

Could medieval arrows pierce armour?

Medieval archers used different arrows, arrow heads and weights of bow to undertake specific tasks.

The heaviest bows (hardest to pull) were the war bows. These could be between 110 and 180lbs in draw weight.

John's English Yew bow has a 130lb draw weight at 32".



Long thin bodkin heads were developed in the 13th Century to pierce mail armour, which was the standard military defence. As plate armour developed during the 14th and 15th centuries, new, heavier arrow types were designed to try and punch through the curved iron plates.

Mark's Italian Yew bow has a 140lb draw weight at 32".



Archers Mark Stretton and John Potter shot a series of replica medieval arrows at this replica steel breastplate from fifty yards to see how effective these arrows really were.

The breastplate was fixed to a heavy bag of dried beans, which was wrapped in a padded jacket.



The Results

The later style, lozenge-shaped bodkin arrows were shot first. The first one hit the lower section of the breastplate (the plackart), which is double thickness. The arrow cut through both layers of armour (3mm of steel) but bounced back out again. The large dent around the point of the plackart shows the heavy impact of the arrow. Further holes were achieved in both the double and single layered parts of the target. Each hole is accompanied by a dent and in most cases the armour flexed then sprung back, forcing the arrow out of the hole it made.

The last of the broad bodkins was the heaviest at 102g, with a long lozenge-shaped head. This cleanly penetrated the single layered armour at the centre of the target, the jack beneath and the bag of beans. The arrow head cut to a depth of 1.25 inches into the beans.

As expected, the lighter long bodkin arrows, which were designed to pierce mail armour, did not penetrate the breastplate. The first one bounced off leaving a small dent on the armour and a curled tip to the head, while the second shattered its shaft, bent the entire head and left a short but deep scrape in the armour.

Blunt Trauma

The buckling of the armour on impact is as significant as the penetration of the arrow head. A blunt trauma impact of more than 80 joules of energy to the human torso is usually fatal. The arrows which pierced this breastplate hit with around 150 Joules of energy, which would have knocked the wearer over and stopped his heart. If an armoured man was hit by several arrows at the same time the flexing of his armour would have catastrophic effect on him even if it was not pierced. A charging knight would add his own momentum to the energy upon impact, making the effect even worse.

With many thanks to Mark Stretton and John Potter.