the East European zone, is relatively applicable to the lands of the Lower Danube. The main empirical material lacks examples with coincidence of the axes of blade and grip and of straight hand guards with rounded rectangular cross section – therefore its application in the case of the commented sabre actually does not work. Significant for us is that based on the statistical processing of the data, the authors prove that sabres with slightly curved blades occur both in the 2<sup>nd</sup> half of the 10<sup>th</sup> – 11<sup>th</sup> c. and also in the 12<sup>th</sup>-14<sup>th</sup> c., i.e. *the slightly curved blade, unlike the highly curved one, can not be a chronological indicator*<sup>11</sup>.

<sup>11</sup> We agree with the conclusion of A. Pyankov and I. Cokur that the details in attaching the scabbard to the belt is much more dynamic and therefore more accurate chronological indicator (Пьянков, Цокуп 2011, 162).



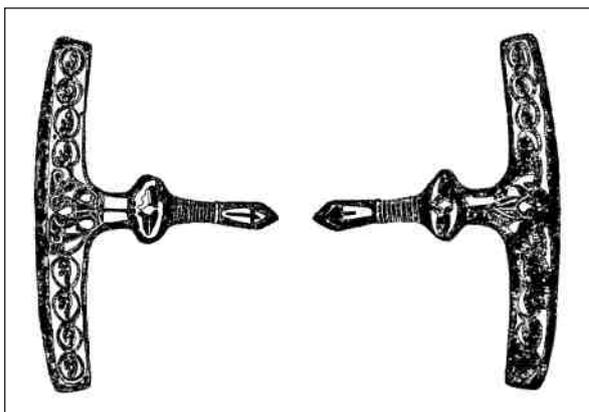


Fig. 13. Battle-axe with silver plates from the fortress at the village of Stana, Novi Pazar region (after Ђотов 2004).

Ryc. 13. Platerowany srebrem czekan z fortecy we wsi Stana, region Novi Pazar (wg Ђотов 2004).

Against that background, a natural uncertainty arises whether it is not a question rather of different arms centres with different traditions in making wedge-shaped weapons. The slight curve of the blade and the straight guard with extended shoulders suggest a different manufacturing practice. Even in 1993, A. N. Kirpichnikov and V. Kovalenko came to the same conclusion in connection with the sabre from Nezhin<sup>12</sup> (Кирпичников, Коваленко 1993, No. 2, 126; Коваленко, Ситий 2004, 130-131, рис. 5, 17-18). The Nezhin sabre also has a slightly curved blade (Fig. 14:2), double-edged in its spear point part (25 cm) and metric characteristics similar to those of the sabre from the Shumen region. It is 99.7 cm long, 3 cm wide and curved by 2.2 cm. The authors find parallels among the gold-decorated sabres or with inlaid inscriptions in Arabic from the zone of the Kiev Porosie area, which refer to the time of the political alliance of the Black Klobuks (12<sup>th</sup> c.). According to them, in the 12<sup>th</sup>-13<sup>th</sup> c., some of the eastern Islamic countries until then

producing swords now introduced in their arms workshops the sabre which is slightly curved compared to the sword<sup>13</sup>. In this sense, the almost straight sabres, with cut letter-like signs in Kufi style and sometimes decorated with gold, were work of the Arab tradition. Over the following centuries this type of slightly curved cold weapons gained widespread use through Iran, Azerbaijan, Georgia, Anatolia and Egypt. Confirmation of that conclusion we find in a miniature from the poem *Vargeh va-Golshāh* belonging to the 1<sup>st</sup> quarter of the 13<sup>th</sup> c., where two of the warriors are armed with almost straight, slightly curved sabres (Fig. 15) (Gorelik 1979, 35, fig. 38). Their use continued in the 14<sup>th</sup> c. as well, which is evidenced by another miniature from an Iranian manuscript *Jamīc al Tawārīkh* from 1300-1310, depicting a somewhat curved scabbarded sabre with a straight guard, its middle part widened in the form of a rhomb and a lightly bent grip (Nicolle 1982, I, XXXVIII, No. 638).

In this context, as relatively close analogues we can point to two sabres found near the village of Imenkovo in the province of Kazan (Fig. 14:3-4), i.e. on the territory of Volga Bulgaria, dated from the 2<sup>nd</sup> half of the 12<sup>th</sup> – 1<sup>st</sup> half of the 13<sup>th</sup> c. (Кирпичников, Коваленко 1993, No. 2, 128-129, 133, рис. 3:1-2). Both sabres have a slightly curved blade, double-edged towards the point, the grip of the one lies on the same axis with the blade. The metric characteristics of the two sabres are similar: length – 98.5 cm and 101 cm, width – 3 cm, thickness – 0.5 cm, the double-edged spear point section is respectively – 20 cm and 25 cm and the curve is 3 cm. The archaeometric comparison indicates that the two sabres from Imenkovo are a little longer and with a greater curve than the here commented sabre. The decoration is different – the one has Kufi letters or signs in gold inlaid frame, and the second – inlaid silver crosses and

<sup>12</sup> I express my gratitude to the colleague E. Армарчук for the valuable information and the literature.

<sup>13</sup> The observations of D. Nicolle confirm the conclusions of Russian-Ukrainian researchers. According to the author, the sabre is less widespread in the Arab world and its appearance there is a result of the influence of the steppe (Turkic) people (Nicolle, 1991, 4, 303-305, 320). The earliest sabre, found in the Islamic context, is that from Nishapur, dated in the 9<sup>th</sup> c., which, however, in D. Alexander's opinion, belonged to a captured Turkic warrior. The famous horseman on the mural painting from Nishapur actually represents a Turkic falconer armed with short and long (garahur) sabre (Alexander 2001, XXI, 214, fig. 14-15).

Fig. 12. 1 – detail of the so called “sabre of Charlemagne” (after *The Ancient... 1996*); 2 – sabre published by I. Hoynovski (after *Корзуха 1950*); 3-4 – cross guard of the 10<sup>th</sup> c. sword (after *The Ancient... 1996*); 5 – battle-axe from the Volga area (Povolzhye) (after *Рыбаков 1948*); 6 – blade of the sabre with an Armenian inscription (after *Djanpoladian, Kirpichnikov 1972*); 7 – blade of the sabre from Nezhin, Chernigov province (after *Кирпичников, Коваленко 1993*); 8 – helmet from Mosku, Moldova (after *Spinei 1974*); 9 – silvered stirrup (after *Плетнева 1973*); 10 – cheek-piece of the bit with silver-gilt plate (after *Коваленко, Ситий 2004*).

Ryc. 12. 1 – detal tzw. „szabli Karola Wielkiego” (wg *The Ancient... 1996*); 2 – szabla publikowana przez I. Choynowskiego (wg *Корзуха 1950*); 3-4 – jelec X-wiecznego miecza (wg *The Ancient... 1996*); 5 – czekan z Powołża (wg *Рыбаков 1948*); 6 – głownia szabli z armeńską inskrypcją (wg *Djanpoladian, Kirpichnikov 1972*); 7 – głownia szabli z miejscowości Nezhin, obw. Czernichów (wg *Кирпичников, Коваленко 1993*); 8 – hełm z Mosku, Republika Moldova (wg *Spinei 1974*); 9 – posrebrzane strzemię (wg *Плетнева 1973*); 10 – pobocznicza wędzidla z posrebrzaną okładziną (wg *Коваленко, Ситий 2004*).

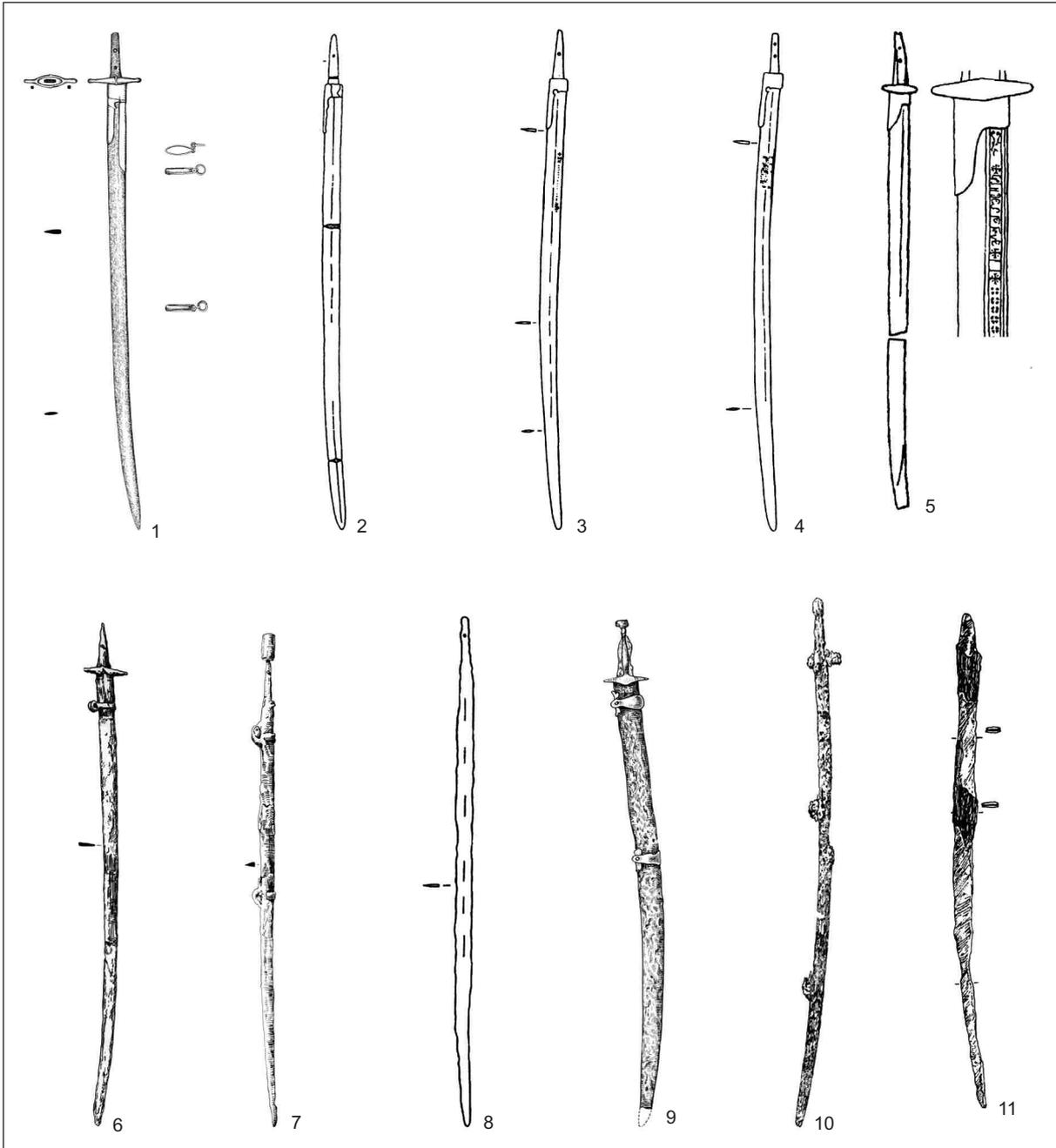


Fig. 14. Sabres: 1 – the National Museum of History in Sofia; 2 – Nezhin, Chernigov province (after *Кирпичников, Коваленко 1993*); 3-4 – Imenkovo, Kazan province (after *Кирпичников, Коваленко 1993*); 5 – Tyumen province (after *Nicolle 1988*); 6 – Stepantzi, Kiev province, mound 215 (after *Плетнева 1973*); 7 – Potok, Kiev province, mound 453, grave 3 (after *Плетнева 1973*); 8 – Kanevskiy uезд, Kiev province (after *Кирпичников, Коваленко 1993*); 9 – Cumanian sabre (after *Стени Евразии 1981*); 10 – Cumanian sabre from the Chingulskiy kurgan near Zamozhnoe village, Zaporozhye province (after *Отроценко, Рассмакин 1986*); 11 – Mednikarovo village, Galabovo region (after *Борисов, Шейлева 2000*).

Рис. 14. Szable: 1 – Narodowe Muzeum Historii w Sofii; 2 – Nezhin, obw. czernichowski (wg *Кирпичников, Коваленко 1993*); 3-4 – Imenkovo, obw. kazański (wg *Кирпичников, Коваленко 1993*); 5 – obw. Tiumeń (wg *Nicolle 1988*); 6 – Stepanci, obw. kijowski, kurhan 215 (wg *Плетнева 1973*); 7 – Potok, obw. kijowski, kurhan 453, grób 3 (wg *Плетнева 1973*); 8 – Ujazd Kaniewski, obw. kijowski (wg *Кирпичников, Коваленко 1993*); 9 – szabla połowiecka (wg *Стени Евразии 1981*); 10 – szabla połowiecka z Czingulskiego kurhanu pod wsią Zamożne, obw. zaporozżski (wg *Отроценко, Рассмакин 1986*); 11 – wieś Mednikarovo, region Galabowo (wg *Борисов, Шейлева 2000*).

letters. According to the authors, they are the work of different eastern and most probably Caucasian workshops, subsequently commercially fallen into the area of the Volga-Kama basin. Of Caucasian

and more precisely of Armenian origin is the above mentioned gold-decorated sabre found in the area of Northern Ural (Fig. 14:5). Its blade is somewhat curved with a rhomb-shaped guard and a grip to



Fig. 15. Miniature from the poem *Vargeh va-Golshāh*, 1st quarter of the 13th c. (after Gorelik 1979).

Ryc. 15. Miniatura z poematu *Vargeh va-Golshāh*, 1. ćwierć XIII w. (wg Gorelik 1979).

some degree bent to the blade – features that date it back to the 12<sup>th</sup>-13<sup>th</sup> c. (Djanpoladian, Kirpichnikov 1972, 15-16; Nicolle 1988, 72, 374). Its metric characteristics are comparable – overall length – 1.00 m and width – 3.5 cm. The hitherto commented analogues at this stage outline the Caucasus area as a well developed arms centre, manufacturing in the period between the 12<sup>th</sup> and 13<sup>th</sup> c. sabres distinguished for their good technical characteristics such as solidity and hardness of material but also for their luxurious decoration of engraved Arabic and Armenian inscriptions.

Besides the discussed artefacts, another comparatively close analogue, is the sabre found in mound 215 from Stepantzi, province of Kiev (Fig. 14:6) (Плетнева 1973, 49, табл. 1:1). It has a blade, slightly curved in the middle and lying in one line with the guard. It originates from a grave in the centre of the mound, considering the head turned west – the burial is dated to the 11<sup>th</sup>-12<sup>th</sup> c. and is associated with the later nomads (very likely the Pechenegs). The same characteristics of the blade and the grip owns the sabre from mound 452, grave 3, near the village of Potok, Kiev province (Fig. 14:7) (*ibidem*, 81, табл. 33:8). The grave is secondary, orientated westwards and dated back to the 12<sup>th</sup> c. – the burial is associated with the Pechenegs. The sabre from the former Kanevskii uezd, Kiev province, also has a somewhat curved narrow blade, which lies on the same axis with

the guard (Fig. 14:8) (Кирпичников, Коваленко 1993, No. 2, 133, рис. 3:4), as well as the sabre from the grave on the right bank of the river Kalka (Кравченко 2003, 3, 125,127, рис. 3:3). In this line of parallels falls also according to Sv. Pletnyova a Cuman sabre with a straight rhomboid guard, attributed to the 12<sup>th</sup> c. (Fig. 14:9) (*Стены Евразии...* 1981, 260, рис. 83/40). Another one from the 2<sup>nd</sup> half of the 13<sup>th</sup> c. is that from the Chingulskiy kurgan by the village of Zamozhnoe, province of Zaporozhie (Отрощенко, Рассемакин 1986, 22, рис. 7:1, 25; Chochorowski, 1996, 221, fig. 121). The grip and the blade lie on one axis, the blade is somewhat curved and the guard is straight (Fig. 14:10). The differences, however, are significant – the sabre is considerably longer and wider – 130 cm x 4 cm, and the guard is asymmetrical. Different are the hoops for the sabre strap. Another specimen, probably also of Cuman origin, is from the mound at the village of Kamenka, Donetsk province. Its grip and the blade are on the same axis, but it is much longer and wider. Its guard is arch-shaped with spherical ends, typical for the 9<sup>th</sup> and 11<sup>th</sup> c. (Косиков, Гриб 1985, 2, 257, 260, 261). We should also mention sabres from the necropolis of Kolosovka No. 1, mound 2, in North Caucasus. They have almost straight, barely curved, rhomboid guards, analogous to here commented sabre, but with spherical ends (Дитлер 1961, 159-166, табл. XVII:1,

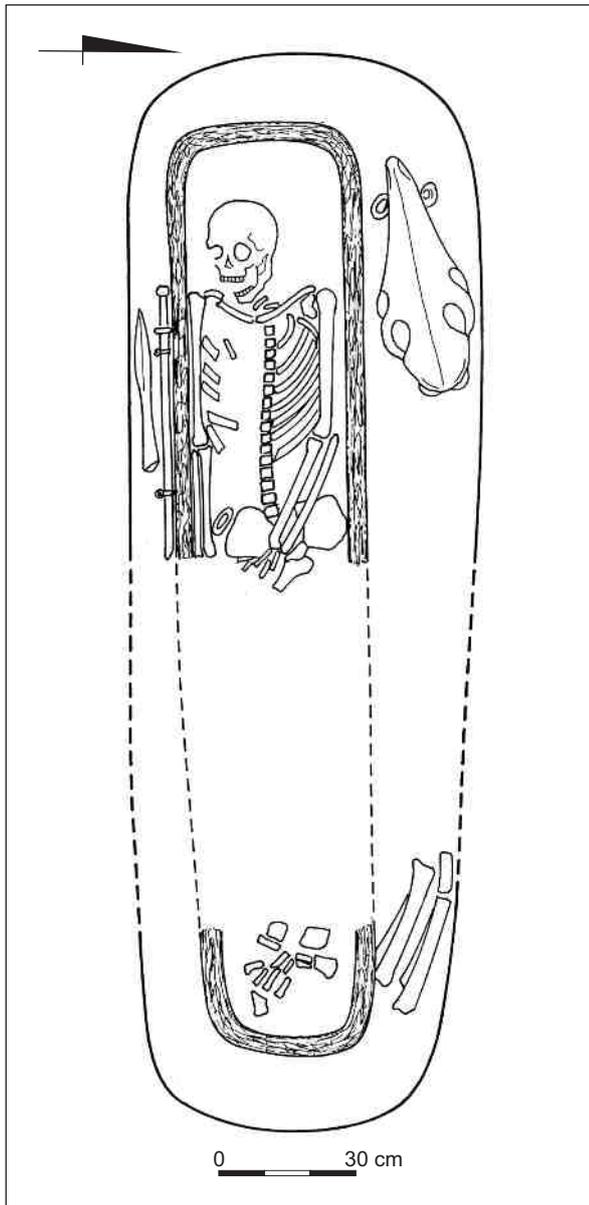


Fig. 16. Grave No. 2 from mound XXV, Pliska (after Paues 2007).

Рис. 16. Грób nr 2 z kurhanu XXV, Pliska (wg Paues 2007).

XVIII:1, XIX:1). They are dated back to the 2<sup>nd</sup> half of the 10<sup>th</sup> – 1<sup>st</sup> half of the 11<sup>th</sup> c. Considering the funeral rites, A. Dittler connects the necropolis with the local Adigh tribes. Unlike the commented specimen, the grip axis of the Adigh sabres slants at a slight angle to the blade, and its length varies – 77 cm, 88 cm, 73 cm (Пьянков, Цокур 2011, 160, 162). The sabres from the necropolis of Leninabel (Adygea) have similar morphological characteristics. They own a slightly curved blades, straight guards and maximum length of 0.90 m. The differences are in the symmetrical bulges on both sides of the hand guard. The sabres date back

to the 2<sup>th</sup> half of the 11<sup>th</sup> – the beginning of the 12<sup>th</sup> c. (Завьялов 2004, 84-84, рис. 4).

The parallels from the area of the Balkans are for now limited – relatively close analogue is the sabre from the secondary grave in mound XXV, situated to the west of the fortification of Pliska (Fig. 16) (Рашев 2007, 123, 129, обр. 5). Judging by the fragments, preserved *in situ*, the blade is straight and lying in one line with the guard and the restored length is approximately 91.7 cm. These characteristics very much resemble those of the commented sabre. The man was buried in a coffin shaped in a tree trunk, his head to the west. The grave is identified as late nomadic (Cuman). From the area south of Stara Planina we should mention the sabre from the village of Mednikarovo, Galabovo region (Борисов, Шейлева 2000, 248-249, обр. 1:в), which is 95 cm long and 3.4 cm wide. Its blade is somewhat curved and in one axis with the guard (Fig. 14:11). The sabre originates from a secondary grave, with the head orientated to the southeast and is connected with the Cumans.

Of a much wider range of occurrence are the straight hand guards with diamond-shaped widening in the middle. The lower time boundary of their spread is determined by the sabre from Novinki II, mound 14, grave 3, the guard of which, with its straight long shoulders, is a direct analogue to the here discussed one (Fig. 17:1), (Багаудинов, Богачев, Зубов 1998, 111, рис. 23/1, 112-113). It dates back to the end of the 8<sup>th</sup> – the beginning of the 9<sup>th</sup> c. A similar guard, cast in bronze, is known from northeastern Bulgaria (Йотов 2004, 69, 71, табл. 9:1). It has extended shoulders and a protruding rhomboid central part (Fig. 17:2). It differs from the guard of the NMH artefact in the opening in its centre, repeating the basic form. The sabre is determined as belonging to the 2<sup>th</sup> half of the 8<sup>th</sup> – the early 9<sup>th</sup> c. As a direct analogue can be specified the guards of type 3 by L. Kovács, dated back to the time of the conquest of Fatherland (Fig. 17:3) (Kovács 1980-1981, 10/11, 247, Taf. 1/II, 3). The central part is rhomboid, the shoulders – straight, and the oval opening for the blade is entered into a bed with the same shape. In this line also fall the straight rhomboid guards of the late nomadic sabres from Stepantzi, mounds 215 (Fig. 17:4) and 216 (Плетнева 1973, 49, табл. 1/1, 8). The upper chronological boundary of spread of this type of guards is determined by the finds from Voynska Greblya, Poltava province (Fig. 17:5) and from Gorodishte, Hmelnisky province, dated from the 12<sup>th</sup> to the 1<sup>st</sup> half of the 13<sup>th</sup> c. (Кирпичников 1966, 70-71, рис. 13:III, 98:89, 102). Their extended arms have a round

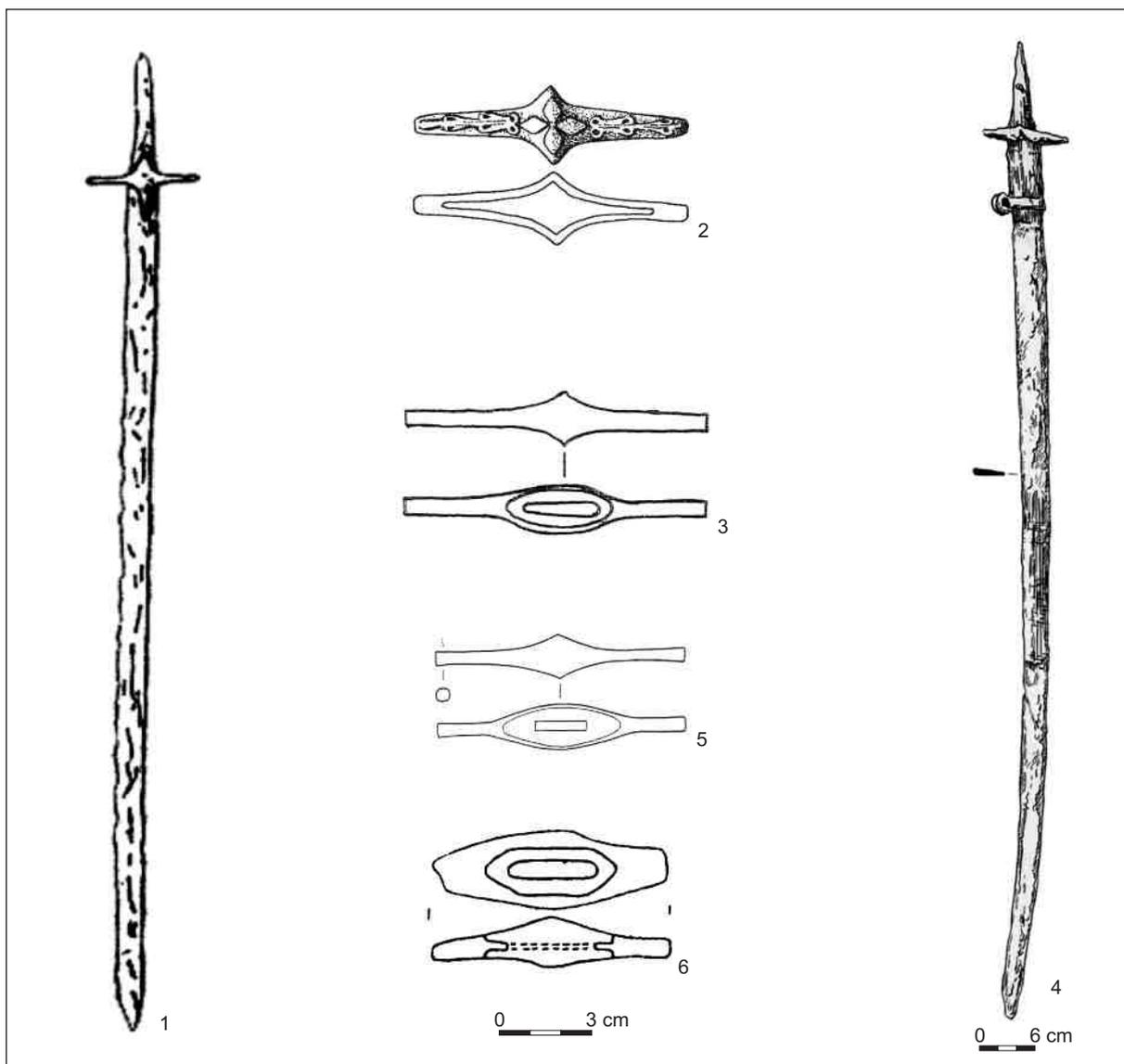


Fig. 17. Cross guards with a rhomboid widening: 1 – Novinki II, mound 14, grave 3 (after Багаутдинов, Богачев, Зубов 1998); 2 – Northwest Bulgaria (after Йотов 2004); 3 – Cross guard from the 10<sup>th</sup> c. (after Kovács 1980-1981); 4 – Stepantzi, mound 215 (after Плетнева 1973); 5 – Voynska Greblya, Poltava province (after Кирпичников 1966); 6 – Petrushki, Chernigov province (after Коваленко, Ситий 2004).

Рис. 17. Јелце з ромбоватими пошзерzeniami: 1 – Novinki II, курхан 14, гроб 3 (wg Багаутдинов, Богачев, Зубов 1998); 2 – Рóлносно-зачодня Булгария (wg Йотов 2004); 3 – јелце з X в. (wg Kovács 1980-1981); 4 – Степанци, курхан 215 (wg Плетнева 1973); 5 – Војнска Гребля, обв. полтавски (wg Кирпичников 1966); 6 – Петруши, обв. черниховски (wg Коваленко, Ситий 2004).

cross section, and the opening in the middle is entered in an ellipsoid bed. With the same form is the guard of a sabre, found in the settlement near the Petrushki village, province of Chernihiv (Chernigov), dated broadly in the chronological boundaries of the 10<sup>th</sup>-13<sup>th</sup> c. (Fig. 17:6) (Коваленко, Ситий 2004, 134-135, рис. 7:4). With a straight guard but without the rhomboid widening in the middle is the sabre from the secondary grave in mound XXV at Pliska (Рашев 2007, 129, обр. 5).

The iron plate soldered beneath the hand guard of the sabre also deserves special attention.

The cuff-like plates from mound 2 in the necropolis of Kolosovka 1 dated back to the 10<sup>th</sup>-11<sup>th</sup> c. (Дитлер 1961, табл. XVII:1, XVIII:1, XIX:1) are similarly “Г”-shaped and envelope the blade in the same way, as well as those from Knyazha Gora, Kiev province (Fig. 18:1) (Кирпичников 1966, табл. XXXV:5) and Gorodishte, Hmelnsky province (Fig. 18:2) (Кирпичников, Коваленко 1993, 127, 133, рис. 3:1), both dated from the 12<sup>th</sup> to the 1<sup>st</sup> half of the 13<sup>th</sup> c. Direct analogues are the hammered figural plates of the two sabres from Imenkovo (Fig. 14:3-4) (*ibidem*, 128-129, 133, рис. 3:2-3). Like the sabre commented here,

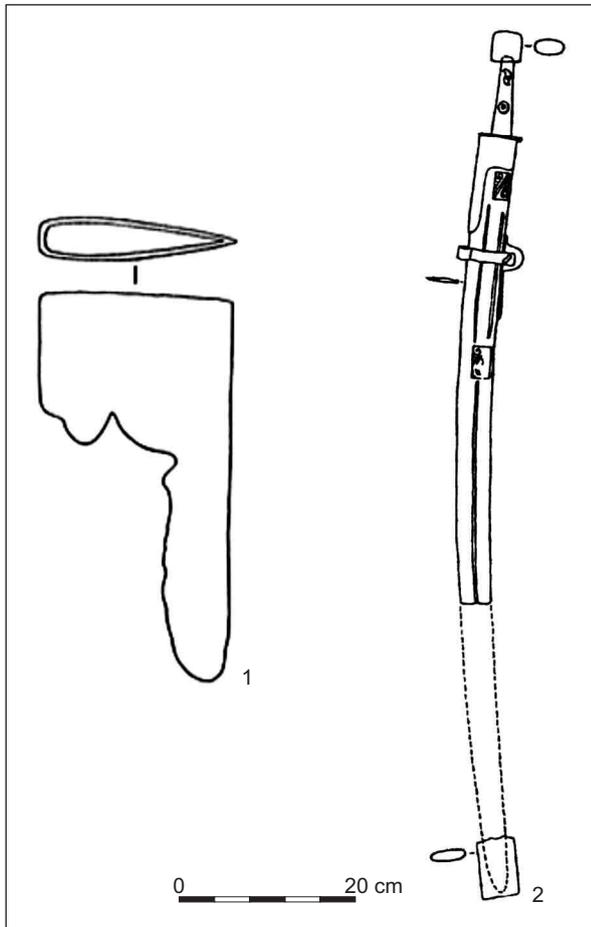


Fig. 18. Cuff-like fittings: 1 – Knyazha Gora, Kiev province (after Кирпичников 1966); 2 – Gorodishte, Hmel'nisk province (after Кирпичников, Коваленко 1993).

Рис. 18. Окучия в форме манжету: 1 – Кня́за Гора, обв. кижовский (wg Кирпичников 1966); 2 – Горо́дище, обв. чмиелниcki (wg Кирпичников, Коваленко 1993).

they possess a comma-like curve, which in turn implies that they were manufactured at one and the same time and maybe in one and the same workshop. “Г”-shaped and figurally hammered is also the soldered plate of the sabre from Nezhin (Fig. 12:7).

Typical feature for dating the sabre from NMH is the way the scabbard is attached to the sabre-straps. The two preserved elliptical hoops fitted with rings for the straps indicate that the scabbard was suspended in horizontal position, slightly inclined towards the waist. At the earliest such hoops, encircling the scabbard, are known from the 1<sup>st</sup> half of the 11<sup>th</sup> c. from the necropolis near Gochevo (Корзухина 1950, 93, III:13). Identical are the hoops from the late nomadic graves, mounds 215 and 216 near Stepantzi (Fig. 14:6) (Плетнева 1973, 49, табл. 1/1, 8), mound 452 near Potok (Fig. 14:7) (*ibidem*, 81, табл. 33:8).

To these parallels we can add the hoops to the scabbard of the sabre from Knyazha Gora (Кирпичников 1966, табл. XXXV:6) and the Gorodishte village, Hmel'nizky province (Fig. 18:2) (Кирпичников, Коваленко 1993, 133, рис. 3:1). The Kolosovka sabres also have similar ellipsoid hoops of the scabbard but with the difference that to them belong arched hoops of a specific type (Пьянков, Цокур 2011, 159, рис. 2:2,4,6; 3:3-5; 4:4-5; 5:4-5).

In the area of Lower Danube, the sabre from the secondary grave in mound XXV owns identical ellipsoid hoops for suspension (Рашев 2007, обр. 5). The detailed comparison indicates that the hoops were made identically of elliptically bent iron plate, through which passed an axle for the sabre straps.

The comparative and morphological analysis of the separate characteristics and on the whole, associates the sabre from NMH with the cold weapons from the 2<sup>nd</sup> half of the 12<sup>th</sup> – 13<sup>th</sup> c., decorated with precious metal (gold or silver). Not surprisingly, the Hypatian Codex mentions the “gold-decorated” sabre of Knyaz Daniil Galitzkiy only for the year of 1252 (Кирпичников 1966, 66, бел. 24). The above introduced direct parallels with slightly curved sabres, having identically shaped soldered plate at the base of the blade, i.e. in the ricasso, point to some eastern manufacturing centres. Their different location – in the south, in the area of the political alliance of the Black Klobuks, and in the north, in the territory of Volga Bulgaria, is due to the extensive trade links of these centers. We assume that the sabre from the Lower Danube lands illustrates the southernmost point of their spread.

### Ornamentation

Differences in performance of the floral trailers presented on both sides of the blade – the different size of the three-leaved palmettes, the absence of symmetry, indicate that the composition was performed freely and not after a pattern (Fig. 2:4-5; 19:1). However, some elements of the pattern – the buds in the twisting tendrils, the specific leaves of the extreme bifoliate palmette and particularly the growing and as if framed by the trailer trifoliate palmettes imply that the artist worked after a model. Quite unexpectedly, the same stylistic manner of performance we see in the decoration of a Chinese vase, where similar three-leaved palmettes with the same dot-shaped ends, growing from a trailer, are depicted in a horizontal band (Fig. 19:2) (Зиливинская, Алексейчук 2003, 3, 310, 320, рис. 17). The fragments of the vase were found in room 5 in



Fig. 19. 1 – graphic reconstruction of the ornament on the sabre from the collection of National Museum of History in Sofia; 2 – pattern on a Chinese vase from the Selitrennoe Gorodishte (after Зиливинская, Алексейчук 2003); 3 – goblet from Raguli, Stavropol province (after Федоров-Давыдов 1976); 4 – wall-painted frieze from St. Sophia church in Kiev (after *The Glory...* 1997); 5 – frieze from St Luka church in Fokida, Greece (after *The Glory...* 1997).

Рис. 19. 1 – графична реконструкція орнаменту на шаблі зі збірок Народового Музею Історії в Софії; 2 – зразок на китайській вазі з Селитренного Городища (wg Зиливинская, Алексейчук 2003); 3 – пuchar z Raguli, kraj stawropolski (wg Федоров-Давыдов 1976); 4 – маловидло ściенне з коścioла św. Зофії в Кijowie (wg *The Glory...* 1997); 5 – fryz z коścioла św. Лyкaша в Фокидзje, Грецja (wg *The Glory...* 1997).

a housing-estate of the Selitrennoe Gorodishte (Sarai Batu), built by the Golden Horde on the left bank of the river Ahtuba. With them were found 16 Chinese coins from the 13<sup>th</sup> c. The explanation of the obvious coincidence of patterns lies in the cultural and historical background in the area of the Lower Volga and North Caucasus, caught in the 13<sup>th</sup>-14<sup>th</sup> c. under the rule of the Golden Horde. In the new urban centers one could find goods both from the west and the east, including Chinese silk, bronze mirrors, porcelain

etc. (Греков, Якубовский 1950, 141-159). Freely settled craftsmen as well as forcibly housed craftsmen including armourers from the conquered territories<sup>14</sup> (Khoresm, China, Crimea) as evidenced in the 13<sup>th</sup> c. by Plano Carpini (Плано Карпини 1911, 36), worked in the workshops to meet the needs of the Tatar cavalry and infantry. The here commented sabre could have been produced in the atmosphere of cultural syncretism of the period 12<sup>th</sup>-13<sup>th</sup> c. A common motif in the art of metalworking repertoire of the Golden Horde in

<sup>14</sup> ...in the lands of the Saracens and the other, in which they are the masters, they take all the best of the craftsmen...The other craftsmen pay them taxes (Плано Карпини 1911, 36).

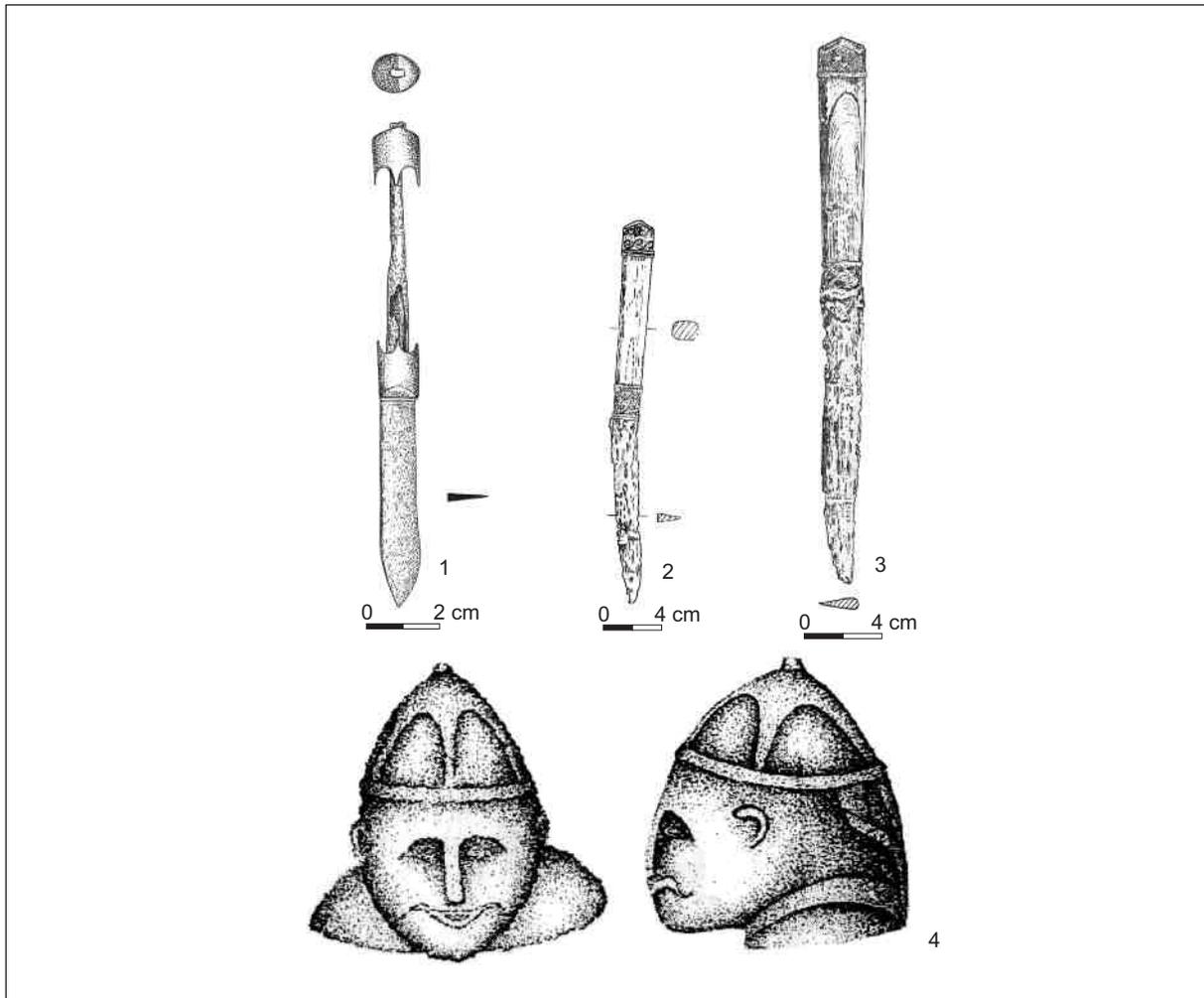


Fig. 20. 1 – knife from the collection of National Museum of History in Sofia (drawing by St. Todorov); 2-3 – knives from Chingulskiy kurgan, Zaporozhnoe village, Zaporozhye province (after *Отрепченко, Рассемакин 1986*); 4 – stone sculpture from Lugan province (after *Красильников, Тельнова 2000*).

Рис. 20. 1 – нóż ze zbiorów Narodowego Muzeum Historii w Sofii (rys. St. Todorov); 2-3 – noże z kurhanu czingulskiego we wsi Zaporozże, obw. zaporożski (wg *Отрепченко, Рассемакин 1986*); 4 – rzeźba kamienna z obwodu lugańskiego (wg *Красильников, Тельнова 2000*).

the 13<sup>th</sup>-14<sup>th</sup> c. is the floral trailer, a motif, which had penetrated there under the influence of eastern models. The gold goblet from Raguli, province of Stavropol, is decorated with a similar trailer from the tendrils of which buds grow out (Fig. 19:3) (*Федоров-Давыдов 1976, 168, № 129, 183*). The same stylistic and technological manner appears here – the trailer is rendered through a sequence of dots. More distant analogues of the motif are found in the trailers decorating the stirrup from Babichi (Fig. 12:9), which speaks for certain standardization of the ornament and for its widespread use. Tendrils, from whose branching stems grow out three-leaved palmettes are known much earlier in Christian ornamentation of the 11<sup>th</sup>-12<sup>th</sup> c. – wall painted friezes in the St. Sophia church in Kiev (Fig. 19:4) (*The Glory... 1997, 272*) as well as in the church St. Luke in Fokida, Greece

(Fig. 19:5) (*ibidem, 20*), however, they have different stylistic characteristics.

In conclusion, we emphasize the circumstance that not the ornament so much but rather the technique of gilding and in particular the material used – steel in that case, suggest that the sabre was made in some eastern atelier with well established traditions in arms production in the North Coastal Black Sea zone. In turn, the archaeometric comparisons point at analogues among the earlier sabres, therefore we can not exclude the occurrence of their production and distribution at the end of the 11<sup>th</sup> – the beginning of the 12<sup>th</sup> c.

### Knife

On analysing the knife, we should immediately note that there is not yet developed typology of this kind of items; therefore its identification is

difficult. The visible difference in comparison with the knives known to date is the too short and wide blade at the expense of the elongated handle (Fig. 20:1). This construction feature however is at the expense of its functionality. The small loop soldered on top the upper protective casing of the knife implies that it most probably used to be suspended from the waist belt. The gold casings are cast and shaped through hammering. The loop is made from a curved metal strip, 0.24 cm wide and with rectangular cross-section.

Regarding the point, symmetrically shaped to the blade, and the specific gold casings of the handle, the knife from NMH has no direct parallels. As the closest analogue we can give two knives found in a grave in the Chingulskiy kurgan near the village of Zamozhnoe, Zaporozhye province (Отрещенко, Рассемакин 1986, 53, 14-36, рис. 12). In the same way, the two ends of their bone handles are decorated with silver-gilt casings, the upper of the two also double-side tapered (Fig. 20:2-3). To the casing of one of the knives, a small suspension loop is soldered. Judging by the special burial structure and the wide array of defensive and offensive weapons, articles of precious metals and clothing accessories, the grave can be associated with any of the Cumans' Khans from the 2<sup>nd</sup> third of the 13<sup>th</sup> c. One too characteristic feature of the knife from NMH is the shape of the opposite concave grooves. They remind the four concave "cuttings" on the helmet of a Cumanian stone sculpture with portrait features from Lugansk area (Fig. 20:4), dated to the 12<sup>th</sup>-13<sup>th</sup> c. (Красильников, Тельнова 2000, 1, 230-231, 242, табл. IX:90). Such similarities in the characteristics of items, different in forms and functions, can hardly be accidental.

### Conclusion

The researchers' assertion that the sabre and the knife were found together, the presence of gold in the decoration of both weapons, their identification with the late nomadic armour from the 2<sup>nd</sup> half of the 12<sup>th</sup> – 13<sup>th</sup> c., allow us to conclude with high probability that they made a set. Moreover, according to the statistics given by A. Evglevskiy and T. Potyomkina, the knives are the most frequently occurring objects in the graves with sabres (Евглевский, Потемкина 2000, 1, 152). The representative nature of the gold-decorated weapons inevitably associates them with a person

who was high in the social hierarchy of the late nomads. Not accidentally, the written sources also cite the gold sword or sabre among the royals insignia. With the exception of some of the discussed features of the knife, the stylistic and morphological analysis of the sabre does not allow definite ethnic identification. Given the ethnopolitical situation to the south of the Danube<sup>15</sup> at the end of the 11<sup>th</sup> – 13<sup>th</sup> c. they could be connected with some of the Cumanian invasions in 1091, 1095, 1114, 1148, 1155, 1159 or 1160, when the Cumans were cunningly used by Byzantium as potential opponents against the Pechenegs (Расовский 1939, 29, 203-211; Павлов 1991, 7-19). The established long lasting Bulgarian-Cumanian military and political alliance after the restoration of the Bulgarian Kingdom between 1186 and 1241 provides another option on the penetration of paramilitary groups of Cumans and even raising to responsible positions of some of the representatives of the Cumanian aristocracy<sup>16</sup> (Павлов 1992, 8-46). It is in these wide time boundaries that we can assign the material traces of their stay in the north-eastern Bulgarian lands, evidenced mostly in the area of the first Bulgarian capitals Pliska and Veliki Preslav – the stone statues near the village of Tzarev brod, the secondary graves in mounds from the Bronze Age at Madara and Pliska, the secondary graves near the Devdashlar (stones erected in orderly fashion) around Pliska (Пашев 2007, 120-130), as well as an inscription most probably reflecting their seasonal presence (Тотев 1985, 168) in areas of natural surrounding similar to that of the North Coastal Black Sea steppe. The sabre we commented above comes from that same area, according to the available information. We can exclude the period of the 40s of the 13<sup>th</sup> to the early 14<sup>th</sup> c. when under the pressure of the Golden Horde, part of the Cumans was pushed westwards, to the Middle Danube area and the lands of the medieval Bulgarian Kingdom (Греков, Якубовский 1950, 65, 66; Павлов 1987, 631-635; 1989, 2, 24-33) or invasion of Tartars (Tartar-Cumans) at the same time (Павлов, Владимиров 2009, 79-114).

*dr Mariela Inkova*  
National Museum of History  
Sofia

Translated by T. Raichevska

<sup>15</sup> Although various objects of arms and armour, decorated with silver, gold-plated or gold elements were discovered in the Lower Danube zone, and that in areas with documented presence of late nomads (the Pliska plain and the adjoining region) there is no reason to assume that the sabre was produced in a local arms centre.

<sup>16</sup> In this context it should be mentioned the concentration of Cumanian toponyms on the left bank of the Danube, on the opposite side of some Bulgarian fortresses (Павлов, Владимиров 2009, 82).

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*Mariela Inkova*

## ŚREDNIOWIECZNA SZABLA I NÓŻ ZE ZBIORÓW NARODOWEGO MUZEUM HISTORII W SOFII

Streszczenie

Artykuł jest próbą określenia proveniencji dwóch zabytków ze zbiorów Narodowego Muzeum Historii w Sofii – szabli i noża, odkrytych w regionie Szumen. Zachowana niemal w całości (brak jedynie kapturka) szabla ma lekko zakrzywioną, przy obu stronach zaostrzonym piórze, głównię, zaopatrzoną w połączoną i zdobioną puncowaniem okładzinę osadzoną przy rombowało rozszerzonym pośrodku jelcu. Na jej głównej zachowały się okucia pochwy. Klinowata główka pugińska zakończona jest trzpieniem, na który nałożono kościaną okładzinę osadzoną przy pomocy dwóch połączonych blaszek, zamontowanych po obu stronach rękojeści. Obserwacje mikroskopowe wykazały, że na jelec szabli i okładzinę nakuto cienki arkusz srebrnej folii, techniką opisaną w XI w. przez Teofila Prezbitera, nacinając uprzednio żelazne powierzchnie. Następnie całość pokryto cienką złotą folią.

Omawiane przedmioty są trudne do jednoznacznej interpretacji chronologiczno-kulturowej. Zbliżone

typologicznie zabytki pochodzą z terenu Europy Wschodniej – Północnego Nadczarnomorza, znad Dolnej Wołgi czy Północnego Kaukazu. Odkryte na analogicznej szabli napisy kufickie wskazują, że broń taka była wytwarzana w warsztatach islamskich w XII i XIII w., głównie na potrzeby Czarnych Kłobuków, a później także Złotej Ordy. Także ornamentyka zaobserwowana na zabytku potwierdza tę hipotezę. Podobne zdobienia jak na szabli z muzeum sofijskiego znajdują się również na okładzinach noża, odkrytego w tzw. Kurhanie Czingulskiego Chana na Zaporozżu (Ukraina). Omawiane przedmioty mogły dostać się zatem na teren Bułgarii zarówno w trakcie XII- i XIII-wiecznych najazdów połowieckich, jak i w wyniku ekspansji tego ludu na tereny naddunajskie pod naporem Złotej Ordy od lat 40. XIII w. po początek XIV stulecia.

Tłumaczył Piotr N. Kotowicz