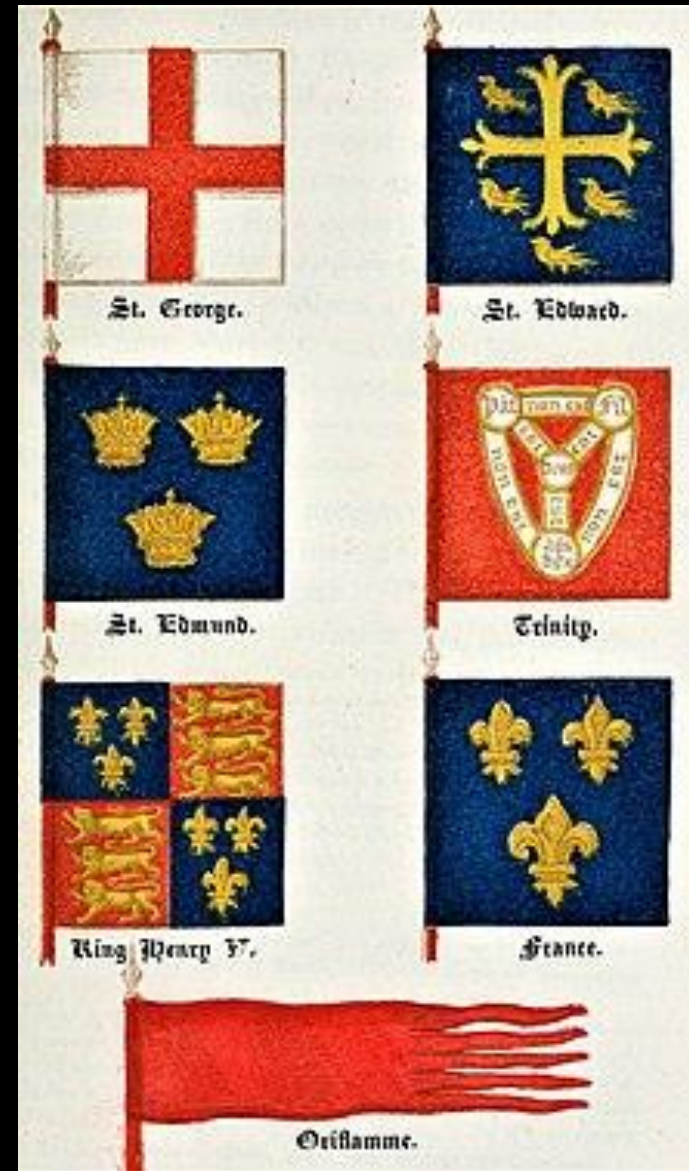


Battle of Agincourt and the effectiveness of the bodkin arrow

By Joseph Slattery

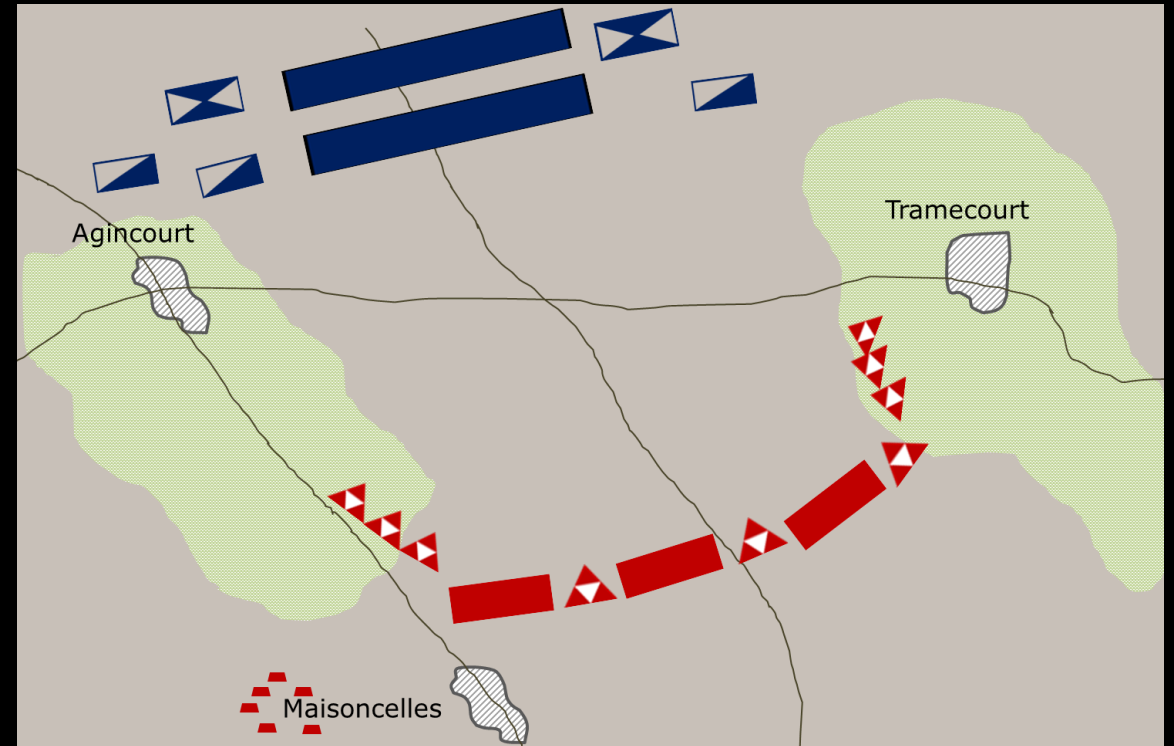
History

- ◆ Henry V invaded France after failed negotiations, claiming the title of King of France based on his ancestry.
- ◆ Negotiation attempts involved Henry giving up his claim to the French throne in exchange for payment and concessions of various French lands.
- ◆ The French, well-equipped and with superior numbers, blocked Henry's way to Calais, forcing a confrontation at Agincourt.



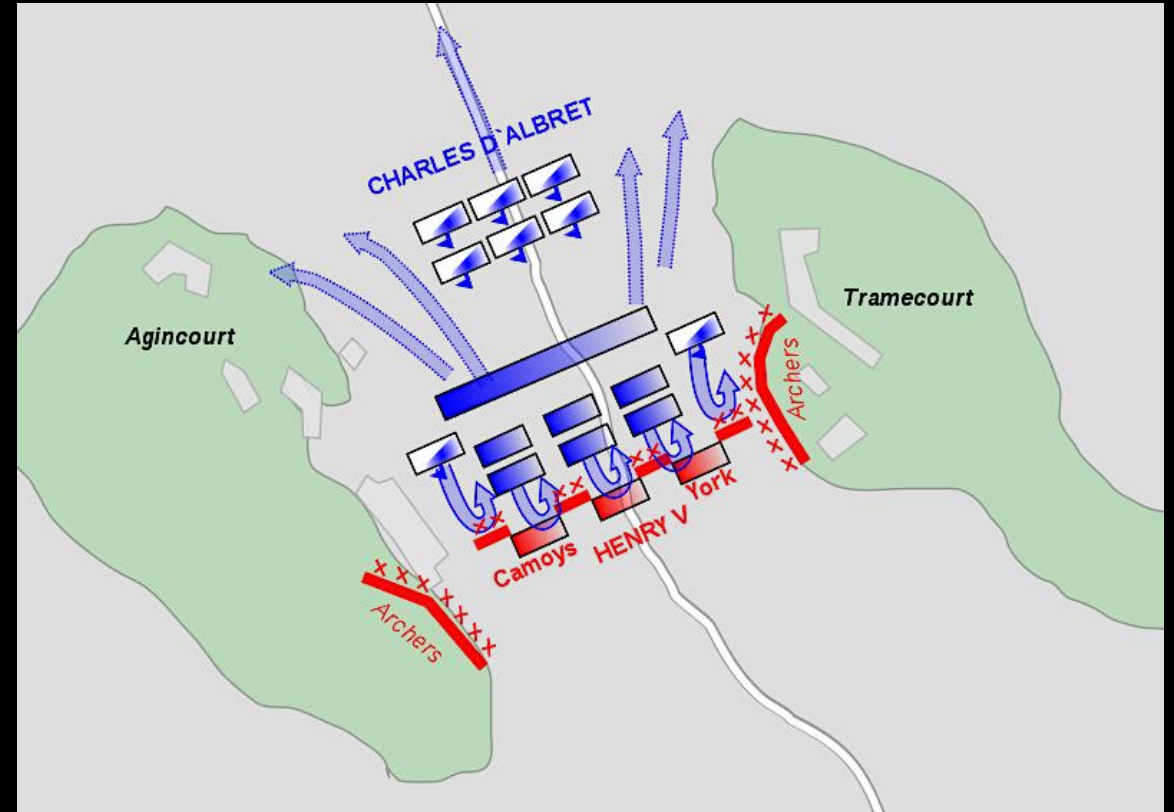
Setting

- ◆ The precise location of the battle is not known.
- ◆ Most likely a narrow strip of open land formed between the woods of Tramecourt and Agincourt
- ◆ Narrow, recently ploughed land surrounded by dense woodland
- ◆ The thick mud in the battlefield was a significant advantage for the English and hindered the movement of French knights.



Deployments

- ◆ Henry deployed his army (approximately 1,500 men-at-arms and 7,000 longbowmen) across a 750-yard stretch of terrain.
- ◆ The English army was divided into three groups: right wing led by Edward, Duke of York; center led by Henry himself; left wing led by Baron Thomas Camoys.
- ◆ French army had 10,000 men-at-arms, 4,000–5,000 miscellaneous footmen, and potentially 10,000 armed servants accompanying each man-at-arms.
- ◆ The French were organized into two main groups: a vanguard and a main battle, both composed mainly of men-at-arms fighting on foot.
- ◆ Elite cavalry force aimed to break the English archer formation, and a smaller force planned to attack the rear of the English army.



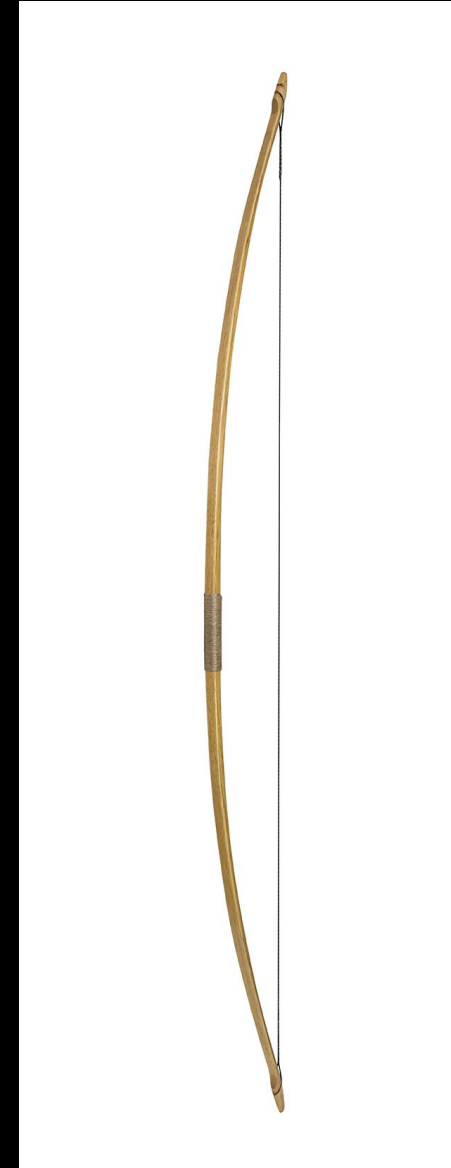
Equipment

- ◆ Great Britain
 - ◆ long bow
 - ◆ Knights in plate
 - ◆ Most in mail
 - ◆ Palings
 - ◆ Leather
- ◆ France
 - ◆ Bows & crossbows
 - ◆ Mostly plate armour
 - ◆ Cavalry
 - ◆ Pikemen
 - ◆ Swords men



Long bow

- ◆ A longbow's length varies based on the user's need to draw the string to a point on the face or body, 5 to 6 feet (1.5 to 1.8 meters).
- ◆ Historian Jim Bradbury noted an average length of about 5 feet and 8 inches for longbows.
- ◆ The full range of draw weights was between 100–185 lbf (440–820 N).
- ◆ Flight arrows of professional archers were suggested to reach 400 yd (370 m).
- ◆ The effective combat range of longbowmen was lower than the practice range due to fatigue and the challenges of campaigning.



Training

- ◆ Longbows were challenging to master due to the high force required.
- ◆ Swift and effective combat shooting with the longbow necessitated considerable practice.
- ◆ The difficulty in using the longbow prompted various English monarchs to encourage ownership and practice.
- ◆ The Assize of Arms of 1252 and Edward III of England's declaration of 1363 instructed people, rich and poor, to practice archery on holidays to maintain the skill in the realm.



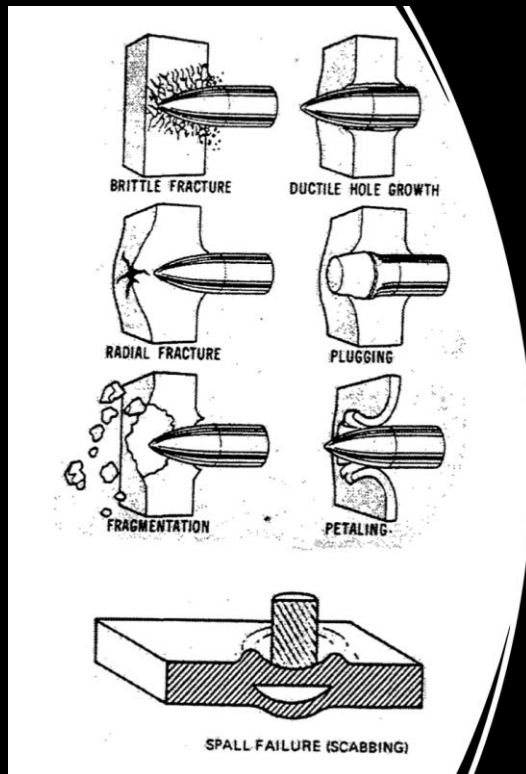
Bodkin arrow

- A bodkin point is a type of arrowhead widely used during the Middle Ages.
- In its simplest form, a bodkin point is an uncomplicated squared metal spike.
- The typical bodkin is a square-section arrowhead, with a length of up to 11.5 cm (4.5 in) and a thickness of 1 cm (0.39 in) at its widest point.
- The bodkin arrowhead tapers down behind the initial square shape.
- Bodkin arrows were designed to complement traditional broadhead arrows.
- Bodkins were specifically crafted to defeat mail armor, while broadhead arrows were more effective at causing serious wounds and tissue damage.



Physics

- ◆ Momentum, Kinetic Energy, and Arrow Penetration (And What They Mean for the Bowhunter) By Dr. Ed Ashby
- ◆ The profile of the arrow is key,
- ◆ Momentum plays a major part in the equation,
- ◆ A balance between mass and velocity.



Penetration by Long Rod

$$V_{\text{lim}} = \left[16.38 \frac{d^3}{W} \left(\frac{p \sec \theta}{d} \right)^{1.12} \right]^{0.5}$$

where:

V_{lim}	limiting penetrator velocity (m s ⁻¹)
p	armour thickness (mm)
d	penetrator calibre (mm)
θ	impact obliquity
W	projectile weight (kg)

Real world tests

Against a replica of the thinnest contemporary gambeson, a 905 grain needle bodkin and a 935 grain curved broadhead penetrated over 3.5 inches (89 mm).

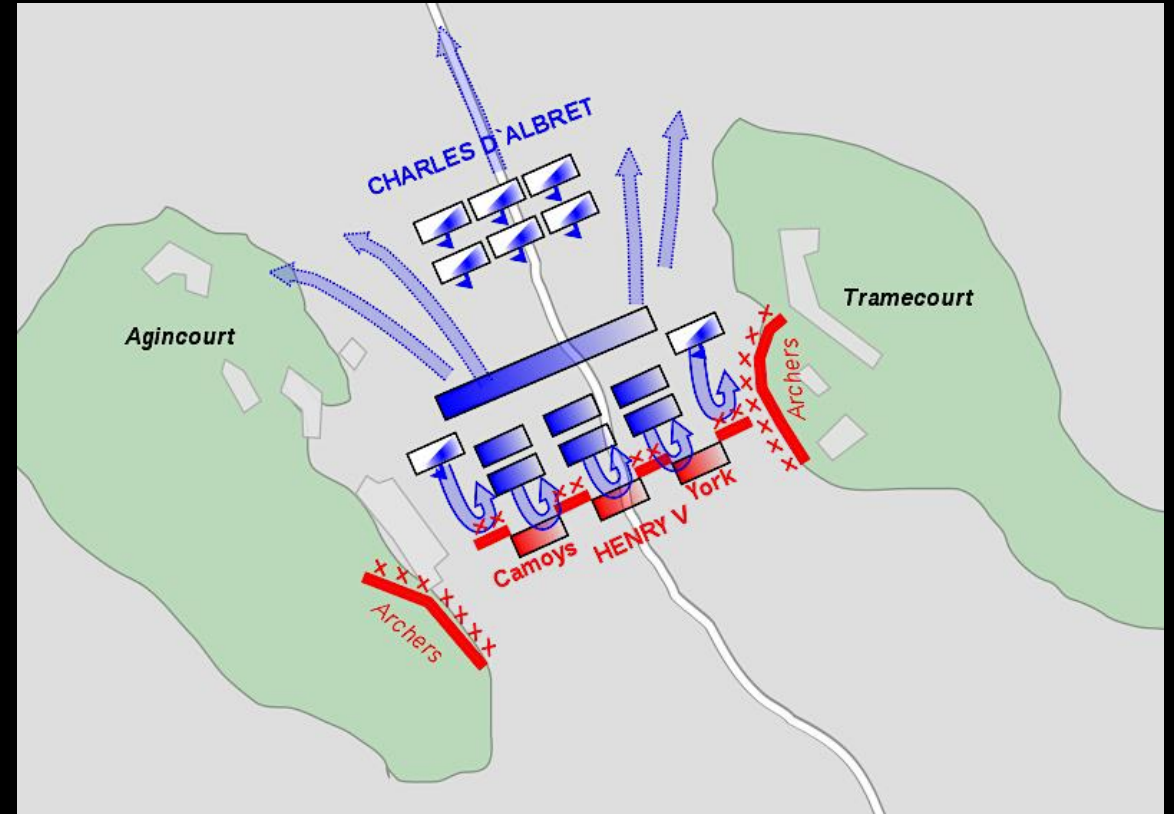
Bodkin arrows penetrated 2.8 in (71 mm) against "high-quality riveted maille" and achieved 0.3 in (7.6 mm) penetration against a coat of plates.

Needle bodkin penetrated to a shallow depth against plate armor of "minimum thickness," while other arrows did not penetrate.

Computer analysis in 2017 estimated that heavy bodkin point arrows could penetrate typical plate armor at up to 738 feet (225 m) but with a slight depth of penetration unlikely to be deadly.

Strategy

- ◆ Palings prevented a cavalry charge
 - ◆ Majority long bow on the flanks
 - ◆ Focused fighting on a compact area
 - ◆ Dense forest surrounding troops flanks
 - ◆ Troops on lookout from night before
-
- ◆ French placement of archers made them useless
 - ◆ Very densely packed troops preventing quick reaction
 - ◆ Lots of people but only half were men at arms



Conclusion

- ◇ Although English and Welsh archers were a major contributing factor, the bodkin arrow along didn't turn the tide.
- ◇ Weather and land conditions favoured our fighting style, lighter armoured troops
- ◇ Prepared for Frances main advantage, using paling to prevent cavalry charge
- ◇ Heavy armour significantly reduced the effect of the bodkin arrow but didn't stop it entirely

Questions

