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LEATHER IN THE EQUIPMENT OF THE EARLY PIAST MONARCHY BODYGUARD

It goes without saying that dukes, princes and other noblemen profited from war expeditions. They not only allowed them to establish their rule over new territories but were a chance to take prisoners of war, herds of cattle, horses, weapons and other valuable loots. This enriched people from power circles, thus building up their prestige, which in turn helped them find new supporters of the organization of the state. An expedition, however, was an expensive undertaking. It required that a ruler should have at his disposal a numerous and well-equipped army. In a state where the authority of the ruler was based on the strength of his bodyguard, the soldiers had to be maintained permanently. According to Ibrahim ibn Jakub's account¹ dating back to the second half of the tenth century, armoured cavalrymen, 3000 strong, constituted the main part of Mieszko's army. The warriors received "lothes, horses, weapons and everything they needed," which probably meant the accommodation and food. In the thirteenth-century version by Kazwini more information can be found: "His troops are paid monthly and they are given horses, saddles, bridles, weapons and any other accessories should they need them".

It may be assumed that the needs were stable in peacetime but they increased rapidly before a planned expedition. The bodyguards' equipment had to be made complete and spare parts provided as they got easily damaged when the soldiers were on the march or fighting. Therefore the state had to have at its disposal a sufficiently rich source of materials needed to equip the army and some efficient well-organized production centers where arms and armour for the warriors

were constantly being made. In the present paper I will deal with these elements of the equipment which required the use of leather. Leather as an organic material which can survive only in very favourable conditions and is hardly ever unearthed during archaeological excavations has never attracted the attention of researchers, who usually discover scarce fragments of military accessories. In order to reconstruct the role played by this material in military equipment, one has to refer to archaeological accounts and iconographic sources, particularly written ones, dealing not only with Polish territory but lands inhabited by other Slavs or peoples, whose useful military habits and ideas the Poles could have copied.

If one wants to discuss military accessories, they have to differentiate between individual equipment and group equipment, where leather was used as either a main or auxiliary material. Let us deal with group one first and begin by quoting Ibrahim ibn Jakub. His account concerns Czech Prague²: In the city of Prague saddles, bridles and not durable shields used in their countries are made". This sentence suggests that the local production of horse harness must have been intensive enough to draw Ibrahim's attention. The products were meant for sale. In Poland this sort of market had not yet developed. However, the author is not interested in the question whether the goods were marketed or not. The subject of the present paper is the products themselves. The fact that saddles and bridles were made of leather seems to be unquestionable as it still remains an indispensable material in the production of horse harness. One can, however, wonder what those "not durable" shields were made of. Arms and armour researchers agree that in the early Middle Ages such weapons were made from organic materials: wood covered in leather.³ To decorate

¹ *Ibrahim ibn Jakub's Account of the Expedition to the Slav Countries translated by Al Bekri*, "Monumenta Poloniae Historica" new series, vol I, ed. T. Kowalski, Kraków 1946, pp. 49-50; G. L a b u d a, *Ibrahim ibn Jakub. Najstarsza relacja o Polsce w nowym wydaniu*, "Rocznik Historyczny", vol. 16, 1947, pp. 134-135.

² *Ibrahim ibn Jakub's ...*, pp. 49-50.

³ A. N a d o l s k i, *Studia nad uzbrojeniem polskim w X, XI i XII w.*, Łódź 1954, p. 76; by the same author, *Historia uzbrojenia w badaniach nad kulturą materialną Polski*

and probably strengthen the shields, pieces of sheet silver or even gold were hammered to them. Sometimes patterns were stamped on the leather covering or the leather was dyed. This practice is referred to in iconographic sources,⁴ which allows the researcher to reconstruct the spherical or almond-like shapes of the tops, which were probably the most popular ones in the tenth and eleventh centuries in Western Europe and in Poland as well. They differed in size to meet the needs of various types of army. The material from which such shields were made can be established on the basis of the fragment of a shield unearthed in a burial of a twelfth-thirteenth century nomad discovered in Korolevino near Tahancha.⁵ The find was made from light, alder wood, covered in leather which was dyed red. Mentions of coloured shields are also found in some local written accounts found in Mistrz Wincenty's chronicle and the Great Poland Chronicle. According to these sources, while fighting with Pomeranian troops during the siege of Białogard, Bolesław III the Wry-Mouthed talked to the people of the town exhausted by the battle: "duo scuta ostentans, unum rubeum alterum album. Quod inquit istorum eligitis? Et illi: Album, quia in se pacis plan-ditur condorem."⁶ Wood could of course be dyed white or red but the find from Tahancha allows us to assume that in the case of more expensive equipment, wooden shields used to be covered in dyed leather or morocco. This technique as well

as some other techniques of making arms and armour were copied by the Slavs from nomadic peoples. This sort of treatment made a wooden construction more resilient and such a shield was not much heavier than an ordinary one.

Russian analogues suggest that a similar technique was employed in the production of quivers, whose wooden insides were covered in leather and ornamented with fittings, pieces of sheet metal reinforcing the construction.⁷ Polish excavations provide evidence that this technique was also employed in the production of sword sheathes, where the wooden stiff inside used to be covered in leather, the basic material determining the quality of the weapon. Such finds come from the archaeological sites in Gdańsk, Opole, Wolin, Wrocław,⁸ where the conditions in the cultural layers were favourable for the preservation of leather objects. Sword sheathes were probably also reinforced and decorated with metal hobnails. A similar function was performed by special fittings, which were also meant to protect the top of the accessory. A sheath of this type was found during excavations conducted on a site situated on the left riverbank in Wrocław. It was 39.5cm long and strengthened with pieces of wood. The wood was covered with an open-work leather covering with a figure of eight pattern.⁹ The sheathe found in Opole was made of sheep leather produced from splits. This strengthening technique was often used in the region. The sheathe did not have any fittings and no ornament, which might mean that various types of equipment were used and its quality was considered a warrior's status symbol.

Horse harness must have been the most important element of cavalry equipment. A horse harness consisted of a saddle, a bridle with head harness a saddle-girth and stirrups attached to a stirrup leather, a back-piece and a peytral, which made the saddle stable and secure. Unfortunate-

średniowiecznej, "Kwartalnik Historii Kultury Materialnej", vol. 19, fasc. 4, 1971, p. 632; for further information cf.: A. Samsonowicz, *Wytwórczość skórzana w Polsce wczesno-feudalnej*, "Studia i Materiały z Historii Kultury Materialnej", vol. LIV, 1982, p. 78, Note 15.

⁴ A warrior depicted on a tenth-century goblet from Włocławek is holding a round shield. Some almond-shaped shields are shown in the scenes from the Płock Evan-gelitarium, dating back to the second half of the eleventh century, on the mid-twelfth-century Gniezno Door and on a goblet from Trzemeszno dated to the fourth quarter of the twelfth century.

⁵ W. Sarnowska, *Wczesnohistoryczny kurhan z Korolewina pod Tahanchą, w pow. kaniowskim*, "Światowit", vol. 20, 1948-1949, p. 249; for information on the burial, dated to the twelfth-thirteenth century and wrongly considered as Slav, see: A. Kirpichnikova, *Drevne-russkoe orużie. Dospech, kpmpleks boevych sredstv IX-XIII v. Archeologija SSSR*, Moskva 1971, pp. 35 and 83.

⁶ *Mistrza Wincentego kronika polska*, "Monumenta Poloniae Historica", ed. A. Bielowski, vol. II, Lwów 1872, p. 330. The same text is to be found in: *Kronika Wielkopolska*, "Monumenta Poloniae Historica" new series, vol. VIII, ed. B. Kürbis, Warszawa 1970, p. 31. The information came from an older mention or coloured shields were used as late as the thirteenth-fourteenth centuries.

⁷ S. A. Izjumova, *K istorii kożevennego i sapožnego remesel Novgoroda Velikogo, Materialyi Issledovanija po Archeologii SSSR*, no. 65, vol. 2, 1959, p. 221, Fig. 12.

⁸ In Gdańsk – A. Nadolski, *Pochwa miecza znaleziona w osadzie miejskiej z XI w. w Gdańsku*, "Wiadomości Archeologiczne", vol. 22, fasc. 2, 1955, pp. 186 seqq.; in Opole – W. Hołubowicz, *Opole w wiekach X-XIII*, Katowice 1956; in Wolin – J. Wojtasik, *Wczesno-średniowieczne wyroby ze skóry znalezione na stanowisku 4 w Wolinie*, "Materiały Zachodnio Pomorskie", vol. 6, 1960, p. 180; in Wrocław – J. Kaźmierczyk, *Wrocław lewobrzeżny we wczesnym średniowieczu*, parts I-II, Wrocław 1966-1970, p. 231.

⁹ J. Kaźmierczyk, *Wrocław lewobrzeżny ...*, part II, p. 231.

ly, only scarce fragments of horse harness leather parts can be found during archaeological excavations conducted on medieval sites. Remnants of a saddle-bow with sheets of rotten leather discovered in the burial ground in Lutomiersk¹⁰ and the front of an eleventh-twelfth-century saddle from Gützkow near Gryfice¹¹ can serve as examples here. Another saddle, with high saddle-bows can be seen in the bronze figure found in Wolin.¹² However, the technique of its production remains unknown. If one takes into consideration the account by Ibrahim mentioned above as well as the number of metal stirrups discovered on Polish territory, it may be assumed that the production of horse harness in the period in question must have been quite well developed. Of course bridles with head harness, saddle-girths and stirrup-leathers could be made from hemp ropes as well. However, leather was a much more appropriate material. It was strong and durable enough to be used in fighting. It can, therefore, be assumed that fragments of leather straps varying in size discovered during excavations could have been parts of horse harness or parts of wagon harness, indispensable while transporting the military equipment which did not belong to individual warriors but the army as a whole.

The jackets reinforced with small metal plates found in Czersk and Siedlatków¹³ were personal leather accessories. Various techniques may have been employed in their production. The plates could be riveted to the inside of a jacket and the heads of the rivets were decorative elements visible on the outside. This technique was in widespread use in Europe as early as the fourteenth century.¹⁴ The plates could sometimes be attached

to the outside of the jacket and this sort of body protection, reinforced with metal covering, was called scale armour. In this case not leather but strong cloth could be used. It seems, however, that in contemporary Poland, leather was a more popular material as it could be tanned in such a way as to be a satisfactory protection even if no metal plates were attached to the garment. In order to strengthen the jacket leather straps similar to those known in ancient Rome¹⁵ could be used. Armour of this type was called "brunea" or "brunia" in Latin, "broigne" in French, "brünne" in German and "brynja" in Old Norse. The Slavonic word "broń" is derived from the same source. Interesting information coming from the "Glossarium latino-theodiscum", dating from the tenth century, can be found next to this entry in Du Cange's dictionary. According to it, the word "brunia" is synonymous with the words "lorica" and "thorax." According to Varron, the first synonym meant a suit of armour, which was originally made only of leather. The leather was specially hardened and the term was derived from the word "lorum," meaning leather or a leather strap. With the passage of time, the accessory began to be covered with metal plates and armour of this type was then called "lorica squamis" or "lorica conserta." The Latin name for the suit of armour "coratium," found in thirteenth-century written sources, the originally French word "cuirasse" as well as the Italian term "corazza" seem to point to this function of leather.¹⁶ Another kind of armour mentioned in Polish early medieval sources was the coat of mail, which was also called "brunia" or "broigne treslie."¹⁷ It can be assumed that it was also worn over a leather jacket protecting the warrior's body against the metal rings of his coat of mail. Such a jacket must have had sleeves, but its length might have varied from warrior to warrior. The side edges were not sewn but tied, which facilitated the warrior's movements.¹⁸

¹⁰ K. J a ż d ź e w s k i, *Cmentarzysko wczesnośredniowieczne w Lutomiersku pod Łodzią w świetle badań z 1949 r.*, "Materiały Wczesnośredniowieczne", vol. I, 1951, pp. 148-149.

¹¹ J. K o s t r z e w s k i, *Kilka uwag o siedłach wczesnośredniowiecznych i współczesnych ludowych*, "Slavia occidentalis", vol. 20, 1960, p. 59.

¹² The illustration is to be found in *Mały słownik kultury dawnych Słowian*, ed. L. Leciejewicz, Warszawa 1972, table XXVIII.

¹³ For information on the armour found in Czersk see: T. K i e r s n o w s k a, *Czersk w XIII i XIV wieku. Ośrodek władzy książęcej na południowym Mazowszu*, Warszawa 1986, pp. 225-226; for information on the find from Siedlatków see: A. N a d o l s k i, *Hełm i fragmenty zbroi z Siedlatkowa*, "Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi", seria archeologiczna, vol. 15, 1968, pp. 80-93.

¹⁴ For further information see: A. S a m s o n o w i c z, *Wytwórczość skórzana ...*, p. 85, Note 27.

¹⁵ A. S a m s o n o w i c z, *Wytwórczość skórzana ...*, p. 85, Note 27.

¹⁶ F. B u t t i n, *Aus dem Glossaire des Werkes von F. Buttin* "Du costume militaire au moyen age et pendant la renaissance" verdeutsch von A. V. R e i t z e n s t e i n, *Waffen und Kostümkunde, Zeitschrift für historische Waffen und Kostümkunde*, vol. 16, fasc. 1, 1974, p. 48.

¹⁷ For information on the fragments of chain mail found in Polish lands see: A. N a d o l s k i, *Studia nad uzbrojeniem ...*, p. 77; Z. S t e f a ń s k a, *Pancerze w Polsce średniowiecznej*, "Muzealnictwo Wojskowe", vol. 2, 1964, pp. 73 seqq.; F. B u t t i n, see above, p. 47.

¹⁸ A sleeve-shaped leather fragment with remnants of sewing was discovered in Kruszwica in the vicinity of Mysia Wieża (Tower of the Mice), which seems to support this assumption.

Unfortunately, we have hardly any evidence that leather was used to make the collars of helmets protecting the warrior's neck. Remnants of such a tenth-century leather collar were probably found next to a helmet unearthed in Mokre, (Volyn).¹⁹ The leather was riveted to the metal. It may be assumed that like Germanic peoples, the Slavs used only helmets made of hardened leather. The Germanic warriors²⁰ depicted on Trajan's column in Rome are wearing helmets of this type. This assumption is supported by a small number of metal helmets found on Polish territory though it cannot be considered as strong *ex silentio*.

Undoubtedly, every warrior needed shoes, which must have been made of specially hardened leather. Such shoes had to be resistant to long marches. It may be assumed that especially foot soldiers were equipped with two pairs of shoes in the case of a war expedition. Some wealthier knights may have also worn greaves protecting their legs against blows.

Leather was also an indispensable material in the production of sacks, which varied in size and were used for storing water, forage for the horses and spare pieces of clothing. They could also serve as buoys needed to cross rivers. Such pontoons were very light and easy to carry.

Sheets of leather used to protect wagons against humidity were also part of troops' military equipment during war expeditions. Such protections were very important when an army had to cross a river or marshland. They were in use in Charlemagne's²¹ state and must have been known on Polish territories as well. Because of the qualities of well-tanned leather, namely its resistance to water, this material was used in the production of such protective tents, which came in handy not only in wartime but during the ruler's peacetime expeditions too. The Piasts had at their disposal a team of men whose task was to put up poles to be covered with sheets of leather. Leather was also used for covering various siege devices. This method was employed by the Avars and the Slavs during the siege of Constantinople in 626, which is mentioned in The Easter Chronicle;²² "Khan ordered his stone-throwing machines arranged

closely and covered with sheets of leather." This was to make it impossible for the enemy to set them on fire. After the unsuccessful siege and before the army's retreat, Khan had "all the leather coverings removed and all the palisades, towers and siege sheds burnt." His decision would suggest that such sheets of leather could be used several times as leather was a valuable material for both nomadic peoples and the Slavs. In the history of Justinian's rule written by Agathangos of Myrina,²³ the following description of a shed used by the attackers in a siege can be found: "a shed is a sort of wicker wattle shaped like a roof. It is tightly fitted, dense and therefore unbreakable. The structure is surrounded by logs protruding on both sides from top to bottom. They cover its top and sides with furs and sheets of leather in order to make it more resilient and resistant to projectiles." The Life of Saint Demetrios contains information about the same technique employed by Slavs, who protected their boats during their pirate expeditions to the towns lying on the coast of the Aegean Sea in the seventh-eighth centuries. According to Anna Komnena's²⁴ account of a fight of 1081 between Robert Giscard and Paleolog, the Byzantine troops used sheets of leather as protections. On his arrival in Dyrrachium, Robert met up with his enemy and "ordered wooden towers covered in leather to be built on the larger ships immediately." However, when the storm began, the sheets of leather spread over the towers loosened in the humid air, the nails fell off and the heavy leather sheets overturned the wooden towers, which in turn overturned the ships." Gall's²⁵ account of the siege of Naklo laid by Boleslaw III the Wry-mouthed found in his chronicle provides information about the use of different siege devices in Polish lands. It may be assumed that in this case, the siege towers were

²³ B. Miśkiewicz, *Machiny wojenne i przyrządy oblężnicze polskiego wojska wczesnośredniowiecznego*, "Kwartalnik Historii Kultury Materialnej", vol. 5, fasc. 3-4, 1957, p. 479.

²⁴ For further information coming from The Life of Dimitrios see: G. Labuda, *Słowiańszczyzna pierwotna. Wybór tekstów. Materiały źródłowe do historii Polski epoki feudalnej*, vol. I, Warszawa 1954, p. 294; Anna Komnena, *Aleksajda*, ed. O. Jurewicz, Wrocław 1969-1972, p. 98.

²⁵ For information on the use of siege machines see: *Galli Anonymi Cronica et gesta ducum sive principum Polonorum*, ed. K. Maleczyński, "Monumenta Poloniae Historica" new series, vol. II, Kraków 1952, p. 163; for further information see: B. Miśkiewicz, *Machiny wojenne ...*, pp. 463-486.

¹⁹ A. Nadolski, *Studia nad uzbrojeniem ...*, p. 77.

²⁰ G. A. Bravov, J. Trupke, *100 000 Jahre Leder. Eine Monographie*, Basel-Stuttgart 1970, p. 195.

²¹ *Capitulare de villis*, ed. S. Arnold, Warszawa 1923, p. 17.

²² M. Plezia, *Greckie i łacińskie źródła do najstarszych dziejów Słowian, cz. I: do VIII w.*, Poznań-Kraków 1952, pp. 120-122.

also covered in leather because of the material's qualities.

This discussion of the above set of leather military accessories leads to the conclusion that the Piasts' state, which was just coming into existence at that time, had to have at its disposal large quantities of leather and some well-organized production centers. For the country, the production of leather must have been as important as the extraction of iron ores and the production of arms and armour. Evidence of the existence of tasks imposed on villages by the ruler and connected with keeping animals and the production of arms and armour requiring the use of leather is to be found in written sources and local village names. Researches into the production of leather accessories have revealed that pig-leather was hardly ever used, because its loose texture required a tanning technology unknown in Polish lands at that time. Cattle, horse and, to a certain extent, sheep and goat leather could be used for making military equipment. Contemporary tanners could produce leather varying in quality. Some accessories were made of thick, resilient leather which was resistant to blows and water, others required an elastic, soft and easy-to-shape material.

In order to estimate the demand for the material used for the production of the duke's bodyguards' equipment, one should, above all, find out about the size of raw leather sheets obtained from the animal skins mentioned above and deduct 15 percent – the waste left after the tanning process. These calculations allow the researcher

| | | | |
|---------------|----------------|--------------|---------------------|
| horned cattle | mature animals | average size | 146 dm ² |
| horses | mature animals | average size | 217 dm ² |
| sheep | mature animals | average size | 35 dm ² |
| goats | mature animals | average size | 45 dm ² |

to assume that the sizes of tanned leather sheets were as follows:

The next step was to estimate the sizes of the leather sheets used for producing the basic military accessories of an army. In order to avoid mistakes and make the data reliable, the author did not take into consideration the leather accessories which belonged to the group equipment but only the objects needed by individual warriors. Mieszko might have had at his disposal 3000 armed men. The kinds of leather best suitable for the production of a given accessory and the cut-

ting process during which the smaller quantity of waste was produced were used in the calculations. According to J. Kaźmierczyk²⁶ and his consultants, the amount of waste can be estimated at 2-4 percent. The results are shown in the table below. One has to take into consideration the fact that different parts of such equipment were worn away at different rates and that the number of different accessories used over a span of thirty years varied considerably. Therefore during Mieszko's rule, about 23 million dm² of leather, that is to say, about 157.000 cattle skins or about 106.000 horse skins must have been used to equip his warriors. Thus the minimum yearly demand for the material reached 760.000 dm² of leather, about 5.200 cows or 3.500 horses.

| use | size number of square decimetres | most suitable kinds of leather | | |
|--|----------------------------------|--------------------------------|--------------|----------------|
| | | cattle | sheep | horse |
| shoes | 35-40 | X | - | - |
| belts | 5-6 | X | - | - |
| sword sheathes | 6-18 | X | X | X |
| dagger and knife scabbards | 1-3 | X | - | - |
| jackets worn under armour or leather jackets | | | | |
| parts reinforcing armour | 60-200 | X | X | X |
| helmet collars | 50-60 | X | X | X |
| horse harness | 200-210 | X | - | -X |
| shields | 80-105 | X | - | X |
| quivers | 15-17 | X | - | X |
| forage bags | 60-70 | X | X | X |
| water bags | 60-70 | X | X | X |
| total | 572-799 | 4-5 | 14-20 | 2.5-3.5 |
| | | skins | skins | skins |
| | average number: 685 | | | |

The sizes of leather sheets used for making cavalry equipment:

What was the country's economic capability to store leather material? Written sources suggest that keeping cattle played an important role in the economy of various groups of Slavs. In the peri-

²⁶ J. Kaźmierczyk, *Wrocław lewobrzeżny* ..., part II, p. 255.

od of their expeditions and territorial expansion, herds of cattle were constantly looted. They were highly valued as they could satisfy all sorts of needs. Cattle was a source of meat, dairy products, skins. Cows also served as legal tender²⁷ and they constituted a sort of investment. Having a large number of cattle herds was considered a status symbol and played an important role in the development of the financial and social structure of the country.

In addition, cattle was also a common sort of tribute paid by the defeated.²⁸ In the tribe period war spoils, valuable objects, were often divided among the commander and the elders. Some of them were also won by warriors of initiative. The cattle herds looted or taken as tribute, however, constituted the treasure of the tribe, which as a result of the growth and consolidation of the state, became the duke's treasure. Tribe tribute, which had originated in the tribe period and was characteristic of the Polish lands, was another source of cattle. A cow and an ox were to be provided yearly by each tribe community.²⁹ Al-

though, the first mention of this type of tribute dates from the thirteenth century, K. Buczek³⁰ pointed out the archaic character of this obligation. H. Łowmiański³¹ suggested that each tribe community was, on average, about 1000-2000 strong. If we assume that at the close of Mieszko's reign, about 700.000 people and about 400 tribe communities lived in his state, the ruler may have received about 800 cows as tribute. In my opinion, 800 skins equaled about 120.000 dm² of leather. To equip his cavalrymen with very basic equipment, the duke needed six times as much leather as obtained from tribute. In addition, with the passage of time, the number of troops grew and the needs increased as a result of the state's territorial expansion. Under the circumstances, the ruler had to introduce a system of duties, which had been in use since the time of Charlemagne and was known in both Germany and Bohemia. The system consisted in assigning various duties to particular villages. The names of the villages still reflect their assignments. The author of the present article is interested in those connected with keeping animals and the production of leather equipment. The names of the places reflecting the tasks of their inhabitants are as follows: Kobylniki (iumentari), Skotniki (pecorarii), Owczary (pastores ovium), Koniary (agazones or custodies equorum), Koniuchy (co-nuchones), Oborniki and finally Karmniki. If one juxtaposes the local names connected with the animals in question, that is to say, those being the source of leather (the village name Świniary is not included here), with the map by K. Modzelewski³², they can assume that in 29 hamlets out of 62, horses were kept and looked after, 18 hamlets were responsible for keeping large cattle and 2 villages had to breed sheep. Of course, with the passage of time, the names may have been modified and changed, but the above juxtaposition leads to the conclusion that the state was, above all, interested in breeding horses, which were indispensable for the army and could satisfy the court's transport needs. The villages responsible for keeping large horned cattle played an important role in the state's economy as well. It should be pointed out that

and 221-229; J. Widajewicz, *Danina stołu książęcego w Polsce Piastowskiej*, Lwów 1926, p. 72 (this publication contains the collected source mentions about tribute in cattle form).

³¹ H. Łowmiański, *Problematyka początków państwa polskiego w nowszych badaniach historycznych*, "Slavia Antiqua", vol. 23, p. 97.

³² K. Modzelewski, *Organizacja gospodarcza państwa piastowskiego (X-XII wiek)*, Wrocław 1975.

²⁷ The anonymous work Muchtasar al-agáh wal-dharāib, which, according to T. Lewicki (*Średniowieczne źródła arabskie i perskie o hodowli zwierząt domowych u Słowian*, "Kwartalnik Historii Kultury Materialnej", vol. 2, fasc. 3, 1954, p. 451) was a rewritten copy of the lost work by al-Masūdy, who died in 956, contains information about the Bulgarians inhabiting the lands near the Danube River, who "knew neither gold nor silver coins. All costs connected with deals and marriage contracts were paid by means of cows and sheep." Similar information about the Croats in Dalmatia is to be found in written sources, see: L. N i e d e r l e, *Slovanské starožitnosti, Oddíl kulturní: Život starých Slovanu*, 1925, p. 464.

²⁸ For information on the cattle loots taken by the Pomeranian duke Warcisław see: *Herbord, Herbordi dialogues de vita Ottonis Episcopi Babenbergensis*, "Moumenta Poloniae Historica" new series, vol. VII, fasc. 3, ed. J. Wikarjak, Kraków 1974, p. 150; and the so-called registers of Wrocław of 1238 (*Codex Diplomaticus Masovie Generalis*, ed. J. K. Kochanowski, Warszawa 1919, vol. I, no. 379) and of Wrocław of 1271 (*Urkundenbuch zur Geschichte des Bisthums Breslau in Mittelalter*, Wrocław 1845, no. 36). Tribute, among others, in cattle form is mentioned in Otto III's document of 991. The emperor gave the bishop of Magdeburg 1/3 of the tribute paid by Bohemia "sive in auro seu argento vel pecoribus aut in alliquibus rebus" – *Codex Diplomaticus ... Regni Bohemiae*, ed. G. Friedrich, vol. I, Prague 1904, no. 36).

²⁹ Mentions of this type of tribute are to be found as late as the thirteenth century in, for example, Vladislav Odonic's document of 1213, which exempted the monastery in Łekno "a bove et vacca quod opolne dicitur" – *Codex Diplomaticus Poloniae Majoris*, ed. T. Zakrzewski, F. Piekoński, vol. I, 1877, no. 79.

³⁰ K. B u c z e k, *Organizacja oplona w Polsce średniowiecznej*, "Studia Historyczne", vol. 13, fasc. 2, pp. 205-248

unlike horses, cows were used as tribe tribute. As a result more cows had to be bred to provide the valuable leather material too. In my opinion,³³ the number of cows kept in the eighteen villages serving the duke can be estimated at about 1600. They could provide at least 230.000 dm² of leather. However, the rational economy of the state required that only a part of a herd could be slaughtered. If at least 760.000 dm² of leather were needed for military purposes and about 120.000 dm² came from the tribe communities, the duke's farms had to produce about 640.000 dm² at the minimum in order to equip the warriors properly. This meant that about 4400 cows had to be at the dukes disposal yearly. Therefore it can be assumed that the 18 villages serving the duke in the tenth century and mentioned in written sources were not the only ones of this type.

Analysis of the distribution of the breeding villages seems to suggest that villages producing parts of leather equipment, such as Szczytniki, Żerniki, Szewce, Szłomniki,³⁴ were often situated in their vicinity. Czech written sources³⁵ provide evidence of the fact that saddles and horse harness were produced by village communities. No local names suggesting this type of assignment can be found in Polish written sources, which might lead to the conclusion that this sort of production was gradually taken over by the town and its vicinity. This assumption seems to be supported by the fact that a village named Szłomniki or Szłomniki was mentioned only once. This change reflected some more general changes in the social, economic, as well as military structure of Poland and her armed forces. The number of

people inhabiting the villages called Szewce suggests that they were supposed to sew not only shoes (the word *szwiec-szewc* means a shoemaker in Polish) but also leather jackets reinforced with metal plates or worn under the coat of mail. The author, however, has no information about the existence of villages making sword sheathes, dagger scabbards, quivers, belts and other leather straps as there are no local names suggesting this type of assignment. Maybe such objects were produced by shield makers (*szczytnicy*) or saddle makers, who could also work wood as it should be remembered that leather products frequently contained wooden parts.

The above source evidence and the results of my painstaking analysis and estimations of the demand for leather, used to make leather accessories for Mieszko's armoured cavalry, lead to the following conclusions. As the fundamental role played by the bodyguard unit maintained by the duke in the process of state consolidation cannot be questioned, the importance of the leather material, indispensable in the production of the warriors' equipment, cannot be overestimated. Therefore leather seems to have made a very significant contribution to the creation of the Polish state and had some stimulative effect on the economy and various social processes. The demand for leather discussed above encouraged cattle and horse breeding as well as the specialized production of leather accessories, which, in turn, resulted in the organization of villages serving the duke. The accessory makers living in such villages learned all kinds of craft. They frequently moved to the outlying parts of the city either because the ruler wanted them live there or because they were ready to take chances themselves. Thus the production of leather played an important role in the urbanization process.

Translated by Zuzanna Poklewska-Parra

³³ A. S a m s o n o w i c z, *Wytwórczość skórzana ...*, p. 147-153.

³⁴ For further information on the production of leather accessories in villages serving the duke, their location and their probable duties, see above pp. 154-165.

³⁵ For example, while founding the archcollegiate church in Stara Bolesláv in 1047, Bretislav I added a shield maker "qui debet sex scuta dare" yearly (?). (*Codex Dipolomaticus Bohemiae*, vol. II, no. 382). Czech sources also contain information about the village production of saddles and helmets, see: M. K u č e r a, *K problému včasnostradovej služebnoj organizacie na Slovensku*, "Historicky Časopis", vol. 12, part 4, 1964, p. 372; B. K r z e m i ň s k a, D. T ř e š t i k, *Služebna organizace v rane středovekyh Čechach*, "Československy Časopis Historicky", vol. 12, 1964, pp. 653 seqq.

