



ST. MARY THE VIRGIN

Sovereign Military Order of the Temple of Jerusalem

Medieval Arms & Armor

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INTRODUCTION

Medieval Arms & Armor

European warriors of the early Middle Ages used both indigenous forms of military equipment and arms and armor derived from late Roman types. At the height of the Middle Ages, Saint Anselm (ca. 1033–1109) listed the equipment of a knight: his war horse (which by the thirteenth century was protected by mail and fabric), bridle, saddle, spurs, hauberk (a long-sleeved mail shirt, sometimes with a hood, or *coiff*), helmet, shield, lance, and sword. Toward the end of the twelfth century, a new flat-topped type of helmet with side plates, which hid the face of a knight, became popular. To distinguish friend from foe, the knight's triangular shield was painted with identifying symbols. By 1200, mail for the legs, called chausses, was commonly worn by mounted warriors. Later, boiled leather or steel pieces protected the knees (kneecops), while small squares of the same hard materials covered the vulnerable shoulder joints (*ailettes*).

By the fourteenth century, the improved crossbow was able to pierce shields and mail armor. To counter this, knights first wore a poncho-like coat with small rectangular plates riveted to it, while articulated plate armor was developed for the legs, arms, and hands. The small, square, convex shield of the time (the *targe*) was eventually relegated to use in tournaments, since improved body armor made it unnecessary. A new form of helmet joined the all-encompassing great helm and the wide-brimmed chapel-de-fer (war hat). This was the more streamlined, close-fitting bascinet, with a curtain of mail (*camail*) from chin to shoulders, which frequently had a movable visor. By the late 1300s, solid breastplates first appeared to protect the chest as part of the short, tight-fitting coat of plates called a brigandine, while smaller plates covered the abdomen, hips, and back.

Within a few years, by about 1420, full head-to-toe plate armor was in use, completing the image of the knight in shining armor.



Figure 1 Exhibit in Glenbow Museum showing a medieval armorer working on plate armor

Blacksmithing

The "black" in "blacksmith" refers to the black fire scale, a layer of oxides that forms on the surface of the metal during heating. The origin of "smith" is debated, it may come from the old English word "smythe" meaning "to strike" or it may have originated from the Proto-German "smithaz" meaning "skilled worker."

The first evidence of smithing by hammering iron into shape is a dagger found in Egypt dating to 1350 B.C. Although in Egypt, it was likely the product of a Hittite tradesman. The Hittites likely invented forging and tempering, and they kept their ironworking techniques secret. When the Hittites were scattered, their ironworking skills were spread to Greece and the Balkans. This early Iron Age occurred about 800-500 B.C. The smith can also be found in the classical mythology of the Romans, Greeks, Phoenicians and Aztecs.

The medieval times was defined by wars. Some of the battles fought were small and short-term, while others were a series of wars like the Crusades. The blacksmiths of the medieval era provided armies with arms, shields, weapons and also supplied various tools and equipment to construct ships and houses. The Middle Ages were practically a second Iron Age and blacksmiths made a wide variety of objects from iron. The blacksmiths of this era were, in fact, one of the biggest contributors in the development of craft and science of metal working.

Medieval blacksmiths were loved, hated, thought to have magical healing powers, and able to fend off the devil. Not only did the knightly class require weapons and armor for warfare and tournaments, but they also needed horseshoes and defensive metalwork for their castles. Knights and the aristocracy were generally the only ones who could pay for good weapons and armor, adding to their elite status. A coat of mail was worth sixty sheep and a good sword cost as much as three cows. Being a castle blacksmith would have been an enviable (and usually hereditary) position. Peasants had their own needs, such as for pots, ploughs and axes, and growing centralized towns could support more than one smith in their need for new tools and repairs of old.

Beyond the obvious ability to work metal, blacksmiths were thought to hold the power to heal. This may seem a little odd to us, but it does make sense if you think of things more symbolically, as medieval people did. For example, barbers were also surgeons as their specialty was cutting; likewise, blacksmiths were healers (especially of ailments like broken bones), because their specialty was repairing or "reforging".

Not surprisingly, blacksmiths' sooty work with fire and furnace, and their ability to turn rock into metal tools, easily led to associations with the devil. Smiths were too essential to the community to actually become persecuted for this, but some colorful legends sprang up (see side panel).

Horseshoes and Luck

In the Irish story of the blacksmith and the devil, one day a blacksmith was working hard in his shop forging horseshoes. Suddenly, the devil appeared and demanded his own shoes. The blacksmith, recognizing the devil, took a burning hot shoe and nailed it deep into the devil's hooves. After walking away, the devil was in such excruciating pain, he ripped the horseshoes off and swore he would never go near one again. Thus, the tradition of hanging a horseshoe over the entrance of a house to ward off evil spirits was born.

Another story has more to do with the metal in the horseshoes. Early Western Europeans believed that iron had magical powers. Iron could drive away evil, and folklore of the time told of many malevolent fairies and mystical creatures. Since horseshoes were made of iron, they kept the badly behaving fairies away. Other legends said that witches were so afraid of iron horseshoes, they traveled on broomsticks instead of on horseback. Yet another states that 8th-century Chaldeans believed the crescent shape of the horseshoe protected against the evil eye, thus making it a good luck charm.

Even the number of holes in a horseshoe is lucky. Horseshoes have seven holes to hold them in place on the horse's foot. Many cultures consider seven a lucky number, as it appears so frequently in our world — seven continents, seven colors in the rainbow, seven seas, seven days in the week.

Horses and Horseshoes

In the popular imagination, medieval knights rode enormous horses, like modern draft horses (such as Clydesdales or Percherons). But this is not the case. As the term "draft horse" should suggest, these are bred to "draw" heavy loads, plows, wagons, harvesters and the like. They have very wide backs and would thus be very awkward to ride, as your legs would stick out sideways.

Medieval horses differed in size, build and breed from the modern horse, and were, on average, smaller. They were also more central to society than their modern counterparts, being essential for war, agriculture, and transport. Consequently, specific types of horse developed, many of which have no modern equivalent. Horses in the Middle Ages were rarely differentiated by breed, but rather by use. This led them to be described, for example, as "chargers" (war horses), "palfreys" (riding horses), cart horses or packhorses. Reference is also given to their place of origin, such as "Spanish horses," but whether this referred to one breed or several is unknown. Another difficulty arising during any study of medieval documents or literature is the flexibility of the medieval languages, where several words can be used for one thing (or, conversely, several objects are referred to by one word). Words such as 'courser' and 'charger' are used interchangeably (even within one document), and where one epic may speak disparagingly of a rouncey, another praises its skill and swiftness.

The origins of the medieval war horse are obscure, although it is believed they had some Barb and Arabian blood through the Spanish Jennet, a forerunner to the modern Friesian and Andalusian horse. It is also possible that other sources of oriental bloodstock came from what was called the *Nisaeen breed* (possibly akin to the Turkoman horse) from Iran and Anatolia, another type of oriental horse brought back from the Crusades. "Spanish" horses, whatever their breeding, were the most expensive. In fact, in Germany the word *spanjol* became the term for quality war horses. However, German literary sources also refer to fine horses from Scandinavia. France also produced good war horses. Some scholars attribute this to the strong Feudal society there, but an equally probable explanation is the historic influence of the Roman horse breeding traditions preserved by the Merovingians, combined with the addition of valuable Spanish and oriental bloodstock captured in the wake of the victory of Charles Martel over the Islamic Umayyad invaders at the Battle of Tours in 732. Following this battle, the Carolingians began to increase their heavy cavalry, which resulted in the seizure of land (for fodder production), and a change in tribute payment from cattle to horses.

One of the best-known of the medieval horses was the destrier, renowned and admired for its capabilities in war. It was well trained, and was required to be strong, fast and agile. A 14th-century writer described them as "tall and majestic and with great strength". In contemporary sources, the destrier was frequently referred to as the "great horse" because of its size and reputation. Being a subjective term, it gives no firm information about its actual height or weight, but since the average horse of the time was 12 to 14 hands (48 to 56 inches), thus a "great horse" by medieval standards might appear small to our modern eyes.

Coursers were generally preferred for hard battle as they were light, fast and strong. They were valuable, but not as costly as the destrier. They were also used frequently for hunting.

Horse sandals



The **hipposandal** is a device that protected the hoof of a horse. It was commonplace in the northwestern countries of the Roman Empire, and was a predecessor to the horseshoe. The necessity of protecting the horse hoof was recognised by the ancient Greeks and Romans, and written about by Xenophon. An early form of hoof protection was seen in ancient Asia, where horses' hooves were wrapped in rawhide, leather or other materials for both therapeutic purposes and protection from wear. Elsewhere, various methods were employed to trim the hoof into a hollow form and give it as much hardness as possible. Gradually, protection items started to appear, first with the *soleae Spartae*, a sort of leather hoof boot, later improved into the *soleae ferreae* that featured metal studded soles similar to contemporary military boots. The hipposandal, which appears in the Celtic-Roman area north of the Alps around the mid-1st century AD, was the next step in the development of hoof protection, where the sole of the boot was made of metal. It included an oval-shaped cup of thick metal that enclosed and protected the hoof, complete with a fixation system. The device was fastened to the hoof by metallic clips and leather laces. Like the *soleae Spartae* and *soleae ferreae*, the hipposandal increased ground adherence of draught animals, thereby giving them better traction, and protected the hoof on rough ground. To further improve traction, the bottom of each hipposandal was grooved.

A more general-purpose horse was the rouncey (also *rounsey*), which could be kept as a riding horse or trained for war. It was commonly used by squires, men-at-arms or poorer knights. A wealthy knight would keep rounceys for his retinue. Sometimes the expected nature of warfare dictated the choice of horse; when a summons to war was sent out in England, in 1327, it expressly requested rounceys, for swift pursuit, rather than destriers. Rounceys were sometimes used as pack horses (but never as cart horses).

The well-bred palfrey, which could equal a destrier in price, was popular with nobles and highly-ranked knights for riding, hunting and ceremonial use. Ambling was a desirable trait in a palfrey, as the smooth gait allowed the rider to cover long distances quickly in relative comfort. Other horse types included the jennet, a small horse first bred in Spain from Barb and Arabian bloodstock. Their quiet and dependable nature, as well as size, made them popular as riding horses for ladies; however, they were also used as cavalry horses by the Spanish.

The hobby was a lightweight horse, about 13 to 14 hands (52 to 56 inches), developed in Ireland from Spanish or Libyan (Barb) bloodstock. This type of quick and agile horse was popular for skirmishing, and was often ridden by light cavalry known as *Hobelars*. Hobbies were used successfully by both sides during the Wars of Scottish Independence, with Edward I of England trying to gain advantage by preventing Irish exports of the horses to Scotland. Robert Bruce employed the hobby for his guerilla warfare and mounted raids, covering 60 to 70 miles a day.

Knights were only possible once horseshoes developed and became widespread in the tenth century, to replace the bronze horse sandals that the Romans had used. Horse sandals (hipposandal) had little wires that one could twist to keep the sandals on, but not surprisingly they tended to fall off a lot. Horseshoes, made of iron, were nailed to the horse's hooves as they still are today, providing protection so that the hooves did not wear down, fatally crippling the horse.

There is speculation that the Gauls were the first to nail on metal horseshoes. The nailed iron horseshoe first clearly appeared in the archaeological record in Europe in about the 5th century AD when a horseshoe, complete with nails, was found in the tomb of the Frankish King Childeric I at Tournai, Belgium. In Gallo-Roman countries, the hipposandal appears to have briefly co-existed with the nailed horseshoe.

Farrier Historically, the jobs of farrier and blacksmith were practically synonymous, shown by the etymology of the word: *farrier* comes from Middle French: *ferrier* (blacksmith), from the Latin word *ferrum* (iron).

Saddles

In the Early Middle Ages (5th-10th centuries), the saddle was made only of leather, with a padding of wool or horsehair.

The stirrups were the only difference with the Celtic horn saddle the Romans had used. The stirrups were short so the riders had their legs flexed all the time. This way, they easily controlled their horses and could turn around in their saddles. It was useful because cavalry fought mainly with swords, maces, axes and javelins, so the riders didn't have much reach but they had precision.



Figure 2 Medieval European Saddle

Eastern European, Muslims and Asian riders kept using this kind of saddle until the 14th century because it was the best for horse-archers and feigned retreats: they could turn around and shoot without changing the horse's direction.

In the late 10th century, in Europe they started using saddles with a wooden frame (called *tree*), pommels (on the front) and cannels (on the back), with longer stirrups. This kind of saddle sacrificed mobility of the rider and control of the horse, but allowed for a better use of lances, held at arm's length, transferring all the momentum of the charge.

In the 12th century, lances were used tucked under the arm (couched lance) and cavalry became mainly a shock force. Pommels and cannels became higher, sometimes reinforced with steel, so they could maintain the rider on the saddle even after an impact. From the 14th century until the end of the Middle Ages, they would get even higher, as lances became longer and heavier.



Figure 3 Simple medieval saddle



Messengers, hunters, nobles riding for pleasure used simpler saddles. Women either rode in the same saddles as men or, after the 13th century, in special sidesaddles. Although they were meant to be more comfortable than normal saddle, from modern recreations they seem to be a torture after a long trip.

Horsemanship



Bem cavalgar, fully *Livre da ensinança de bem cavalgar toda sela* ("Book on the instruction of riding well on every saddle"), is a book written by Edward of Portugal, left incomplete as Edward died of a plague in 1438. It is one of the oldest remaining manuals of medieval horsemanship and jousting. The first two parts, intended as preambles, address two questions: why you should want to learn horsemanship (and, therefore, want to read this book), and why anyone can become a good horseman. The third part deals with the necessary skills and useful knowledge, in the form of 16 'recommendations': strength (not just of the rider and the horse, but also of his riding gears), fearlessness, confidence, steadiness, *soltura* (a term that implies bodily relaxation – basically the rider's ability of moving with the horse's motion), use of the spurs and rod, controlling reins, hazards, terrain, judiciousness, elegance, endurance, horses' mouths and bits, how to deal with the horses' faults, how to foster horses' virtues, and how to evaluate horses.

Stirrups

One of the most important advances in military technology came with the invention of the stirrup. The stirrup allowed warriors on horseback to use the power of horse and rider to deliver more powerful spear thrusts from a mounted position. With the stirrup, riders could rest the lance between the upper arm and the body to create a steadier, more effective fighting position. Stirrups also allowed horsemen to stand in the saddle and use their swords to chop down on their opponents. This small invention revolutionized military strategy and techniques on the medieval battlefield — especially among the Franks who became well-known for their use of heavy cavalry — but when did the stirrup actually reach Western Europe?

Stirrups are most likely a Chinese invention, appearing in that region sometime in the 5th century, possibly even earlier. Historians and archaeologists debate

when they actually arrived in Western Europe. Walther Veeck, author of *Die Alemannen in Württemberg*, and H. Muller-Karpe, author of *Hessische Funde von der Altsteinzeit bis zume frühen Mittelaltar*, both claim the stirrup came to Germany in the late seventh century. Their claims are based on excavations at Andelfingen, Oetlingen, and Pfahlheim in Wurrtemberg, though Veeck's inventory at Andelfingen does not include stirrups and neither does his source.

At Oetlingen, an iron spur and bit appeared in one grave without stirrups, but in a neighboring grave, stirrups did emerge. The Pfahleim cemetery includes seven horse burials, and of these seven, only one contained stirrups.

Some historians point to the grave of an Alemanic chieftan in Alsace to prove the Germans did not have stirrups in the late seventh century, as evidence by the lack of stirrups in this prominent chieftain's grave, which was found with a complete set of horse equipment but no stirrups. These historians believe the stirrup did not arrive in Germany until the early eighth century.

Western art does not really provide us a clearer picture of when the stirrups fist came to medieval Western Europe. Artists in the early Middle Ages did not concern themselves with naturalism, and as a result, depictions in art often lagged behind reality. The stirrup does not show up in Middle Eastern or Byzantine art until the late eighth or early ninth century, and there is a similar lag in Western art, though Frankish art does begin to depict stirrups a few decades earlier than Greek art. Two horsemen wearing stirrups do appear on panels of the altar of Sant' Ambrogio in Milan around 840. Also, in the Golden Psalter of St. Gall from the second half of the ninth century, there are seven riders in its miniatures who are shown wearing stirrups.

It is, however, in archaeology and not in art history that the true evidence of the diffusion of the stirrup into medieval Western Europe appears. At the time of Charles Martel, in the early eighth century, the verbs *insilire* and *desilire*, used in reference to getting on and off horses, were replaced by *scandere equos* and *descendere*,



The English word **Stirrup** stems from Old English *stirap*, *stigrap*, Middle English *stirope*, *styrope*, i.e. a mounting or climbing-rope.

Spurs are mentioned in several contexts related to our Order.

Thomas B. Costain in *The Three Edwards* describes that development by the time of Edward the Third. "Conferring knighthood had developed into a complicated and rather beautiful ceremony since the beginning when the accolade, a tap on the shoulder with a sword, had sufficed. It began the previous evening when the candidate was shaved and then taken to a special chamber where a bath was prepared with scented water and a covering of linen and rich cloths. While he bathed, two old knights talked to him solemnly about the duties of the order. Later still he was led to the chapel, where he stood throughout the night, keeping watch over his armor and saying prayers and meditating. At break of day he bathed again, confessed, heard mass, and offered a taper with a piece of money stuck in the white tallow. *With his future squire riding before him and carrying the sword and the gold spurs that were to be attached to his heels, he made his way to the great hall.* Here he knelt on one knee and was given the accolade."

In *Praise of the New Knighthood* *Liber ad milites Templi: De laude novae militiae* by St. Bernard of Clairvaux: What then, O knights, is this monstrous error and what this unbearable urge which bids you fight with such pomp and labor, and all to no purpose except death and sin? You cover your horses with silk, and plume your armor with I know not what sort of rags; *you paint your shields and your saddles; you adorn your bits and spurs with gold and silver and precious stones,* and then in all this glory you rush to your ruin with fearful wrath and fearless folly.

referring to the fact that someone must step when mounting or dismounting as opposed to leaping.

An even more convincing set of evidence is found in the drastic change in the group of weapons used by the Franks at that time. The *fransisca* and the *ango*, both staples of the Frankish infantry, disappeared while swords used for horsemen became longer. Also, the Franks developed a spear with a heavier stock and spurs below the blade, which soon became the typical Carolingian wing-spear, featuring a cross-piece. These spurs prevented too deep a penetration of the lance — which could only have occurred with the full momentum of a horse, fitted with stirrups, and rider wielding the lance under his arm — thus making it easier for the rider to withdraw his lance from his opponent. Under previous conditions — without stirrups — a horseman could never have impaled his enemy so deeply as to require the need for barbs on his spear. Such it was that Charles Martel took advantage of this technology, and with the combined force of rider, horse, stirrups, and lance, changed the face of the medieval battlefield for decades to come.

Spurs



Figure 4 Medieval prong spur

Spurs are one of the distinctive pieces of equipment that have been used by horsemen throughout the ages. The earliest spurs were possibly made from wood or bone and probably took the form of "prick" or "prong" spurs. The first recorded metal examples were simple bronze spurs found in Etruscan tombs from the 2nd Century BC, others from that time have been found at Roman sites in Britain. They gradually changed in shape, developing plates that stopped the spike penetrating the horses' sides, or taking on a ball and spike form (as seen in the Bayeux tapestry) that had the same function. Eventually a pyramidal or conical shaped goad developed.

The revolving rowel used in modern western spurs probably originated in France. A roweled spur was shown upon the Seal of Henry III of England who lived from 1207 to 1272. This type became widely popular about the fourteenth century.

During the age of chivalry, spurs became an emblem of rank. Gold or gilded spurs were only worn by knights or royalty. Esquires' were silver and those of a page were tinned. One could tell the rank of the wearer by the spurs, even if the armor or clothing gave no clue. The caste system was all-important at that time.



Figure 5 Revolving rowel spur

Knights vied with each other to indicate their prestige with costly spurs. Many were jeweled and all were objects of art. Spurs were usually buried with their owner, accounting for the fact that few remain today. In 1302 the "battle of the spurs" took place in West Flanders. 20,000 Flemish burghers on foot repulsed the attacks of 47,000 French knights on horseback. The burghers collected 700 pairs of gilded spurs as trophies of their victory.



Figure 6 Battle of the Spurs

The Guild of Spur-Makers of Paris during the 14th century only allowed only one apprentice to each master craftsman. Apprenticeship was for six years with little or no pay. At the end of this strict training, the apprentice became a master artisan.

When a valet became an esquire or an esquire was knighted, he was fitted with new spurs during a special ceremony; thus came the expression, "earned his spurs." In the rare case of disgrace, a knight's spurs were chopped off in a public ceremony with a cook's cleaver.

Churchmen were not permitted to wear spurs and a knight who failed to remove his spurs before entering a church had to pay a fine to the choir boys in order to regain them.

Swords

In the European High Middle Ages, the typical knightly arming sword was a straight, double-edged weapon with a single-handed, cruciform (i.e., cross-shaped) hilt and a blade length of about 28 to 31 inches.

The high medieval sword of the Romanesque period (10th to 13th centuries) developed gradually from the Viking sword of the 9th century. In the Late Medieval period (14th and 15th centuries), late forms of these swords continued to be used, but often as a sidearm, at that point called "arming swords" and contrasting with the two-handed, heavier longswords.

The most widespread typology for the medieval sword was developed by Ewart Oakeshott in 1960, mostly based on blade morphology.

The Oakeshott typology defines and catalogue the medieval sword based on physical form. It categorizes the swords of the European Middle Ages (roughly 11th to 15th centuries) into 13 main types labelled X to XXII.

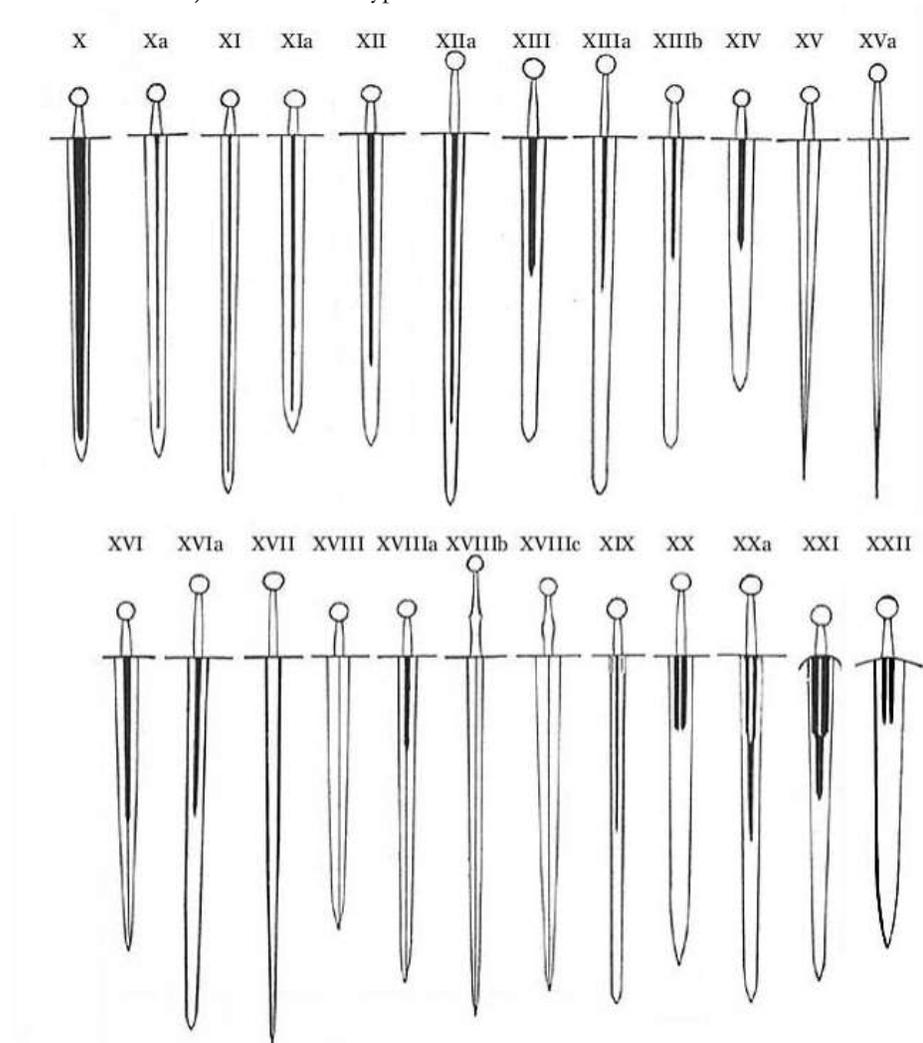


Figure 7 Oakeshott sword typology

The common "knightly swords" of the high medieval period (11th to early 12th centuries) fall under types X to XII.

Type X is the Norman sword as it developed out of the early medieval Viking sword by the 11th century. Type XI shows the development towards a more tapering point seen during the 12th century. Type XII is a further development, typical throughout the Crusades period, showing a tapering blade with a shortened fuller. Subtype XIIa comprises the longer and more massive "great-swords" which developed in the mid-13th century, probably designed to counter improvements in mail armor; these are the predecessors of the late medieval longsword.



Pell Training

The word Pell is derived from the Latin word "palos" which means stake. The English word pale was derived from the same Latin word and referred to a pointed stick, since a stick or a tree trunk was used as a target during the practice. The origins of the medieval Pell can be traced back to the Roman times when a similar sword practice was used. This Pell was not a uniquely medieval practice and existed before the medieval times as well. However, it became popular mainly during the medieval times. The primary purpose of the medieval Pell was sword practice. A wooden post was planted firmly on the ground and it was used as a target for sword practice. Swords made of wood were generally used for a medieval Pell. Sometimes, Pell training also included spear throwing and shield defense. Training on the medieval Pell allowed the knights to freely use all the tactics of sword fighting such as thrusting, cutting, and slicing without any danger of inflicting injury on an opponent. There were two main varieties of Pells - standing Pells and hanging Pells - which could be decorated to look human.

Type XIII is the knightly sword typical of the later 13th century. Swords of this type have long, wide blades with parallel edges, terminating in a rounded or spatulate tip, and with a lens-shaped cross-section. The hilts become somewhat longer, about 15 cm, to allow occasional two-handed use. The pommels are mostly of the brazil-nut or disk shapes. Subtype XIIIa has longer blades and hilts. These are the knightly "great-swords", or *Grans espées d'Allemagne* which seamlessly develop into the longsword type in the 14th century. Subtype XIIIb describes smaller single-handed swords of similar shape. The form classified as type XIV develops towards the very end of the high medieval period, around 1270, and remained popular during the early decades of the 14th century. They are often depicted on the tomb effigies of English knights of the period, but there are few surviving specimens. Continuations of the knightly sword as the "arming sword" type of the late medieval period correspond to Oakeshott types XV, XVI and XVIII.

Oakeshott also introduced a system of classification of medieval pommel forms in his *The Sword in the Age of Chivalry* (1964) to stand alongside his blade typology; enumerated with capital letters A–Z, with subtypes indicated by numerals.

Shields

Medieval Shields were developed to shield, or protect, a knight or soldier from the direct blows from the weapons of their enemies. Shields used during the Middle Ages were also used as bludgeoning weapons. The use of the shield as an actual weapon was practiced by knights at the Pell (see side panel). Training at the Pell demanded hours of practice to increase the skills, strength and agility of the Medieval knights in relation to their swords and shields.

There were many different types of medieval shields; the styles of shields changed as different types of body protection were developed.

The kite shield is a large, almond-shaped shield rounded at the top and curving down to a point at the bottom. The term "kite shield" is a reference to the shield's unique shape, and is derived from its supposed similarity to a flying kite.

The first known illustration of a kite shield appeared in the Gospels of Otto III, indicating it was in use with Western European armies by the late eleventh century. The shield was developed for mounted cavalry, and its dimensions correlate to the approximate space between a horse's neck and its rider's thigh. A narrow bottom protected the rider's left leg, and the pronounced upper curve, the rider's shoulder and torso. This was a vast improvement over



Figure 8 Kite shields

more common circular shields such as bucklers which afforded poor protection to the horseman's left flank, especially when he was charging with a lance. Though their great length and unwieldy nature made them cumbersome and inconvenient for foot soldiers, kite shields nevertheless gained popularity, spreading throughout Western Europe during the 1100s.

Plywood is made by gluing together thin sheets of wood called veneers, with the grain of each sheet running in an alternate direction. This creates a material that is stronger and more flexible than solid wood. The technique has been around for a long time – as early as 2600 BC in ancient Egypt.

A typical kite shield was at least three to five feet high, being constructed of laminated wood, stretched animal hide, and iron components. Records from Byzantium in the 1200s suggests the shield frame accounted for most of the wood and iron; its body was constructed out of hide, parchment, or hardened leather, similar to the material used on drum faces. To compensate for their awkward nature, kite shields were equipped with enarmes, which gripped the shield tight to the arm and

facilitated keeping it in place even when a knight relaxed his arm; this was a significant departure from most earlier circular shields as they possessed only a single handle.

Kite shields were introduced in large numbers to the Middle East by the First Crusade when Arab and Byzantine soldiers first observed the type being carried by Norman crusaders; these left such a favorable impression on Byzantium that they had entirely superseded round shields in the Komnenian army by the mid twelfth century.



Figure 9 Heater Shield

Smaller than the kite shield, the heater shield was more manageable and could be used either mounted or on foot. From the 15th century, it evolved into highly specialized jousting shields, often containing a *bouche*, a notch or "mouth" for the lance to pass through.

As plate armor began to cover more and more of the body, the shield grew correspondingly smaller, until by the mid-14th century, it was hardly seen at all outside of tournaments.

Heater shields were typically made from thin wood overlaid with leather. However, they were often also made of metal or like

Around the mid to late twelfth century, traditional kite shields were largely replaced by a variant in which the top was flat, rather than rounded. This change made it easier for a soldier to hold the shield upright without limiting his field of vision. Flat-topped kite shields were later phased out by most Western European armies in favor of much smaller, more compact *heater shields*.



Figure 10 Heater shield with bouche

materials, or were made of wood braced with metals such as steel or iron. Heater shields often featured a strap, called a guige, for the shield to be slung over the back when not in use. Some shields, such as that of Edward, the Black Prince from his tomb in Canterbury Cathedral, incorporated additional layers of gesso, canvas, and/or parchment.



Figure 11 Display of arms on heater shield

The heater shield was used by almost every class of society in medieval Europe, from knights to typical soldiers. This design lent itself to being relatively inexpensive and easy to make. It was relatively lightweight compared to other similar shields at the time such as the kite shield, being easy to move around during both mounted and on-foot combat, and had a fairly high amount of surface area, making for a solid defense. However, this style of shield was not without its flaws. When using a heater shield properly, the legs are left almost entirely unprotected, although this disadvantage can be somewhat mitigated by protection of the legs using armor.

Heater shields were often used for heraldic display, or display of the coat of arms of the wielder. This lent itself to the relatively wide surface area of the shield and its shape, which made it excellently suited for display.



Figure 12 Medieval pavis shield

A pavis was an oblong shield used during the late 14th to early 16th centuries. The name comes from the city of Pavia, Italy. A smaller version for hand-to-hand combat and for wearing on the backs of men-at-arms was also made. The pavis is characterized by its prominent central ridge.

The pavis was primarily used by archers and crossbowmen in the Middle Ages, particularly during sieges. It was carried by a *pavisier*, usually an archer, or, especially for the larger ones, by a specialist pavis-bearer. The pavis was held in place by the pavisier or sometimes deployed in the ground with a spike attached to the bottom. While reloading their weapons, archers and crossbowmen would crouch behind them to shelter against incoming missile attacks.

Pavises were often painted with the coat of arms of the town where they were made, and sometimes stored in the town arsenal for when the town came under attack. Religious icons such as St. Barbara and St. George were featured on the front of pavises. Most pavises were covered in a coarse, carpet-base-like canvas, before being painted with oil and egg-based paints.



Figure 13 Decorated pavise shields

A buckler was a small shield (up to 18 in) in diameter, gripped in the fist with a central handle behind the boss. While being used in Europe since antiquity, it became more common as a companion weapon in hand-to-hand combat during the Medieval and Renaissance periods. Its size made it poor protection against missile weapons (e.g., arrows) but useful in deflecting the blow of an opponent's weapons, binding his arms or hindering his movements.



Figure 14 Sword and buckler fighting

The buckler was more widely used than is commonly known. It was a simple yet effective weapon, often combined with an arming sword, falchion, or rapier. They were popular circa 1100 to 1600.

A larger version of the buckler was the targe. Targe was a general word for shield in late Old English. Its diminutive, *target*, came to mean an object to be aimed at.

The term refers to various types of shields used by infantry troops from the 13th to 16th centuries, or earlier. More specifically, a targe was a concave shield fitted with enarmes on the inside, one adjustable by a buckle, to be attached to the forearm, and the other fixed as a grip for the left hand. These shields were mostly made of iron or iron-plated wood. From the 15th century, the term could also refer to special shields used for jousting. A fair number were created wholly for show.

The inside of the targe was formed from two very thin layers of flat wooden boards, with the grain of each layer at right angles to the other. They were fixed together with small wooden pegs, forming plywood. The front was covered with a tough cowhide, which was often decorated with embossed Celtic style patterns. This was fixed to the wood with many brass, or in some cases, silver, nails, and occasionally brass plates were also fixed to the face for strength and decoration. Some targes had center bosses of brass, and a few of these could accept a long steel spike, which screwed into a small "puddle" of lead that was fixed to the wood, under the boss. When not in use, the spike could be unscrewed and placed in a sheath on the back of the targe.

The back of the targe was commonly covered in deerskin, and a very few had some packing of straw etc. behind this. Some targes, usually those actually used in battle, had their backs covered in a piece of red cloth taken from the uniform of a British soldier (a "Redcoat") that the owner had killed in battle. Although all the old targes show signs of handles and arm straps, of various designs including centre-grips, there is very little evidence to indicate that there was any guige strap for carrying the targe over the shoulder.



The face of a targe typically used two general patterns – concentric circles, or a centre boss with subsidiary bosses around this. There are a few notable exceptions, such as a targe in Perth Museum in Scotland that is of a star design. Although some targe designs appear to have been more popular than others, there is very little to indicate that there ever were "clan" designs (though every clansman would have had a heraldic coat of arms). The nearest that one might come to finding a "clan" design is four identical targes from the family armory at Castle Grant. It appears more likely that targe designs were individual to their owner. During the 1745/46 Jacobite uprising, a William Lindsay, a shieldwright in Perth made hundreds of targes for Charles Edward Stuart's army. He made a distinction in price between an "officer's targe" and an ordinary targe.

Figure 15 Charles Edward Stuart's highly decorated targe on display at the National Museum of Scotland

Helmets



Figure 16 Spangenhelm

One of the earlier forms of helmet that was worn by the knights of the crusades was the conical helm. This style was popular during the early medieval ages and was known by its German name, the Spangenhelm.

Spangen refers to the metal strips that form the framework for the helmet and could be translated as *braces*, and *-helm* simply means helmet. The strips connect three to six steel or bronze plates. The frame takes a conical design that curves with the shape of the head and culminates in a point. The front of the helmet may include a nose protector (a nasal). Older spangenhelms often include cheek flaps made from metal or leather. Spangenhelms may incorporate mail as neck protection, thus forming a partial aventail. Some spangenhelms include eye protection in a shape that resembles modern eyeglass frames, and are thus sometimes called "spectacle helmets". Other spangenhelms include a full face mask.

The spangenhelm was an effective protection that was relatively easy to produce. Weakness of the design were its partial head protection and its jointed construction.

When constructing a spangenhelm, an iron band was formed that then supported vertical bands that would converge at the apex of the skull and hammered together. This was then overlaid with more metal.

The spangenhelm arrived in Western Europe by way of what is now southern Russia and Ukraine, spread by nomadic Iranian tribes such as the Scythians and Sarmatians who lived among the Eurasian steppes. By the 6th century it was the most common helmet design in Europe and in popular use throughout the Middle East. However, helmets of the spangenhelm type were used much longer.

Similar to the spangenhelm was the nasal helmet.



Figure 17 Nasal helmet

As the name suggests, the nasal helmet was characterized by a nose-guard, or 'nasal', composed of a single strip of metal that extended down from the skull or browband over the nose to provide facial protection. The nasals of these helmets were often so large that the wearer was unrecognizable to an observer. The celebrated incident at the Battle of Hastings where William the Conqueror had to lift his helmet to show his troops that he was still alive

The helmet appeared throughout Western Europe late in the 9th century, and became the predominant form of head protection, replacing previous types of helmet. Early nasal helmets were universally conical in shape. The skull could be raised from a single sheet of iron or be of composite, segmented construction.

Though still used, the conical type of helmet declined in popularity during the latter half of the 12th century and round-topped nasal helmets came into fashion.

Another early design was the kettle hat. These helmets were simple conical or spherical helmets, usually made of two or more sheets of metal, with a broad brim running around the circumference. It gained its common English language name from its resemblance to a metal cooking pot (the original meaning of *kettle*).



Figure 18 Kettle helmet

The kettle hat was common all over Medieval Europe. It was worn by troops of all types, but most commonly by infantry. The wide brim gave good protection against blows from above, such as from cavalry swords, and was very useful in siege warfare as the wide brim would protect the wearer from projectiles shot or dropped from above. These hats, although cheap, were not admired because they were considered only suitable for infantry and did not have the high grace or extravagance of a knightly helm like the bascinet or great helm. However, those who did use it proved that it was something worthwhile. An extra benefit was that the rim protected from direct sunlight, preventing getting dazzled. The kettle hat would continue to be used by armies throughout Medieval Europe until the eventual adoption of helmets such as the cabasset, and morion during the Renaissance period.

The bascinet – also bassinet, basinet, or bazineto – was an open-faced military helmet. The first recorded reference to a bascinet, or *bazineto*, was in the Italian city of Padua in 1281, when it is described as being worn by infantry.



Figure 19 Cervelliere

It is believed that the bascinet evolved from a simple iron skullcap, known as the cervelliere, which was worn with a mail coif, as either the sole form of head protection or beneath a great helm. The bascinet is differentiated from the cervelliere by having a higher, pointed skull. By about 1330 the bascinet had been extended lower down the sides and back of the head. Within the next 20 years it had extended to the base of the neck and covered the cheeks. The bascinet appeared quite suddenly in the later 13th century and some authorities see it as being influenced by Byzantine or Middle-Eastern Muslim helmets. The bascinet, without a visor, continued to be worn underneath larger "great helms".

Henry V of England is reputed to have worn a great helm over a bascinet at the Battle of Agincourt in 1415. He was recorded as receiving a blow to the head during the battle, which damaged his helmet; the double protection afforded by wearing two helmets may have saved his life.

The great helm or heaume, also called pot helm, bucket helm and barrel helm, is a helmet of the High Middle Ages which arose in the late twelfth century in the context of the Crusades and remained in use until the fourteenth century. The barreled style was used by knights in most European armies between about 1220 to 1350 AD and evolved into the frog-mouth helm to be primarily used during jousting contests.



Figure 20 Great helm

In its simplest form, the great helm was a flat-topped cylinder of steel that completely covered the head and had only very small openings for the eyes and mouth. Later designs gained more of a curved design, particularly on the top, to deflect or lessen the impact of blows.

The great helm ultimately evolved from the nasal helmet, which had been produced in a flat-topped variant with a square profile by about 1180. From this type of helmet an intermediate type, called an 'enclosed helmet' or 'primitive great helm', developed near the end of the 12th century. In this helmet the expansion of the nasal produced a full face-plate, pierced for sight and breathing. This helmet was largely superseded by the true great helm by c. 1240.



Figure 21 Sugarloaf helm

A later variant with a more conical top is known as a 'sugarloaf helm'. In Spanish they are called *yelmo de Zaragoza*, referring to Zaragoza where they were introduced for the first time in the Iberian peninsula.

Although the great helm offered vastly superior protection than previous helmets, such as the nasal helm and spangenhelm, it limited the wearer's peripheral vision, and in addition to being heavy, the mass-produced form (flat-topped without ventilation holes) provided little ventilation and could quickly overheat in hot weather.

By the middle of the 14th century, most knights had discarded the great helm altogether in favor of a fully visored bascinet. The bascinet, both with and without a visor, was the most common helmet worn in Europe during most of the 14th century and the first half of the 15th century, including during the Hundred Years' War. Contemporary illustrations show a majority of knights and men-at-arms wearing one of a few variants of the bascinet helmet. Indeed, so ubiquitous was the use of the helmet that "bascinet" became an alternative term for a man-at-arms. Though primarily associated with use by the "knightly" classes and other men-at-arms some infantry also made use of the lighter versions of this helmet. Regions where rich citizens were fielded as infantry, such as Italy, and other lands producing specialized professional infantry such as the English and Welsh longbowman probably saw the greatest use of bascinets by infantrymen.

Soon after 1450 the "great bascinet" was rapidly discarded for field use, being replaced by the armet and sallet, which were lighter helmets allowing greater freedom of movement for the wearer. However, a version of the great bascinet, usually with a cage-like visor, remained in use for foot combat in tournaments into the 16th century.



Figure 22 Visored bascinet



Figure 23 Bascinet with cage visor



Figure 24 Sallet helmet



Figure 25 Armet helmet

Crusader Armor

Contrary to the commonly held assumption of crusading knights riding into battle in full plate armor, the majority of crusaders wore chain mail. It was not until the 14th and 15th centuries that full suits of armor developed.

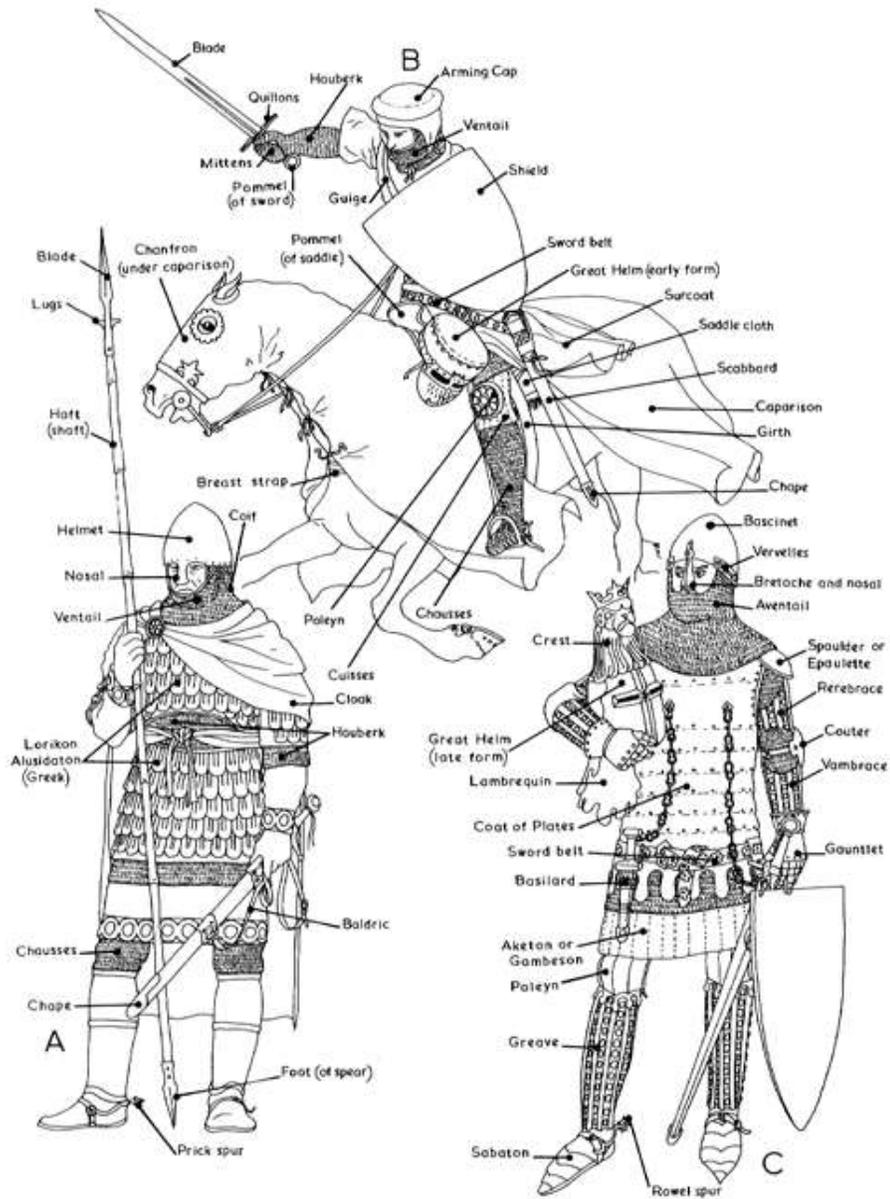


Figure 26 (A= Byzantine Calvaryman 10-11 Cent. B=West European Knight mid-13 Cent. C=German Knight mid-14 Cent.) Image taken from Nicolle, xvii

Head

The crusaders used coifs as well as the Muslims. Some of their headgear consisted of Chapel-de-fer war-hats, a type of wide brimmed hat. It was more suited to the climate than the conical shaped helmets with nose guards that were common throughout much of the crusades. However, the helmets were useful for battle; the

Chain Mail

was a prominent piece of armor during the Middle Ages between the fifth and sixteenth centuries. European mail was generally manufactured through a process of drawing and coiling iron wire into links that were later flattened to create a mesh-like fabric. Research on chain mail suggests that manufacturers probably used simple tools, including pliers and a hammer to construct and flatten the links. The finished product was mostly metallic in color resulting from the iron used to form the links. During the twelfth century, English knights implemented the use of chain mail as part of a piece of armor called the hauberk, which consisted of a chain mail shirt of mid-thigh length worn on top of a padded tunic. As the twelfth century progressed, chain mail began to cover more of the body, including chausses, or leggings, and sleeves that extended to the mittens used to protect one's hands. The small, intricate fabric of iron coils helped deflect jabs from swords and even proved useful in battle when facing arrows from most longbows. The use of chain mail, however, had its drawbacks. It might have been ineffective in providing sufficient protection when facing blows from large, heavy weapons like an axe or lance. In fact, chain mail could sometimes exacerbate injuries if the lacerated coils of iron pierced a wound after a blow. Considering the military context in which it was used and the intricate, labor-intensive process that was needed in order to create it, chain mail was probably a luxury only a knight higher up in the ranks of the English army could afford. In fact, a knight's advantage fighting alongside his more poorly armored sergeants and infantry was acknowledged in the Rule of Temple, which allowed those without mail to withdraw from battle if injured while not permitting those with mail to do the same.

conical shape was the most practical defense for the head since it would leave a glancing surface for the downward stroke of an attack. Other headgear included close fitting round helmets, "kettle hats" or broad brimmed flat iron hats, and arming caps which could be worn under the helmet or separately. By the late-13th century the Great Helm had been developed. This helm included a face guard and neck guard which gave it a cylindrical form with a flat top.

Torso

The mail hauberk was the typical protection for the crusader's body. This was simply a mail shirt that reached to the knees, with either long or elbow length sleeves. Under the Hauberk was worn a padded or quilted shirt, called a gambeson or aketon, to protect the knight's body from the metal. For foot soldiers, this was often their only defense. Over the top of the hauberk would be worn a surcoat, a type of overcoat or cloth covering that served many purposes. It protected the mail from getting wet as well as displaying the coat of arms in order to tell friend from foe. Hauberks were very protective, but extremely heavy and may have slightly restricted one's movements in battle.

Arms and Legs

Mail leggings, called chausses, were often used to protect the leg. Poleyms, a kind of protective knee-cap laced on from behind, also served this purpose. Some mail made for the legs was not in the form of leggings, but rather laced up from behind to protect the front of the legs. Mounted warriors (generally, the knights) wore spurs as well. Unlike their Islamic counterparts, crusaders also developed mail mittens to protect the hands. This would have been acceptable for fighting with swords or lances; however, the adaptation would have been restrictive to the Muslim warriors who were masters of mounted archery.

Horse Armor



Figure 27 Example of matching surcoat and comparison

Horse armor gradually developed by the 14th century. During the times of the crusades, horses wore only a caparison, a coat of cloth similar to a knight's surcoat. It would bear the coat of arms of the knight and may have been padded or quilted to give the horse extra protection. By the mid-13th century, mail was regularly worn by the horse under the caparison.

ST. MARY THE VIRGIN

Medieval Arms & Armor
