# Medieval Crossbows

*Image 1 Crossbowmen from Romance of Alexander, MS Bodl 264. Oxford - Bodleian Library, 1338-44*

## Origins

The European Crossbow probably evolved as a portable form of ancient Greek and Roman war machines such as the arbalest for shooting arrows. European crossbows possibly for hunting are depicted in fourth century reliefs in France. In the Chukchi and Nicobar regions of Asia, and China crossbows were in use since ancient times, being recorded as used in the battle of May-ling, China in 341 BC. In Europe the crossbow seems to have gone out of use from the fifth to the ninth century. Crossbows were used in the siege of Senlis in 947 and at Verdun in 985.

*Image 2 Crossbowmen, Cy commencent les grans croniques de la genealogie des roys de France BM PA 30. Lyon - Bibliotheque Municipal de Lyon, 1380*

Payne-Gallwey speculates that the crossbow was brought to England with the Norman invasion of 1066. In 1099 crossbows were used at the siege of Jerusalem and Anna Comnena daughter of the Byzantium emperor Alexius I describes the use of tzagran (crossbows) where the user lay down on their backs with a foot on each of the bow's arms and drawing the string back towards them, along the tiller into which a groove holds the arrow, which are very short, but thick with a heavy iron head. Anna describes the great power of these weapons in penetrating armour, as the invention of the devil.

*Image 3 Hussite warriors with crossbows and flails. Prague - Prague City Museum, C15*

Saracen opponents of the crusaders adopted the crossbow, the work of Mardi ibn 'Ali at-Tarsui written before 1190, describes making of crossbows of yew and olive and used with or without stirrups. Spanning was generally done with a two-hooked claw and a lock mechanism using a nut.

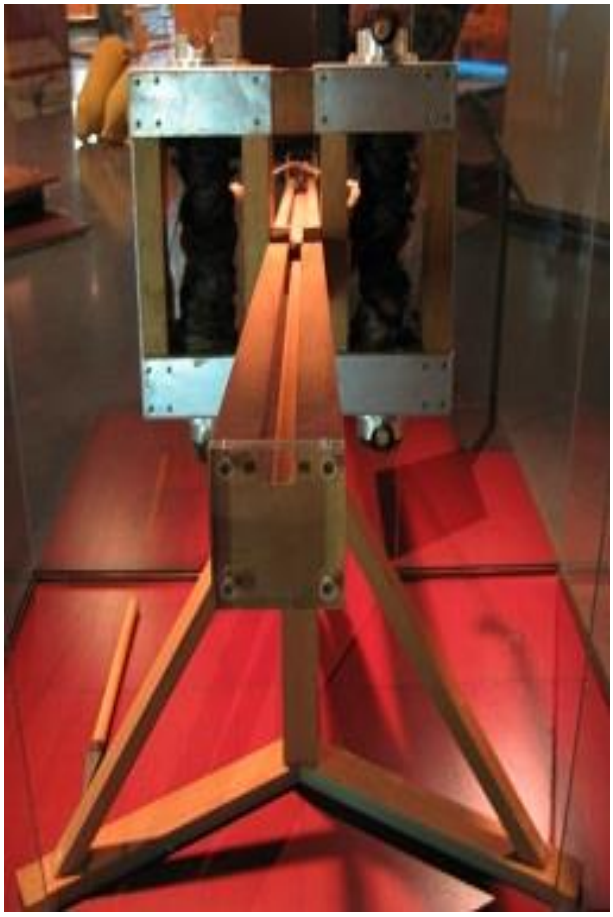

*Image 4 Reconstructed Roman Ballista., Barcelona - Catalonia Historical Museum.*

From the middle of the twelfth century horn bows were used, copied from the bows of Asia, this type of bow was made from a wooden core to which the back was attached a thick layer of sinews held together by fish glue, but generally lacking the horn on the belly. Horns from goats and oxen were used in the lands of the Teutonic knights in the fourteenth century for the cores of composite bows. From the end of the twelfth Century the stirrup was used to draw the crossbow, known as spanning.

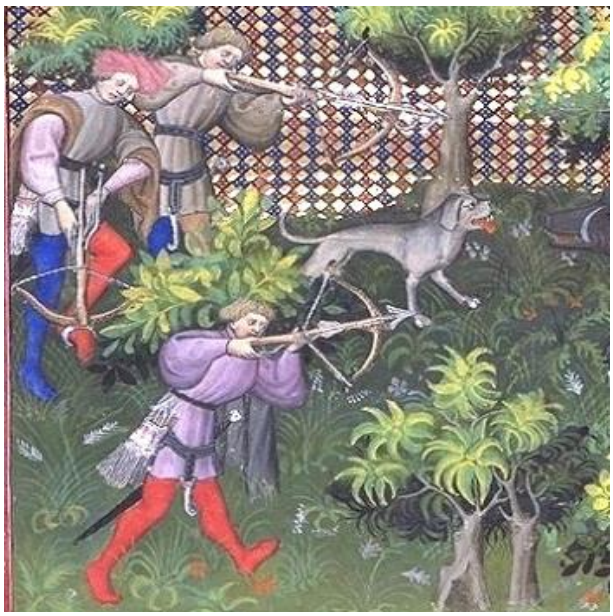

*Image 5 Crossbows used in boar hunt, Gaston Phoebus's Book of the Hunt. Paris - Bibliotheque Nationale, 1405*

Variants of crossbow existed such as those with stirrups to take two feet, and large crossbows spanned using a windlass with very large bolts, all these are mentioned to be purchased at Acre in 1239 and in 1269 at Piacenza. Crossbows that shot two bolts are also said to have existed. Mounted soldiers used crossbows and are mentioned in mid-thirteenth century Norway, and it was advised that they should not be so powerful that they could not be spanned on horseback.

*Image 6 Crossbowmen from Morgan Bible, New York - Morgan Library and Museum*

In the fourteenth century these types of crossbows continued to be used and many fortified places contained crossbows in their inventories. The Genoese became known for good quality crossbows and in providing mercenaries with crossbows. In the mid-fourteenth century the French employed large numbers of Genoese crossbowmen. In 1346 the Genoese crossbowmen were defeated by the English at Crecy using the longbow. The Genoese put their loss down to wet bowstrings, but this is disputed.

*Image 7 Reconstructed medieval rampart style crossbow, Caerphilly - Caerphilly Castle.*

Rampart crossbows appeared in the fourteenth century, mentioned in England in 1301, and were fixed on stands or carts. The spans of the bows could be very large, for example one found at Freiburg, Germany, has a span of thirteen feet, and others were said to be up to twenty feet.

*Image 8 Great crossbow from Romance of Alexander, MS Bodi 264. Oxford - Bodleian Library, 1338-44*

The use of the crossbow on the continent is shown in Germany where every city was required to employ a crossbow maker, in Hamburg for instance he was required to annually produce four crossbows and paid extra if he produced more.

# Genoese Crossbowmen

The Genoese gained a reputation for crossbowmen and their skills which developed from the use of the crossbow in naval warfare on the Italian galleys. Genoese crossbowmen captured by the Milanese had reportedly had one eye put out and one hand cut off. The Genoese were allies of France and crossbowmen were recruited and fought across Europe, and as early as 1099 were said to have been at the siege of Jerusalem.

*Image 9 Siege of Acre showing crossbowmen and pavise from Great Chronicles of France, FRM 2813. Paris – Bibliotheque nationale de France, 1370-1379*

The crossbowmen were hired and paid by the Republic of Genoa and had to swear an allegiance to them. The Genoese crossbowmen were always under the control of the Republic of Genoa and could not be under an independent flag and so were not strictly mercenaries and were sometimes sent to fight for allies without receiving a fee, but the Republic of Genoa bearing the costs. When the crossbowmen were employed, they had strict contracts that would be adhered to, but also those that they employed had strict terms that dictated their sponsor should pay

for anyone who refused to do his job or deserted. Each Genoese crossbowmen was also equipped in addition to their crossbow and twenty bolts, with a helm, body armour, mail armour, a dagger, and was accompanied by a 'Pavesarii', a squire to hold their pavise shield for defence. Both crossbow bolts and bullets were made by a guild of craftsmen called quarellari.

At the naval battle of Sluys in 1340, the French were said to have had twenty thousand Genoese crossbowmen but were defeated by the English longbows of Edward III.

*Image 10 Crossbowman on board ship from Luttrell Psalter, Add MS 42130. London - British Library, 1325-35*

At the battle of Crecy in 1346, the Genoese force led by Ottone Doria, is given variously as two thousand to six thousand strong, but they lacked their protective 'Pavesarii' with their pavise shields who were in the baggage train that was still on route. Normally they would probably take turns to shoot from behind the shields, whilst being protected when spanning the crossbow. Lacking this protective cover, they were outshot by the English longbowmen of Edward III. Payne-Gallwey speculates that the Genoese crossbows did not have the range of the English longbows, regardless of the impact of the rain on the crossbow strings and took a heavy toll from the greater rate that arrows could be shot. The Genoese crossbowmen retreated and were run down by the advancing French cavalry. Ottone Doria was killed but it is unknown if he died from an English arrow or a French knight.

*Image 11 Painting of the battle of Crecy 1346 showing crossbowmen. Leeds - Royal Armouries, late C15. Note that it depicts armour, weapons and crossbows at the time it was painted rather than the time of the battle.*

# Spanning the Crossbow

Spanning is the term used to describe pulling back the string on the crossbow. A locking mechanism was generally used so that the string could be pulled back by the user's hands and the bolt could be loaded, although in the eleventh century it is described how the user lay down on their backs with a foot on each of the bow's arms and drawing the string back towards them, along the tiller into which a groove holds short thick arrows. As it took some time to span the crossbow, it was effective when there was hard cover such as in a building, elsewhere shields such as the pavise were used to protect the user.

*Image 12 Crossbowman. Niederhaslach - St. Florent Saint Sepulchre, C14*

As the bows became stronger, more advanced mechanisms were developed to pull back the string. Stirrups may have been for one or two feet. One-foot and two-foot stirrups are recorded as being made at the Tower of London in the late thirteenth century. In 1301 three thousand bolts for two-foot and five thousand bolts for one-foot crossbows were sent by Edward I to Linlithgow, and in 1307 Edward I ordered one hundred one-foot and forty two-foot stirrup crossbows. In 1321 Marino Sanuto a Ventian known delivered a list of weapons for a proposed crusade and lists crossbows with wooden bows and two-foot stirrups. Inventories at Dover in 1344 and 1366 record one and two-foot stirrup crossbows.

*Image 13 Crossbowman from Luttrell Psalter, Add MS 42130. London - British Library, 1325-35*

In the latter half of the twelfth century the spanning or samson belt was developed, which consists of a hook attached to a belt, where the crossbow is turned with the groove towards the user, one foot is placed in the stirrup, the user bends over or goes down on one knee, and the claws of the spanning hook are put over the string, the user straightens or stands up using their body to pull the string back. The Spanning belt was popular continued to be used into and throughout the fourteenth and fifteenth centuries.

*Image 14 Crossbow spanning hook from Soborg Castle. Copenhagen - National Museum, C14.*

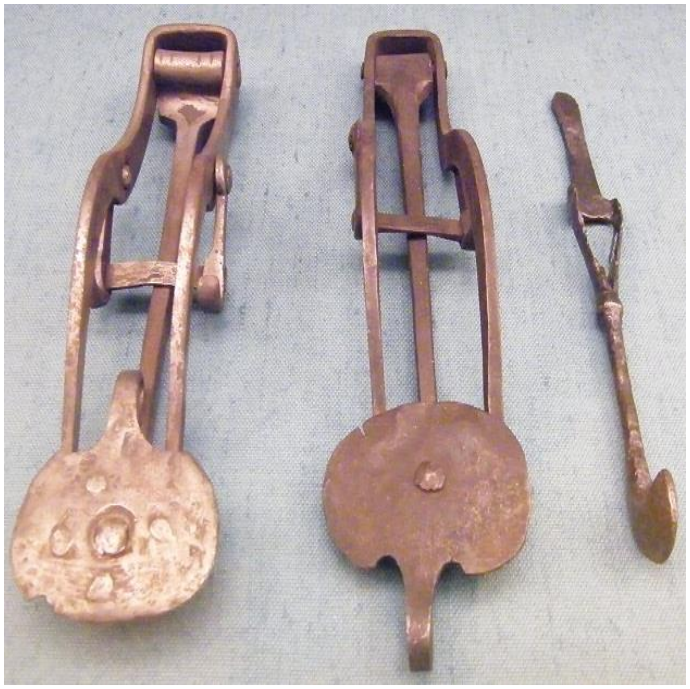

*Image 15 Crossbow goats-feet and spanning hook. Copenhagen - National Museum, C14.*

*Image 16 Crossbow goats-foot. Dortmund - Museum Adleturm, C15.*

An adaption of the spanning belt and claw was to use a pulley, so that the cord went from the spanning belt to a pully that was hooked onto the string and then was hooked to the end of the tiller. These types of crossbows were called 'Turni Balistarii' and 'Arbalests a Tour' and are mentioned from the thirteenth century. In 1301 Edward I requested 'Arbalests a Tour' for the defence of Linlithgow.

*Image 17 Crossbowmen with spanning hook from Queen Mary Psalter, Royal MS2. London – British Library, 1310-20.*

*Image 18 Crossbowmen, one shown with raised leg spanning crossbow from Sächsische Weltchronik WLB HB XIII 6. Stuttgart - Württembergische Landesbibliothek, 1300-50.*

In the 14th century, the goats-foot lever was developed with a wooden handle and iron claws and evolved to be made entirely of iron. It works by hooking onto the string and a lever pulled to draw the string back. It was levered against an iron rod that passed through the tiller behind the lock.

*Image 19 Crossbowman using a goats-foot lever to span the bow whilst behind cover of a pavise from ZBZ Rh hist 33b F 99v. Zurich - Zentralbibliothek, 1420-40.*

Windlass crossbows were mentioned at Acre in 1239 and Piacenza in 1269, a windlass crossbow, 'balista ad turnum' were listed as having been made at the Tower of London in the late thirteenth century. In the fifteenth century a windlass with a winch was used in England and France. Payne-Gallwey gives a date of 1370 for the introduction of the steel bow crossbow and windlass.

*Image 20 Windlass crossbow. Vienna - Vienna Armoury, C16*

The most powerful spanning device was the 'German winch' or cranequin with cog wheels and a rack of teeth. The earliest illustration of a cranequin is 1373.

*Image 21 Crossbow cranequin. Vienna - Vienna Armoury, C15*

*Image 22  Crossbow cranequin. Vienna - Vienna Armoury, C16*

In the fourteenth century spanning belts made of ox hide fitted with hooks and rings are mentioned at Frankfurt am Main.

*Image 23 Crossbowmen using a single claw spanning hook from Velislavova Bible CNM XXIII C124. Prague - National Library of the Czech Republic, c1325-1349.*

*Image 24 Crossbowmen spanning with 2 claw spanning hooks from Bible with prologues M969. New York - Morgan Library, 1275-99*

The use of these advanced spanning mechanisms made the crossbow a powerful but slow weapon. Payne-Gallwey describes shooting a fifteenth century siege bow of three-foot two inches length, with a bolt three ounces in weight and fourteen inches in length, a distance of four hundred and sixty yards. At sixty yards he sent a bolt right through a deal plank three quarters of an inch thick. The total weight required to draw the string of its bow seven inches using its portable windlass was one thousand two hundred pounds, or over half a ton.

# Second Lateran Council - 1139

Pope Innocent II summoned in Lent 1139 II a general council, held in the and held in the Lateran Basilica. At least five hundred clerics met in Rome. One of these came from the East, the patriarch of Antioch, but he was a Latin. With the pope presiding the council began on 2 April and it seems to have ended before 17 April. A series of canons were enacted concerning the reform of the church but also including ones banning jousts and the use of archers and crossbows against Christians.

*"14. We entirely forbid, moreover, those abominable jousts and tournaments in which knights come together by agreement and rashly engage in showing off their physical prowess and daring, and which often result in human deaths and danger to souls. If any of them dies on these occasions, although penance and viaticum are not to be denied him when he requests them, he is to be deprived of a church burial."*

*"29. We prohibit under anathema that murderous art of crossbowmen and archers, which is hateful to God, to be employed against Christians and Catholics from now on."*

*Image 25 Crossbow brooch found in Wenceslas Square. Prague - City Museum, C14-15.*

# Crossbow Parts

## Trigger mechanism

The crossbow differs from a bow in the ability to retain the potential energy of the sprung bow until it is released by a trigger. The earliest bows had a notch cut into the tiller or stock and the string would be pulled back and pushed into the slot. To shoot the bow a trigger would push the string out of the slot.

*Image 26 Inlays with groove for holding the crossbow bolt. Copenhagen - National Museum, C14.*

The crossbow stocks shown above are for a crossbow and a child's crossbow. The bow would have sat in the notch on the left and the release mechanism was a pin which pushed the string up.

*Image 27 Crossbow stocks from Boringholm. Copenhagen - National Museum, C14.*

A more elaborate mechanism was developed with a nut that had a segment cut out of it to hold the string. The nut was made of wood, ivory, bone or metal. The nut is not permitted to move until the trigger allows its rotation and the release of the string to propel the bolt forwards.

*Image 28 Crossbow nuts. Copenhagen - National Museum, C14*

## Prods (Bow Arms)

Without a bow string, the prod arms usually arch forwards, so when strung the prod is under tension.

*Image 29 Crossbow with wooden prod. Cologne - Stadt Museum, late C14.*

The prod of a crossbow was originally made of wood and from the mid-twelfth century horn prods were used, copied from the bows of Asia. Composite prods with a wooden core and the back of a thick layer of sinews bonded by fish glue, generally they lacked the horn on the belly. Natural glues require a drying time of six to twelve months and may contribute to composite crossbows being twice the price of wood crossbows.

*Image 30 Crossbow with wooden prod. Zurich - National Museum, C14-15.*

In 1321 Marino Sanuto a Ventian delivered a list of weapons for a proposed crusade and lists crossbows with wooden prods and two-foot stirrups, and that composite prods were better in dry areas than in countries with humid climates.

*Image 31 Composite crossbow prod (wood and whalebone). Cologne - Stadt Museum, C16.*

A 1382 German hunting ordinance instructs the hereditary master of the hunt to deliver to the emperor on his visit, a crossbow with a prod of yew, a tiller of maple, a nut of ivory and a string of silk.

*Image 32 A German crossbow with wooden prod. Copenhagen - National Museum, C14.*

Gary G. Ball gives the first recorded date of a steel prod as 1314 and Payne-Gallwey gives a date of 1370 for the start of the use of steel bows in crossbows, but other authors seem to favour a later date for the steel bow, and they only seem to have become more common in the early fifteenth century.

*Image 33 Crossbow with steel prod. Cologne - Stadt Museum, C16.*

From the start of the fifteenth century metal prods started to be used but wood and composite prods continued to be in the majority of bow types used.

*Image 34 Crossbow with steel prod. Munich - Bayerisch Museum, C16*

# Crossbow Strings

Crossbow strings were made of a single long yarn or cord of linen or hemp, see Payne-Gallwey. In Germany strings were made to a late date with well waxed cord of a hundred and fifty meters in length wound between pins four to five meters apart, and the hank folded several times to the correct length, making a string of sixty to eighty strands (possibly up to two hundred). The strings loops were wrapped with thread and then wound over with thread 4-5 times thicker than the threads of the string.

1382 German hunting ordinance instructs the hereditary master of the hunt to deliver to the emperor on his visit, a crossbow with a bow of yew, a tiller of maple, a nut of ivory and a string of silk. Flemish yarn was used for strings in the lands of the Teutonic knights in the fourteenth century. It is thought that the Burgundian records listing 'Antwerp wire' is the same.

*Image 35 Crossbowman from Romance of Alexander, MS Bodl 264. Oxford - Bodleian Library, 1338-44.*

**Wet bow strings fact or myth?**

At the Battle of Crecy, the chronicler Jean de Vanette describes a sudden downpour which soaked the Genoese crossbow strings. As a result of being wet the Genoese crossbows were said to have been ineffectual against the English longbows whereas the English removed theirs during the rainfall, W. Rose. A crossbow string is not easily removable. In his book European Crossbows Josef Alm thinks improbable that wet bowstrings affected the outcome and may have been an excuse used by the Genoese to explain their defeat. He cites Payne-Gallwey who immersed for twenty-four hours, a bowstring impregnated with wax, and found it had not absorbed water and was perfectly able to be used.

However, Payne-Gallwey does also mention two types of tests carried out which he speculates on the loose strings of the crossbows used at Crecy and these looser strings did become less effective in his tests. He speculates that the English longbow had a greater range and could shoot more arrows than that of the Genoese. The text of this is given below.

> *"Although much doubt has been thrown on the statement that the crossbows of Genoese failed to act on this occasion, owing to their strings being slackened by wet weather, it is possible that the incident occurred, without, however, in any measure influencing the result of the battle.*
>
> *The string might easily have been rendered less effective than usual by the heavy rain that fell just before the battle, and by the bright sun which is known to have succeeded the rain.*
>
> *This combination of water and heat would certainly relax in some degree the strings of the crossbows used at the time of Crecy, if they were uncovered, and would make the strings too loose to be of good service, till they could be removed from the bows in order to be shortened by twisting, and then replaced; all of which would entail, of course, time and care.*
>
> *It should be remembered that the bows of the Genoese crossbowmen at Crecy were doubtless composite ones, made of wood, horn, sinew and glue, bow of steel being of latter introduction.*
>
> *The composite bow was straight; hence its bowstring was fixed to it in a necessarily rather slack condition; for this reason, the thread composing its string, being more or less detached, were liable to absorb moisture.*
>
> *On the other hand, the threads that composed the tightly strained string of a steel crossbow, lay closely packed together, and a in this case the string was always thickly smeared, both inside and outside, with beeswax to preserve it, it was impervious to water.*
>
> *To test the matter, I have sunk a steel crossbow in a tank of water for a day and a night and have found no appreciable alteration in the tightness of its string. I have also placed in water a crossbow with a comparatively loose string - such as those which I believe were used by the Genoese at Crecy - and found that after half an hour's submersion, the application of a lever to bend the bow caused the string subsequently to stretch down the stock an inch further than its proper position, its tautness, and consequent effectiveness, thus being lost."*

The overall conclusion is that although water may have had an effect, the greater number of archers, the faster rate of shot of the longbow, the greater range of the longbow, and the lack of pavise for the crossbowmen to cover behind meant that the Genoese were defeated with wet bow stings having little impact.

*Image 36 Rabbits as crossbowmen from Romance of Alexander MS Bodl 264. Oxford - Bodleian Library, 1338-44*

## Bolts and Quarrels

Crossbow bolts varied in form for different purposes. Bolts of 12 inches or shorter had their centre of gravity one third of the way along the shaft from the head. Longer bolts were a quarter of the way along. The rear of the shaft of the arrow was often made to be of the same thickness as the string. There is no evidence that bolts had nocks as arrows do. The term quarrel arose due to the four sides often in sharp and blunted heads.

*Image 37 Crossbow bolts from Prague. Vienna - Vienna Armoury, 1430-60*

*Image 38 Hunting bolts. Copenhagen - National Museum, 1430*

War bolts often had sockets and short heavy tips of rhomboidal cross section in the 14th century. Long dart like tips with tangs were also used. The heaviest crossbow bolts may not have had flights, lighter ones could have two or three straight, occasional spiral flights of bird feathers, parchment, wood slices, or thin sheet copper. Spiral flights were made in Frankfurt am Main in 1349.

*Image 39 Crossbow bolt heads from Prague – Vienna, Vienna Armoury, 1430-60*

*Image 40 Commander's crossbow bolt from Prague. Vienna - Vienna Armoury, 1430-60*

*Image 41 Fire bolt. Vienna - Vienna Armoury, 1430-60*

Bolts were transported in kegs, and in northern Germany and Denmark a keg was reckoned to contain eight hundred bolts. The Gascons under Edward I in 1283 brought with them seventy thousand bolts in twenty-nine barrels and twelve baskets.

*Image 42 Crescent tipped arrows being made for transportation in barrel from Romance of Alexander MS Bodl 264. Oxford - Bodleian Library, 1338-44*

Cross bow bolts with crescent shaped heads and multi-pronged heads were described by Payne-Gallwey as "bolts for killing large birds". Fox knife bolts, with very wide heads (6 to 12 inches wide) designed for traps can be seen at the Nordic Museum in Stockholm. Josef Alm shows a picture from the hunting manual of Tantzern, 1686, printed in Copenhagen that shows a trap crossbow with a wide crescent head. It is thought that a narrow point may pass straight through a bird or small animal whereas a crescent shape would spread the impact.

*Image 43 Hunting birds using a blunt bolt from Romance of Alexander MS Bodl 264. Oxford - Bodleian Library, 1338-44*

Blunt bolts were also used for small animals and birds. A crescent head may also prevent the bolt burying itself into soft ground and being lost. Other theories for crescent heads are for shooting rigging on ships, although the spin imparted into bolts may make this impossible.

*Image 44 Hunting bolts. Copenhagen - National Museum, C14*

*Image 45 Hunting bolts. Copenhagen - National Museum, C14*

In the mid-thirteenth century John Malemont, England's chief quarrel maker made twenty-five thousand bolts a year and was expected to make a hundred bolts a day for which he was paid seven and a half pence and three pence for fletching them. Bolts were required in huge quantities, in 1277 one hundred and fifty thousand crossbows were supplied to South Wales. In 1282 Bristol supplied fourteen thousand crossbows to Rhuddlan, ten thousand to Chester, ten thousand to Carmarthen, and four thousand for the naval fleet. In 1283 an English army in Anglesey was equipped with one hundred and seventy thousand bolts.

*Image 46 Blunt bolt used for crossbow hunting from Manesse Codex. Heidelberg - Heidelberg University Library, 1304-1340*

Payne-Gallwey states that these bolts were used against armoured opponents *"Other bolts had square-faced heads with four small points, one at each corner of the head, so that they might not glance off armour, but give a straight and smashing blow to mounted men wearing breastplates and helmets, against which the end of a sharp projectile might break, bend, or turn aside."*

## Quivers

Quivers hold the crossbow bolts for the operator, and were generally made of leather, some are depicted or exist in museums with fur. The crossbow bolts seem to have been placed point upwards although there are a number of images that show the bolts point down. The quivers are often wider at the base, probably to accommodate the bolts and the flights.

*Image 47 Crossbow pouch and quarrels. Niederhaslach - St. Florent Saint Sepulchre, C14*

*Image 48 Crossbow bolt quiver. Prague - Vienna Armoury, C15*

*Image 49 Crossbow bolt quiver from southern Germany. Vienna - Vienna Armoury, 1500*

## The Pavise

Whilst spanning the crossbow the crossbowmen was vulnerable to return missiles, and so often a shield or pavise was used. This were large enough for the crossbowmen to shelter behind, then to emerge from behind to shoot. As well as being used in large battles, they also allowed crossbowmen to attempt to approach fortifications that were under siege.

*Image 50 A 'storm shield' thought to be from southern Germany. Copenhagen - National Museum, C15*

*Image 51 Detail of 'storm shield' showing hole through which bolts could be shot. Copenhagen - National Museum, C15*

*Image 52 Detail of 'storm shield' showing port allowing viewing. Copenhagen - National Museum, C15*

*Image 53 Detail of 'storm shield' showing metal spikes allowing it to be planted into the ground. Copenhagen - National Museum, C15*

# The Popinjay

Many countries in Europe encouraged their populations to shoot at archery ranges and in competitions. Shooting at the popinjay, a brightly coloured bird or parrot, was a popular competition. The word popinjay comes from the French word for Parrot, papegai.

*Image 54 Popinjay medallion. Cologne - Stadt Museum, 14C*

Shooting the Popinjay probably dates back to at least the 13th century. The Grand Master of Prussia in 1354 setup in each city a tree or pole of twenty to fifty feet in height at the top of which was placed the popinjay. Blunted bolts were shot at the popinjay, and who won would be called the 'shooting king', and received the prize of a silver chain to which was attached a gilded parrot which he could wear at festivals for a year, and if he won it three times in a row he could keep it.

# Crossbow Timeline

400 BC - Ancient Greek and Roman war machines such as the arbalest or ballista for shooting arrows appear.
341 BC - Battle of May-ling. First recorded use of the crossbow in China.
228 BC - Bronze Chinese crossbow mechanism is the earliest ballistic artefact.
300-400 - European crossbows possibly for hunting are depicted in 4th century reliefs in France.
947 - Crossbows used in the Siege of Senlis.
985 – Crossbows used at the Battle of Verdun.
986 - The Jomsvikingasaga describes lock-bows at the Battle of Hjorungsvag.
1060 August 4 - Charter of William I in donation by Richard de Redvers to Abbey of St Pere de Chartres is witnessed by 'Fulcher the Crossbowman'.
1085 - Doomsday book records some lands in Yorkshire held for the rent of one crossbow.
1099 - Crossbows used at the siege of Jerusalem.
1001-1100 - Anna Comnena daughter of the Byzantium emperor Alexius I describes the use of tzagran (crossbows) where the user lay down on their backs with a foot on each of the arms of the crossbow and draws the string back towards them, along the tiller into which a groove holds short thick arrows.
1100 - King William 'Rufus' II killed by a crossbow bolt whilst hunting.

1100-1123 - Sigurd Jorsalafar, King of Norway said to his brother Osten "You could not span my bow, even were you to brace yourself against it with both feet", suggesting a crossbow.
1100-1135 - Henry I employed crossbowmen.
1081-1137 - The use of the crossbow becomes widespread in France under Louis VI.
1139 - In Rome the Lateran Council commanded that bows and crossbows were only to be used against pagans and heretics and not Christians. The Lateran council declares: *"We prohibit under anathema that murderous art of crossbowmen and archers, which is hateful to God, to be employed against Christians and Catholics from now on"*. They also banned jousting.
1138-1152 - Emperor Conrad III decrees crossbows are not to be used in his realm.
1170 - Esbjorn Snare in a battle with Esthonians and Courlanders, misses with three bolts from his crossbow and smashes it in a fit of rage In Oland, Sweden.
1170 - At Julin, now Eastern Germany, Sune Ebbeson used a crossbow against the Wends.
1180-1223 - Philip Augustus of France employs foot and mounted crossbowmen.
Before 1190 - The Saracens made crossbows of yew and olive and used with or without stirrups. Spanning was generally done with a two-hooked claw and a lock mechanism using a nut.
1199 - Richard II, King of England killed by crossbow bolt at Siege of Chalus.
1199 - Battle of Trondheim Fjord. crossbows were used.
End 12th century - Pope Innocent III repeats that the crossbow is only to be used against pagans and heretics and not Christians.
1205 - Peter the Saracen is recorded as making crossbows for King John.
1212 - King John has an armed guard of crossbowmen.
1219 - Damietta is captured by crusaders and many crossbows with composite prods and other types are found.
1224 - Genoese crossbowmen are said to have had crossbows with composite prods.
1231 - Valdemar, King-elect of Denmark accidentally killed by a crossbow bolt.
1237 - Battle of Damietta. The Chronicles of Matthew Paris state the death of three hundred crossbowmen.
1239 - Emperor Frederick II orders a sea captain at Acre to buy as many two-foot stirrup crossbows and windlass crossbows as he can.
1240 Siege of Carcassonne - Accounts tell of extensive use of crossbows.
1240-5. Phillip le Convers paid four and a half pence a day to repair crossbows at the Tower of London.
1241 - Jutland law decrees that on all naval vessels, every helmsman should have in addition to other weapons a crossbow with thirty-six bolts and a person able to shoot if the helmsman could not do so themselves.
1242 Battle of Taillebourg. Seven hundred crossbowmen in army of Louis IV, King of France defeat Henry III, King of England.
1242 – Sixty crossbowmen sent to Dover Castle.

1245 - Constable of Winchester Castle is required to send eight crossbows and fifty thousand quarrels to Portsmouth.
1246 - Captured Genoese crossbowmen reportedly had one eye put out and one hand cut off by the soldiers of Milan.
Mid-13th century - Mounted soldiers use crossbows in Norway. it was advised that the crossbows they were supplied should not be so powerful that they could not be spanned on horseback.
1250 - Sheriff of Northumberland ordered to repair crossbows at Bamburgh and Newcastle.
1264 - Patent rolls mention archers and crossbowmen were to be gathered in East Anglia against an expected invasion.
1269 - Single and double-foot stirrup and windlass crossbows are mentioned being used at Piacenza.

1270 – The Kings forces sieging Kenilworth Castle request six crossbows from Windsor at seven shillings each.
1277 - Gascony supplies Edward I with one hundred and twenty mounted and foot crossbowmen.
1277 – One hundred and fifty single foot crossbows and fifty thousand double-foot crossbows ordered for South Wales.
1278 - Army of Edward I has one hundred crossbowmen from Gascony, one hundred from London and fifty from other parts of England.
1282 - Bristol supplied fourteen thousand crossbows to Rhuddlan, ten thousand to Chester, ten thousand to Carmarthen, and four thousand for the naval fleet.
1283 - English Army in Anglesey equipped with one hundred and seventy thousand bolts.
1286 - At Schweidnitz, now part of Poland, for the first time a shooting competition with the crossbow took place.
1295 - Earl of Warwick defeats Welsh at Maes Moydog and places in a defensive position one crossbowmen between two cavalrymen.
1296 – In Copenhagen, revolting peasants shoot bolts into the castle where Bishop Jens Krag of Roskilde was staying.
1297 - Roxborough Castle lists twenty crossbowmen.
1298 - Berwick Castle inventory lists seven crossbows with winches, six double-foot spanned crossbows, one without a nut, eight single foot crossbows and one hundred and eighty-nine goose wings for bolts.
1298 July 22 - Battle of Falkirk. The English use crossbowmen.
1301 - Rampart crossbows are mentioned in England.
1301 – Edward I, King of England orders for the town of Linlithgow, twelve crossbows with double-foot stirrups, three thousand bolts for double foot crossbows and five thousand bolts for single-foot stirrups.
1301 - Mutiny by household knight Walter de Teye with archers and crossbowmen after late payment.
1307 - Aranas Castle, Sweden was destroyed. From excavations a crossbow nut of horn was found with a two clawed spanning hook and another single claw spanning hook which had been broken off.
1307 - Edward I, King of England for the Scottish war, orders one hundred single-foot stirrup crossbows and forty double-foot stirrup crossbows.
1307 and 1308 - The City of Hamburg orders ten back crossbows and ten single-foot loop crossbows and rampart crossbows.
1319 - Crossbowmen are listed among the soldiers for the Siege of Berwick.
1320 - The quote "a fool’s bolt is soon shot" was used in 'Proverbs of Alfred'. (Also cited as used as early as 1225).
1321 - Marino Sanuto a Ventian delivers a list of weapons for a proposed crusade and lists crossbows with wooden prods and double-foot stirrups, and that crossbows with composite prods were better in dry areas than in countries with humid climates.
1327 - Swedish Sodermanland laws decree every man liable for military service was to have among other weapons a handbow with thirty-six arrows.
1328 - Edward III orders one hundred crossbows for the defence of the Channel Islands.
1328 - Back crossbows listed at Copenhagen castle.
1340's - Pavesarii are listed as shield bearers for crossbowmen.
1340 June 24 - English longbowmen defeat the Genoese mercenaries at the naval battle of Sluys.
1344 and 1366 – Inventories at Dover show one hundred and twenty-six crossbows, thirty-four of which had composite prods with double-foot stirrups and nine with composite prods and single-foot stirrups, as well as three large windlass crossbows.
1346 August 26 - French army with Genoese crossbowmen defeated at Crecy.

1351 - French ordinance lists all crossbowmen to have a good quality crossbow to match his strength and a good spanning belt.
1354 - Popinjay shooting competition in Prussian cities.
1361 - Battle of Wisby. Bolt heads one to two inches long found with sockets. Wounds show a number of cases where bolt has gone straight through skulls.
1361-1363 – The town of Greifswald, Germany orders back crossbows, foot loop crossbows and rampart crossbows.
1362 - Burgundian accounts list one hundred and eighty-nine light and heavy crossbows with composite prods, and three hundred and eighty-two light crossbows with wooden prods. Additionally crossbows with single-foot stirrups, double-foot stirrups and windlasses are listed, as well as rampart crossbows.
1369 - Soldiers of Florence are equipped with crossbows and spanning hooks.
1372 - Hamburg in Germany lists spanning hooks.
1372-4 - English army accounts show forty-nine crossbows, eight with composite prods and the rest with wooden prods.
1377 - A shooting range is mentioned in Gorlitz, Germany.
1378 – A large crossbow was purchased from Luxembourg by Trier, Germany costing four times that of an ordinary hand crossbow.
1379 - Trier, Germany lists spanning belts with hooks.
1382 - German hunting ordinance instructs the hereditary master of the hunt to deliver to the emperor on his visit, a crossbow with a prod of yew, a tiller of maple, a nut of ivory and a string of silk.
1384 - Burgundy, a contract lists for 20 gros tournais of silver a Genoese style crossbow with iron bands (probably to reinforce the stock). A crossbow with a two-foot stirrup cost the same. A one-foot stirrup crossbow with string, and accessories cost 15 gros in silver.The strings were made of thread or yarn from Antwerp, B. Rathgen.
1390 - Teutonic knights list the majority of their crossbows as back crossbows.
1395 - Siege of Stockholm. The city of Thorn, Poland, are to supply a crossbow maker. The cities of Elbing, Poland, and Danzig (Gdansk), Poland, are to supply a crossbow windlass, goats-foot levers, three strings, two kegs of bolts, and ten windlass crossbows and also ten crossbowmen, each equipped with a small and medium sized crossbow and sixty bolts.
1399 - In the rolls of the Teutonic Knights are listed spanning belts with hooks and quivers.
1405 - A French army supporting Owain Glyndwr includes six hundred crossbowmen.
1415 August - Henry V has about one hundred crossbowmen in his army.
415 October 25 - Rymer's muster-roll of the army of Henry V lists thirty-eight crossbowmen.

# Glossary

**Arbalest or arcubalistae -** Latin for Roman war machine devised for shooting arrows.
**Arbalestes a Tour -** a large crossbow spanned by the use of a windlass.
**Arbalestre or Arbaleste -** Medieval French derived from the Latin Arbalest.
**Arbaleste Gemelle -** old French for crossbow that shoots two bolts.
**Arbalestes a Tour** - crossbows that use a spanning belt with a pulley, see also Turni Balistarii.
**Arbalista ad duos pedes -** double-foot stirrup crossbow.
**Arbalista ad unm pedem -** single-foot stirrup crossbow.
**Arborst -** North German term for crossbow.
**Armborstmakere -** German term for 14th century maker of crossbows.
**Armbrost or armbrust -** Medieval High German for crossbow.
**Artillery** – Large projectile weapons. From the old French word atelier meaning, to arrange, and attillement meaning apparatus or equipment.
**Artillier -** A builder of war machines, Etienne Boileau (c.1268).
**Back Crossbow -** The English translation of the German Ruckarmburst. It is not clear what the difference is between a back crossbow and a stirrup or foot-loop crossbow, and could indicate that spanned with two-feet, a spanning hook or a goats-foot lever.
**Balcanelle -** Blunt crossbow bolts.
**Balista or ballista -** Medieval Latin for crossbow.
**Balista sine nuce, quae duos projicul quarelos -** Double-foot crossbow capable of shooting two bolts.
**Balistae lignea ad duos pedes -** A wooden crossbow prod.
**Balistae de cornu ad duos pedes -** A composite crossbow prod.
**Balistarius -** A German term for 14th century maker of crossbows.
**Balistas de torno -** A large crossbow spanned by the use of a windlass.
**Balistas dorsalis -** Back crossbow.
**Balistas stegerepas -** Foot loop crossbows.
**Balistifex -** German term for 14th century maker of crossbows.
**Bankarmbrost -** From the lands of the Teutonic Knights, rampart crossbow, named after the bank on which it stood.
**Baudrier or baudre -** French term for spanning belt.
**Bender or Vippa -** literal translation is pump handle or lever and is used to describe the goats-foot lever.
**Bolt -** The wooden shaft shot from crossbows, see also quarrel.
**Bow -** The part of the crossbow to which the string is attached at each end and pulled back under tension.
**Crannequin -** French name derived from Dutch or German Kraeneke, also known as the German winch, a crossbow winding mechanism involving cogs and a rack with teeth.
**De torno vel de lena -** Spanned with natural strength.
**Espignol or Espingales -** A rampart crossbow.
**Getfoten -** Goats-foot lever.
**Goats-foot lever -** A mechanism for spanning a crossbow involving the use of a lever.
**Grosses arbaletes -** Rampart crossbows.
**Jawzah -** Arabic term for the crossbow lock mechanism using a nut.
**Khattaf -** Arabic term for two-hooked claw for drawing the crossbow.
**Latchets -** Northern England and Scottish term for crossbow.
**Lath -** see bow.
**Limbs -** see bow.
**Lock -** The mechanism for holding the string of a strung crossbow.
**Lockbow -** Northern European term for crossbow.
**Magnas ballista -** Rampart crossbow.
**Magnae arbalista ad turno -** Large rampart crossbow with windlass.

**Nut -** The mechanism that holds the crossbow string under tension.
**Pavesarii -** Soldiers who wielded shields to protect the crossbowmen.
**Pfilzeine -** Medieval German term for a crossbow bolt shaft, evolving into the modern German zaine.
**Pilsticker -** Northern and western German term for the craftsman who of fitting shafts.
**Piltenar -** Medieval term used in Sweden, for a crossbow bolt shaft.
**Prod -** see bow.
**Quarrel -** The wooden shaft shot from a crossbow, so called because of the four sided head used in sharp and blunt heads, see also bolt.
**Quarellari -** Genoese craftsman who made crossbow quarrels and bolts.
**Ribald -** A rampart crossbow.
**Ruckarmburst -** German term meaning back crossbow. It is not clear what the difference is between a back crossbow and a stirrup or foot-loop crossbow, and could indicate that spanned with two-feet, a spanning hook or a goats-foot lever.
**Samson Belt -** A rope running from the spanning belt through a pulley with hook that attached to the string, the end of the rope attaching to the rear of the tiller, allowing spanning of the crossbow.
**Schtzenmeister -** German term for 14th century maker of crossbows, used in Naumburg.
**Selfbow -** a bow made of one piece of wood.
**Spanning -** The process of pulling back the crossbow string.
**Springal, springol, or springarde -** A rampart crossbow.
**Steigreifarmbrust -** German term for stirrup crossbow.
**Sticken -** Northern and western German term for the process of fitting shafts.
**Stock -** The piece of wood perpendicular to the prod. The body of the crossbow.
**Thene -** Low German medieval term, also used in Denmark, for a crossbow bolt shaft.
**Tiller -** see stock.
**Trigger -** The mechanism that releases the nut which holds the crossbow string.
**Turni Balistarii -** Crossbows that use a spanning belt with a pulley, see also Arbalests a tour.
**Tzagran or tzangran -** Byzantium Greek for crossbow.
**Windlass crossbow -** A large crossbow spanned by the use of a windlass.
**Wintarmbruste or wintarmborst -** Rampart crossbow.
**Teyne -** High German medieval term for a crossbow bolt shaft.

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