

## Különféle lövési módszerek és az íjászat megjelenése Szent László legendájában a magyar középkorban

### Various shooting methods and the representations of archers in the legend of Saint Ladislaus in Medieval Hungary

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#### **Abstract:**

The thesis is about the Medieval Hungarian archery and techniques of shooting. In the first chapter the author describes the different ways of shooting with the bow. The biggest part of the thesis is the description and the examination of the mural paintings of the legend of Saint Ladislaus (László). In this part the author presents not just the ways of shooting, but the use of the quiver, the bow case and the saber. This part is not just a theoretical examination, but also the presentation of experimental archaeological results.

**Keywords:** bow, arrow, quiver, bow case, saber, shooting methods, Saint László-legend, experimental archeology

**Kulcsszavak:** íj, nyíl, íjtegez, nyíltegez, szablya, lövéstechnika, Szent László-legend, kísérleti régészet

A great deal of good studies and books have already been written on the history of bows, on the vital part archers used to play in battles and on the techniques of making bows but we can read about the various shooting techniques in quite a few works.(1)

Various techniques have been developed in different historical periods and areas. Though it cannot be excluded that belonging to a tribe or having a specific cultural background did have influential power on given shooting techniques (especially on their “survival” and formation into a set of rules), the practical aims are the most obvious determining forces in the formation of various shooting techniques.(2)

The form, size and the strength of the bow, the application of it on horseback or on foot, the technique of hanging the quiver, the tactics or the size of the games to be shot are all shaping factors in case of the various shooting techniques. These factors all had once exerted influence on the formation of the various shooting techniques.

The aims of this paper are the presentation of various shooting techniques, the

analysis of the representations of archers in the Saint-László legend from this vantage point, and checking some shooting techniques in practice with the help of experimental archeology. (3)

The foot archer can hold the bow in his left hand either vertically, obliquely or horizontally. (4)

Holding the bow horizontally is fruitful only in the case of rather weak bows of smaller size since the bow can be stretched only to the length of the arm. Thus an archer cannot make use of the power of the bow and the length of the arrow in the case of bigger and stronger bows (if it is longer than the archer's arm) A unit in battle position can constitute a much closer team holding their bows vertically, whereas the battle position is quite loose if the archers hold their bows horizontally. If the archers would stand on the top of the castle wall with their bows horizontally they could line up quite sparsely. The archers would disturb each other when turning right or left if they held the bows horizontally.

The people from the steppe and the European fighters of the Middle Ages did not hold their bows horizontally. On the pictures, they can only be seen holding their bows either obliquely or vertically.(5)

Equestrian archers did not hold their bows horizontally since it is impossible to shoot to the side- or backwards from a horseback and even for shooting ahead a rather small bow is needed. However, with a bow held almost vertically or obliquely shooting ahead, to the side (to the left) and backwards are all possible.(6)

On various representations, we can observe warriors from the steppe holding their bows in such a way but the equestrian archers at Ópusztaszer (Attila Cseppentő's team) and at Galgahévíz (Zoltán Balla's team) shoot this way even nowadays. (7)

After grasping the bow with his left hand, the soldier stretches it with his right hand. The arrow, on the other hand, can get to the left or right side of the bow. In the first case, the arrow props on the index finger of the left hand or the area between the thumb and the index finger. If the arrow gets to the right of the bow, it props on the thumb of the left hand. This kind of shooting spread among the people living on the steppes. It is detectable from the representations, even the wording mirrors this fact since all the Mongolians, the (Manjus?) and people from Tibet derive the expressions of shooting with bow and placing the arrow on the string from the word 'thumb'. (8)

The soldier stretches the bow string with his right hand. Several ways of holding the string exist and the practical aspects are the determining factors. Still, this is probably the most characteristic feature of an area or culture in the act of shooting.

In case of the primary string-hold, the thumb and the index finger of the right hand hold the end of the arrow and stretch the string this way. However, this technique is feasible only with weak bows since a strong bow cannot be stretched with just two fingers.(9) Most children instinctively hold the bow this way and shoot from the right direction. (Unfortunately, at most archery-courses only the Anglo-Saxon or classical string-hold is taught without mentioning the Eastern methods. It is to be noted that both or rather all three methods are appropriate for shooting, the choice is a question of routine or ingrained habit . If we use a quiver, shooting in the Eastern way is a bit faster.) Since it is not possible to shoot at games to great distance this way, neither the people living on the steppes nor the Europeans in the Middle Ages shot this way.

In case of the secondary or classical (or Anglo-Saxon according to some authors) string-hold the index-, middle-, and ring fingers of the right hand stretch the string. (10)

We know two variants of the Asian type or tertiary string-hold. In case of the Mongolian string-hold, the thumb, index, and partly the middle fingers stretch the string and fix the arrow. The thumb is under the arrow. Since a strong bow heavily presses the thumb, the archers often wear a special ring made of either bone, horn or rarely metal on their right thumbs to stretch the string.(11)

Applying the Central Asian variant, the index finger and the thumb of the right hand hold the arrow and the rest of the fingers stretch the bow string. The advantage of this kind of hold is that the arrow is held as well and (ez mire vonatkozik?) cannot slip on the string. In the moment of the shot (i.e. the solution) this way the fingers let off the string and the arrow all at once.

This technique is applied most of the time on the basis of the discernible representations about Hungarian archers or pictures from Hungary from the Middle Ages. (12) Quite rarely in the case of Asian-type-string hold (if the archer holds the bow in a wrong way) the string hits the left forearm. Thus, there is no need for protecting the forearm.

The archer can bend (string) the arrow over the face, chest or ears. This latter one can make the best use of the length of the arrow and the string but it is not possible to aim accurately except at great objects. This technique was mostly used by the English archers to stop the enemy's equestrian units under barrage fire. (13) Bending over the chest can't make the aiming accurate, either, moreover, in case of greater bows it is not possible to make the best use of the entire size of the bow and the arrow.(14)

The bending over the face can mean over the chin, the yoke bone or the edge of the mouth. The important thing for the archer is to bend the bow string to the same place all the time.(15)

It is also important that the archer uses a bow and arrows appropriate for his strength and the length of his arm. A weaker archer cannot use a too strong bow well, neither can an archer of smaller built with short arm –even if he can bend it - use a great bow and a long arrow maximally. Accurate aiming depends on the strength of the archer, the length of the bend and the routine.

The aiming is one of the most important momentums of the shot. For the accurate aiming, good eye, thorough knowledge of the bow and great routine are needed. It is not by accident that it was written about the conquering Hungarians that “ They teach their children and servants to shoot with great diligence.” and as a result “ they kill several thousands with their arrows which they release from their horn-bows so skilfully that it is hardly possible to defend oneself against their shots.” (16)

The experienced archer usually aims while bending the bow but aiming for a longer time is not a mistake, either. In case of equestrian archers, however, the fastest possible aiming is necessary. If the archer's hand shifts a bit while aiming or gets tired, it is worth lowering the bow and repeating the sequence of motions, i.e. the whole process of the shot.

Aiming in battles or during huntings needs great routine, since the distance constantly changes, not all arrows are exactly identical, moreover, the equestrian archer gallops while shooting. Interestingly enough, Katalin U. Kóhalmi has pointed out that the people from the steppe use both their eyes while aiming with their bows not like those with guns.(17) The distance is usually 35-70 m. Since the hurling weapons cannot hurt the archers from 35 m

and more, this distance is a reasonable for the archers.

The series of pictures of the Saint Ladislaus-legend is the only independent iconographic representation of Hungarian wall-pictures.(18) It is also notable that King Saint Ladislaus is among the most highly praised kings of Hungarian sagas and legends of the Middle Ages.(19) The respect for him is unique not only for the reason that he served as an ideal of the age of the chivalry for centuries - the model of the good ruler - but because he had a cult not only in royal centres but most of the legends, tales, ballads and sagas on kings and saints are connected to him as well among the ordinary people. A lot of kings from the House of Arpad and of foreign origin had themselves buried next to him. It is a notable fact that the Saint Ladislaus-saga and the great majority of the frescoes related to it were found along the Hungarian (border??), though this is still a controversial issue among researchers.(20)

Owing to Zsuzsa Lukács' thorough work, we know of 38 complete, fragmentary, partly or entirely destroyed and assumed (by oral tradition or memory) wall paintings.(21) Though sometimes the details cannot be observed due to the deteriorated condition of the frescoes, they are still excellent sources from the point of view of clothing, weapon history and tactics. I have analysed the shooting techniques on 31 wall paintings. The following aspects were important: the number of the archers, the shooting technique of the Hungarians and the Cumans, the place of hanging the quiver and the sabre and the hit targets.

## 1.

### 2. Archers in the Hungarian and Cuman armies

Bögöz		2 archers—3 flying arrows (with barbed head)
Gelence		The Cuman warrior alone—5 flying arrows (3 into the king's shield, 1 into his helmet)
Maksa	2 Hungarian equestrian archers: with helmet and quiver 1 arrow into the Cuman's side	4 Cuman archers+warrior—1 arrow hits the eyehole of the helmet
Erdőfüle	1 archer and 1 with spear but also with a quiver	1 archer+a warrior—4 flying arrows (1 into the crown, 2 into the shield)
Homoródszentmárton		2 archers+ warrior
Sepsikilyén	1 with quiver , but he might be a Cuman (?)	3 archers+ warrior
Sepsibesenyő		2 archers+ warrior —10 flying arrows ( 3 into the glory) warrior —2 flying arrows (1 into the shield, 1 into the glory)
Bibarcfalva	3 equestrian archers(?) 4 foot soldiers with quivers	the warrior
Székelyderzs		the warrior—3 flying arrows ( 1 into the neck of the armour, 1 into the eye, 1 into the crown)
Csíkszentmihály	no details	no details
Székelydália		the warrior
Kakaslomnic	—flying arrows towards the mouth of the Cuman	the warrior – flying arrows (into the shield)
Zsegra	1 equestrian archer—lots of flying arrows	4 archers+ warrior lots of flying arrows
Vitfalva		warrior
Svábfalva		warrior

Necpál		
Liptószentandrás	—1 flying arrow	
Szepesmindszent		at a Cuman warrior
Pónik	3 archers on horseback— lots of flying arrows	3 archers lots of flying arrows
Kassa		only an arrow on the warrior's side—repainted picture
Karaszgó		1 archer is visible, but there are three more with stretched arms!
Rimabánya		warrior and 3 with stretched arms
Gömörhákos		warrior 2 archers and 1 interior with quiver but without arrow
Tereske		warrior
Ócsa		
Gutor		the warrior
Szentmihályfalva		4 archers—1 flying arrow
Felsőlövő		
Bántornya	with quiver, 5 equestrian archers—lots of flying arrows 2 foot archers	warrior 3 archers— lots of flying arrows
Türje	2 equestrian archers —1 flying arrow	3 equestrian archers— lots of flying arrows
Szacsva		the Cuman warrior
Summary	18 equestrian archers—6 with quiver as well 5 foot soldiers —3 with quiver —2 cannot be seen for being covered by others —flying arrows in 6 cases —the archer cannot be seen in 2 cases	56 archers on horseback and 7 with stretched arms  flying arrows in 12 cases hits—into the glory — into the crown — into the helmet-face —a into the eyehole of the helmet — into the neck of the shield — into the shield (into the head in 4 cases!)

### Techniques of shooting

Bögöz the end of XIII. century	below the chin+ Central-Asian string-hold —barbed arrowhead
Gelence the beginning of XIV. century	The warrior is stringing the bow at the back of his head> not a real representation - barbed arrowhead
Maksa XIII-XIV.	The warrior is left-handed and stringing the bow over his ear + another warrior is also stringing the bow over his ear + Central-Asian string-hold
Erdőfüle XIV>XIII.	The warrior is shooting with his left hand, stringing the bow over his chest +Anglo-Saxon string-hold +is not standing obliquely—rhombus arrowhead
Homoródszentmárton XV.	The right-handed warrior is stringing the bow at the back of his head? Barbed arrowhead
Sepsikilyén XIV.	The warrior is stringing the bow below his chin —elongated willow-leaf
Sepsibesenyő XIV-XV. - “ - XV.	The warrior is stringing the bow at the back of his head> not a real representation over his chest, not standing obliquely —huge rhombus
Bibarcfalva the beginning of the XV.c.	All are stringing the bows over their faces – in case of the Hungarian foot soldiers Central-Asian string-hold
Székelyderzs XV.	cannot be seen elongated arrowheads
Csík-szenmihály XV.	no details
Székelydályá XIII.	over his chest— Central-Asian string-hold, is not standing obliquely —long elongated rhombus or with 3 edges
Kakaslomnic XIV.	over his chest —there are two further arrows in the stringing hand!— is not standing obliquely —barbed arrowhead

Zsegra 1380	The only discernible thing is that the warriors are not laying the arrows obliquely.
Vitfalva XIV	Nothing significant can be seen, the picture is damaged.
Svábfalva XIV.	Nothing significant can be seen
Necpál XIV.	There is no archer
Liptószentandrás XIV.	The Cumanians are not visible.
Szepesmindszent the beginning of the XIV.c.	over the face+ Central-Asian string-hold + is not standing obliquely —barbed arrowhead
Pónik XV-XVII	Nothing significant can be seen
Kassa the beginning of the XIV.c.	cannot be seen
Rimabánya XIV.	over his chest + Central-Asian string-hold
Gömörjárkos XIV+rep.	over his chin?-over his face?-maybe Central-Asian string-hold — elongated
Tereske XIII.-XIV.	over his chin?-over his face?
Ócsa XIV.	The shooting is not discernible
Gutor XIII-XIV.	The warrior is not shooting obliquely —barbed arrowhead
Szentmihályfalva XIV.	— elongated arrowhead
Felsőölvő-repainting	
Bántornya XIV.	over his ear+ Central-Asian string-hold +does not seem obliquely —barbed arrowhead
Türje XIV.	They are not shooting obliquely, the Hungarians are stringing the bow over the neck, the Cumanians over the chest— elongated arrowheads
Szacsva XIV.	The Cumanian warrior is not shooting obliquely but over his chest —the arrowhead is huge, leaf-shaped

### The techniques of tying up the sabre and the bowcase

Bögöz end of XIII.	on two straps, the sabre is tied obliquely		
Gelence beginning of XIV.	sabre obliquely	under the bowcase	standing obliquely backwards, the bow is up
Maksa XIII-XIV.			standing obliquely backwards, the bow is up
Erdőfüle XIV>XIII.	sabre obliquely forwards	above the bowcase	standing obliquely backwards, the bow is up
Homoródszentmárton XV.	sabre obliquely forwards	under the bowcase	standing obliquely backwards, the bow is up
Sepsikilyén XIV.			standing obliquely backwards, the bow is up
Sepsibesenyő XIV-XV.			
Bibarcfalva beginning of XV.			
Székelyderzs XV.	sabre obliquely	under the bowcase	vertically, the bow is standing forwards
Csikszentmihály XV.			
Székelydália XIII.			
Kakaslomnic XIV.			
Zsegra 1380		the bowcase	vertically, the bow is standing forwards, but on the right side
Vitfalva XIV		the bowcase	standing forward, the bow is up
Svábfalva XIV.			
Necpál XIV.			
Liptószentandrás XIV.			
Szepesmindszent beginning of XIV.	sabre obliquely	under the bowcase	almost vertical, obliquely backwards, the bow is up
Pónik XV-XVII			
Kassa beginning of XIV.			the bow is standing upwards on the waist, almost horizontally
Rimabánya XIV.			
Gömörjárkos XIV-repainted.			

Tereske XIII-XIV.			
Ócsa XIV.			
Gutor XIII-XIV.			
Szentmihályfalva XIV.			obliquely, almost vertically backwards, the bow is up
Felsőlövő –rep.			
Bántornya XIV.	sword slightly obliquely		
Türje XIV.			
Szacsva XIV.			

The analysis below has been carried out on the grounds of the content of the charts.

A really important fact is that we can see altogether 16 equestrian archers in the Hungarian army in seven cases and they are wearing characteristic eastern-type-quivers on their waists in six cases. We can observe foot archers in two cases, three of them are also wearing the characteristic nomadic quivers, the other three archers are being covered by others or the wall painting is damaged. Arrows flying towards the Cumanian army can be seen without the Hungarian archers in two cases but the damage implies that they probably used to be there. In three other cases, when the Hungarian archers are visible, a lot of arrows are flying towards the Cumanian army. It is notable that the Hungarian archers though in several cases are wearing helmets and chain shirts (just like the Cumans in several cases) they use compound, rigid-horn-, recurved bows and shoot in an eastern way all the time.

In the Cumanian army, we can see 52 equestrian archers in 21 cases and warriors with their arms stretched (they are most probably archers) in two cases. There are arrows flying towards the Hungarian army in 11 cases and the hits are rather notable. Arrows are hitting Saint Ladislaus' glory, crown, helmet, face, an eye of a warrior through the eye-hole of the helmet, the neck part of the armour and the shield. It is to be noted that on the majority of pictures the arrows are hitting the head. On the fresco from Maksa the blood flowing through the eye-hole of the helmet is well observable. On the other hand, on the one from Kakaslomnic, the arrow is flying towards the Cumanian's mouth, it might want to hinder him from blowing flame. Among the representations of the shooting techniques we can find realistic bow strings, ones with lots of discernible details, shots with left hand and ones stringed in a "reverse" way. The warriors are laying the arrow (where it can be seen) on their thumbs of the arms holding the bow in an Eastern way. The various shooting techniques have already been described at the detailed analysis of the pictures that is why from this point on only the various shooting methods will be analysed not the individual ones. The list of the methods of the shots according to the pictures can be found in the proper charts.

The archers are bending the bows over their ears, faces, chinpits, chests and at the back of their heads. This last one, however, is impossible in reality, it is only a peculiar and bad representation. The string of the bow is being held in a "Central-Asian" way most of the time.

The bow case is always hanging on the left side of the warriors and sometimes even the side straps or the bow case belts can be seen. In six cases, the bow case is hanging obliquely backwards, in two cases in a way that the curve is standing upwards and the string is down. This is the real case since this is the way the bow comes at hand and can be taken or put back to the alert quiver quickly as it is required by necessity. On the fragmentary wall painting from Kassa, the bow is kept on the Cumanian warrior's waist with its curve

upwards, without quiver as if nothing kept it. Though it signifies symbolically that the bow was worn on the belt, but probably before the re-painting and the restoration the quiver had been painted there.

The soldiers are wearing the sabres sometimes below, sometimes above the bowcase, and in some cases even the baldrics can be seen. However, it is a realistic representation when the sabre can be seen hanging with its grip upwards a bit obliquely since this way the sabre can be pulled out of the scabbard easily and quickly. On the picture from Bögöz, the artist painted the movement of pulling the sabre out really true to life since the left hand is lifting the scabbard a bit for the sake of quicker pulling out; the baldrick is curving loosely a bit. The artist might have seen this movement he painted so life-likely.

From tactics' point of view, it is worth paying attention to the techniques of using the other weapons and analysing (where it is possible) the cuts, of course taking it into consideration that the painters might have represented the same scenes several times.(22)

The most widely spread shooting techniques can be observed on the photos. The practice has justified the findings presented when demonstrating the various shooting techniques. Antal Szöllösi (the president of the Hungarian Traditional Off-Road Archers) and Csaba Hidán are demonstrating the various shooting techniques. Antal Szöllösi is shooting with an English archery equipment specifically in the secondary way of stretching the bow, Csaba Hidán is shooting with a Cumanian equipment in the tertiary way of stretching the bow.

The experiments have justified that the arrows released from bows with a strength of 55 pounds always hole the chain mail and a 1,4 mm thick hardened steel plate. From this distance each arrowhead holed the chain mail and the armour-breaker-arrows and the arrows with long cutting edges holed the steel plate.

This is an important fact since the common belief, even the professional belief is that the chain mails protect against arrows.(23) The most books on the history of weapons and wars only mention when presenting the chain mails and armours that they were used against stabbing weapons and arrows. (24)

In many cases, the diameter of the rings is given without mentioning that the chain mails cannot protect against the arrows only if the soldiers put on several layers and wear leather cuirass on or below the chain mail. The problem is that in this case the chain mails do not let the bodyheat out and thus one of the best characteristics of them is lost, namely that they can be used in heat as well.

The English and Swedish researchers have arrived at the same conclusion.(25) One of the most important conclusion was that during shooting at a metal plate not only the shape of the arrowhead was important in the respect whether it holes the metal plate or not but also how hardened metal the arrowhead was made of. The chart below demonstrates the strength and size of the bow, the length and weight of the arrows, and the shape of the arrowhead.



**Conquest –type of Hungarian bow with a strength of 55 pounds**

45cm is the length of the curving arm  
25 cm is the length of the inflexible bow horn  
20 cm is the distance between the string and the grip

**Arrows**

Ribbed one with long cutting edge	51 g	77,5 cm
Swallow-tailed	49 g	79 cm
Short one with cutting edge	48 g	79 cm
Chisel-shaped	51 g	78 cm
Long one with cutting edge	50 g	82,5 cm
Sting -like mail-breaker	48,5g	79 cm
Pyramidal mail-breaker	49 g	78,5 cm
Longish-pyramidal mail-breaker	49 g	77 cm
Oval mail-breaker	50 g	77,5 cm

Until the perfection of the firearms, the bow had been an appreciated and important weapon of the people not only from the steppes but also of the European armies in the Middle Ages. The English, Hungarian, Tartar and Turkish archers proved in innumerable battles that they could defeat any enemy. In Eastern-Europe and on the steppes it was used even in the early modern period. It is not by chance that the theme of the archers and shooting is a favoured one in the fine arts as well. The achievements of the experimental archeology has justified and supported all these.

**Notes**

3. We can read about various shooting techniques in two *loci* of Katalin U. Köhalmi's book entitled *A steppék nomádja lóháton fegyverben* [*The Nomadic Inhabitant of the Steppe on Horseback with Weapon*] (pp. 55-57. and p. 174.)
4. The English archers hold their bows vertically while shooting since more soldiers can line up next to one another. Let us imagine how sparse their lines would be at shooting and how much greater area would be needed to line up the same number of archers if they held their bows horizontally.
5. When presenting various shooting techniques, right-handed archers were meant in all cases. If a left-handed archer shoots, the whole shooting process is the same, it is just that the sides interchange. Neither the use of the fingers on each hand nor the aiming technique is different.
6. Though holding the bow entirely vertically is just as difficult, but a declination of 5-10 degrees still means holding vertically in archery.
7. In special cases, for instance shooting from ambush or from a tree, archers can shoot horizontally with smaller bows but these are unique exceptions.
8. Shooting forward on horseback does not mean shooting exactly to direction but to a bit left from it. It is possible to shoot straight to a great distance, but in this case the aiming is not accurate, it is fruitful to shoot only at crowds this way.
9. Boar hunter on a buckle from West-Siberia (II. century B.C.). Source: Katalin U. Köhalmi *A steppék nomádja lóháton fegyverben* picture 10.

Hunting Sassanide ruler on a silver plate (V-VI. century A.D.) Source: Katalin U. *Kőhalmi A steppék nomádja lóháton fegyverben* picture 15.

Equestrian archer on an Avaric belt-end from Klárafalva B. Kürti B. – G. Lőrinczy : *Avarnak mondták magukat. [They Held Themselves Avarics]* p. 19.

The princely hunter of the treasure from Nagyszentmiklós in the stein no 2..S. Trugli.: *Griffek és oroslánok népe. [People of Griffons and Lions]* p. 32.

Equestrian on a metal mount from the Szaján mountains (VIII-X. century). Gy. László.: *A honfoglaló magyar nép élete. [The Lifestyle of the Conquering Hungarian Tribe]* p. 369.

Equestrian archer on a saddle mount from Kudyрге. László Gy.: *A honfoglaló magyar nép élete.* p. 425.

Equestrian archer on a relief from an Armenian temple in Aght-amar (X. century). Nicolle D.: *Arms and Armours of the Crusading Era II.* p. 373.

Cumanian equestrian archer on a fresco in Bögöz (XIII. century). Drawn on location.

Cumanian equestrian archer on a fresco in Székelydála (XIII. century). Gy. László.: *A Szent László-legenda középkori falképei. [The wall paintings of the Saint Ladislaus-legend from the Middle Ages]* p. 105.

Tartar warrior on the representation of Sáhname. (XIV. century). Nicolle D.: *Arms and Armours of the Crusading Era II.* p. 455.

10. Katalin U. *Kőhalmi. A steppék nomádja lóháton fegyverben.* p. 174.

11. Gray Rondal. *Fegyvertípusok enciklopédiája [The Encyclopaedia of the Weapon-types]* (Gemini, Bp., 1995) p. 95.

Of course, these all are ad hoc but graphic examples.

12. Antal Szöllösi gives a graphic description of the whole process of shooting with classical string-hold in his archery manual entitled *Nyílegyenesen [lit. Arrow-straight]*. His book is a useful guide to every archer.

13. K. U. *Kőhalmi: A steppék nomádja lóháton fegyverben.* p. 56.

14. Even the nails of the archer are discernible on the fresco in Szepesmindszent, (Gy. László.: *A Szent László-legenda középkori falképei.* p. 136) and on Dürer's engraving of a Hungarian hussar.. A. Zarnecki : *Mátyás király hadserege. [The Army of King Matthias]* p. 21.

15. It is not really possible to string the bow up to the ear on horseback.

16. If women bend the bows over their breast, a greater breast is not a disturbing factor. It is only fiction that the amazons cut their breast for the sake of better shooting. The pelisse that buttons from left to right does not mean obstacle to the shooting, either.

17. A. Szöllösi: *Nyílegyenesen.* p. 28.

18. György Györffy (ed.): *A magyarok elődeiről és a honfoglalásról. [The Ancestors of the Hungarians and the Conquest]* Regino's Almanac. pp. 206-207.

19. K. U. *Kőhalmi.: Steppék nomádja lóháton fegyverben.* p. 175.

20. Zs. Lukács: *A Szent László-legenda a középkori magyar falképfestészetben. [The Saint Ladislaus legend on the Hungarian wall paintings in the Middle Ages]* Athleta Patriae. (Ed.). Mezey László. 1980. 163.

21. We cannot name any other Hungarian kings or saints whose respect and cult was just as significant at the royal and prelate courts as in the way of thinking of the ordinary people living at the borderland. If we set off from the society pyramid of the Middle Ages we can see immediately that Saint Ladislaus was set as the good ruler's example to be followed in the Hungarian Anjou Legendarium (1338-43) which had been compiled for Charles I's children. The Anjou court, by the way, attached great importance to the cult of Saint Ladislaus and chose him as the patron saint of Hungary. Louis the Great had the figure of

his saint ancestor minted on the back side of his third golden forint. Judit H. Kolba demonstrated in her excellent study (*Athleta Patriae*. Ed. Mezey L. 223-235) that from that time up to Habsburg Rudolf “almost every Hungarian king considered it morally compulsory to follow his example by always dedicating one side of the new coins to Saint Ladislaus.” Around 1400, Saint Ladislaus was not only the saint of the dynasty but embodied Hungary itself. Ernő Marosi gives a graphic account of the fact that the cross-shield on his shield is not only a cross but the heraldic double-cross-sign of Hungary which is the same that was used by the prelates and barons reigning in the name of the Holy Crown (that embodies the country) while Sigismund was in captivity in Siklós. In Sigismund’s period, the flag with double cross was called Saint Ladislaus’s flag. (E. Marosi: *Magyarok ábrázolásai és az orientalizmus a középkori művészetben*. Néprajzi Értesítő. LXXVII. (1995) 84-85). [*The Representations of the Hungarians and the Orientalism in the Art of the Middle Ages*]

It is also not of small significance that when a new register of birth was introduced for the Hungarian nation at the university at Vienna in 1453, a battling scene of Saint Ladislaus was drawn into it besides Saint Stephen and Saint Emeric. The church songs, popular beliefs and sagas about Saint Ladislaus are non the less important. A church song (whose Latin version is known) that was found in a codex from the 16<sup>th</sup> century can be dated approximately to the time of the canonization but we can find a saga in connection with him even in a herbal book from the 16<sup>th</sup> century. In his book, Gyula László makes a mention of Pintér Kálmán’s, Szilárd Leó’s, János Berze Nagy’s és Zsigmond Szendrey’s thorough works in collecting folk poetry.

There is an interesting and touching folk poem written in “folk” Hungarian. The rough translation is as follows:

“King Ladislaus learned to ride a horse from Micheal Archangel, and when he died he became the groom of the sky, he drove the star-mane-horses of the Big Dipper, and twisted a shining flagellum out of the moonbeams.”

(László Gy.: *A Szent László-legenda középkori falképei*. 1993. 17)

How different this picture on Saint Ladislaus is than the official saint ruler model of the Anjou House and King Sigismund. It is rather the wording of the celestial soldier of the eastern grassy plains than that of a saint Christian ruler.

22. Gy. László: *A Szent László-legenda középkori falképei*. 1993. 18.

23. Zs. Lukács: *A Szent László legenda a középkori magyar falfestészetben*. Ed. L. Mezey. *Athleta Patriae*. 1980. 187-205.

24. They painters could copy the military techniques well or inadequately. In this present work, those ones are analysed that are practically feasible and effective.

23. The fact that the “western warrior” protected by chain armour had advantage over the Hungarian equestrians with only bow-and-arrow was mentioned mainly in connection with the conquering Hungarians.

24. In his book entitled *Old Hungarian Weapons*, which is -so far- the most comprehensive book on the history of the Hungarian weapons, János Kalmár writes only that it protects against stab and cut. (p. 253).

Ferenc Temesvári does not write about the ability of chain mails to protect in his book entitled *Between East and West* which is about the exhibition of weapons in the Hungarian National Museum. The same book mentions that the cross bow is able to hole the plate armour from 250 paces. (p.25.) He does not write about the ability of chain mails to protect or the strength of the bows in his other book entitled *Fegyverkincsek, Díszfegyverek* [*Weapon treasures, Ornamental Weapons*.]

Stephen Bull does not write about the ability of the chain mails to protect in his summarising work entitled *Évszázadok fegyverei [Weapons of Centuries]* This book presents the eastern-type-bows quite superficially. He writes about the bows constructed before the 14<sup>th</sup> century: “The early bows were not so effective weapons that later the most-feared legendary long bows”. (p.16.) It is true to say that the author mentions in connection with these that they can hole the chain mail from a short distance (p.61.)

In the chapters (Armours after 1100 [p.38]; Early armours [p.28]) of Jan v. Hogg’s book entitled *The Encyclopaedia of the Weapons*, there is no information to how much extent chain mails and armours can protect against attacks.

25. According to Sir Ralph Payne-Gallwey, the maximum range of the long bow is 255 m, and 360 m is of the cross bow. He is of the opinion that within the tactical shot – he does not give the exact distance – both hole the armour. (In: Harding D (ed.): *Fegyvertípusok enciklopédiája*. 103. o., Bp. 1995.

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