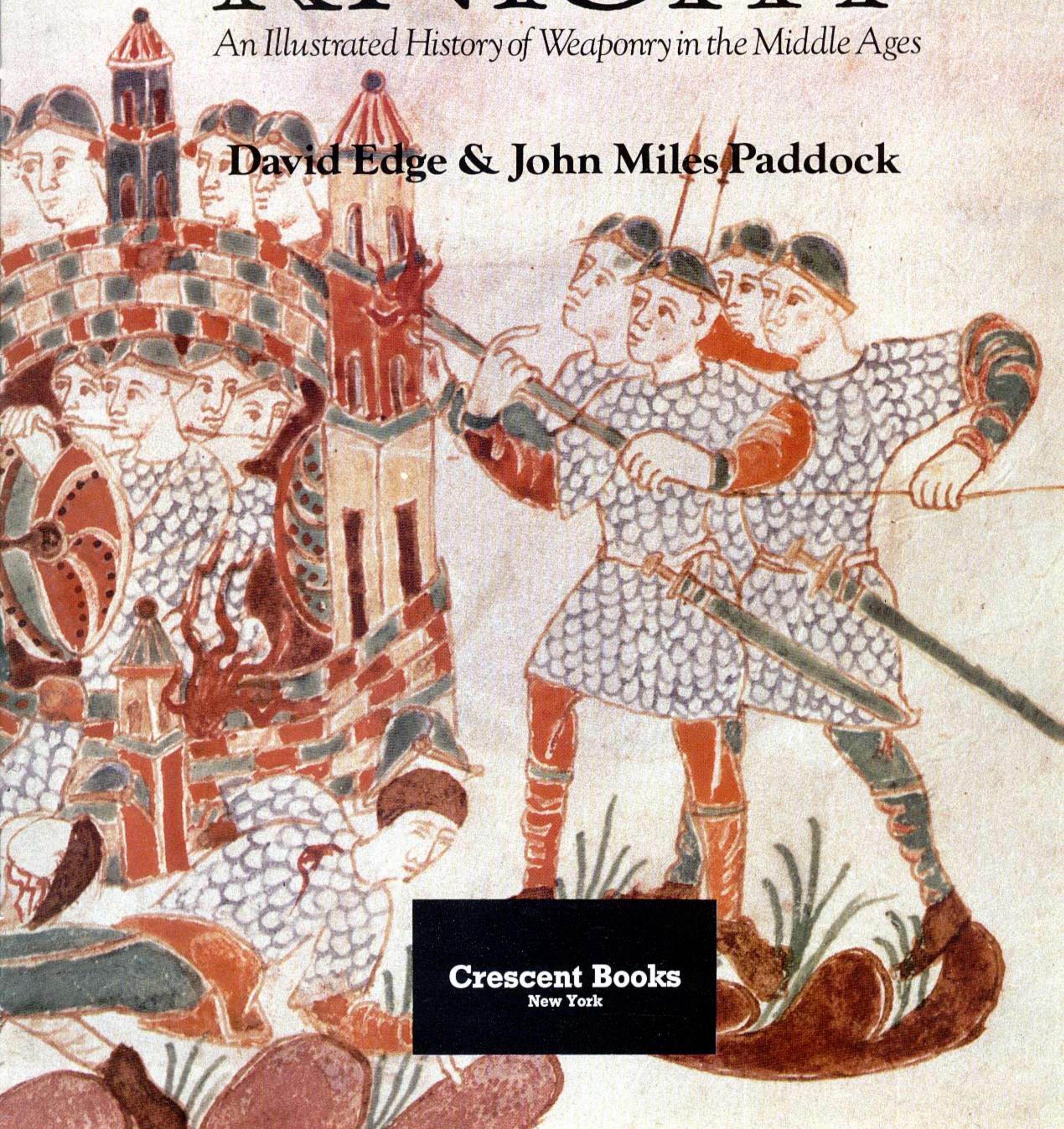


ARMS & ARMOR OF THE MEDIEVAL **KNIGHT**

An Illustrated History of Weaponry in the Middle Ages

David Edge & John Miles Paddock



Crescent Books
New York

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This book does not claim to be based upon new research, but is intended rather as a fresh presentation of current knowledge about the armor and weapons of the Mediaeval Knight. We hope that it will serve as an introduction to this vast and fascinating field of study to which we, the authors, are relative newcomers. We owe much to the scholarship, dedication and research of others; in particular, we are especially indebted to the published works of Claude Blair (former Keeper of Metalwork at the Victoria and Albert Museum) and Vesey Norman (Master of the Armouries). A note of personal thanks is due to all those who helped directly with the production of this work, and to the staff of the Royal Armouries, the Wallace Collection and the Museum of the Order of St John for their assistance and encouragement. Finally we owe a tremendous debt of gratitude to Christine Frances Crickmore, who gallantly saw this enterprise through all its stages of production and who contributed much information and the fruits of her own research on costume. This book is accordingly dedicated to her.

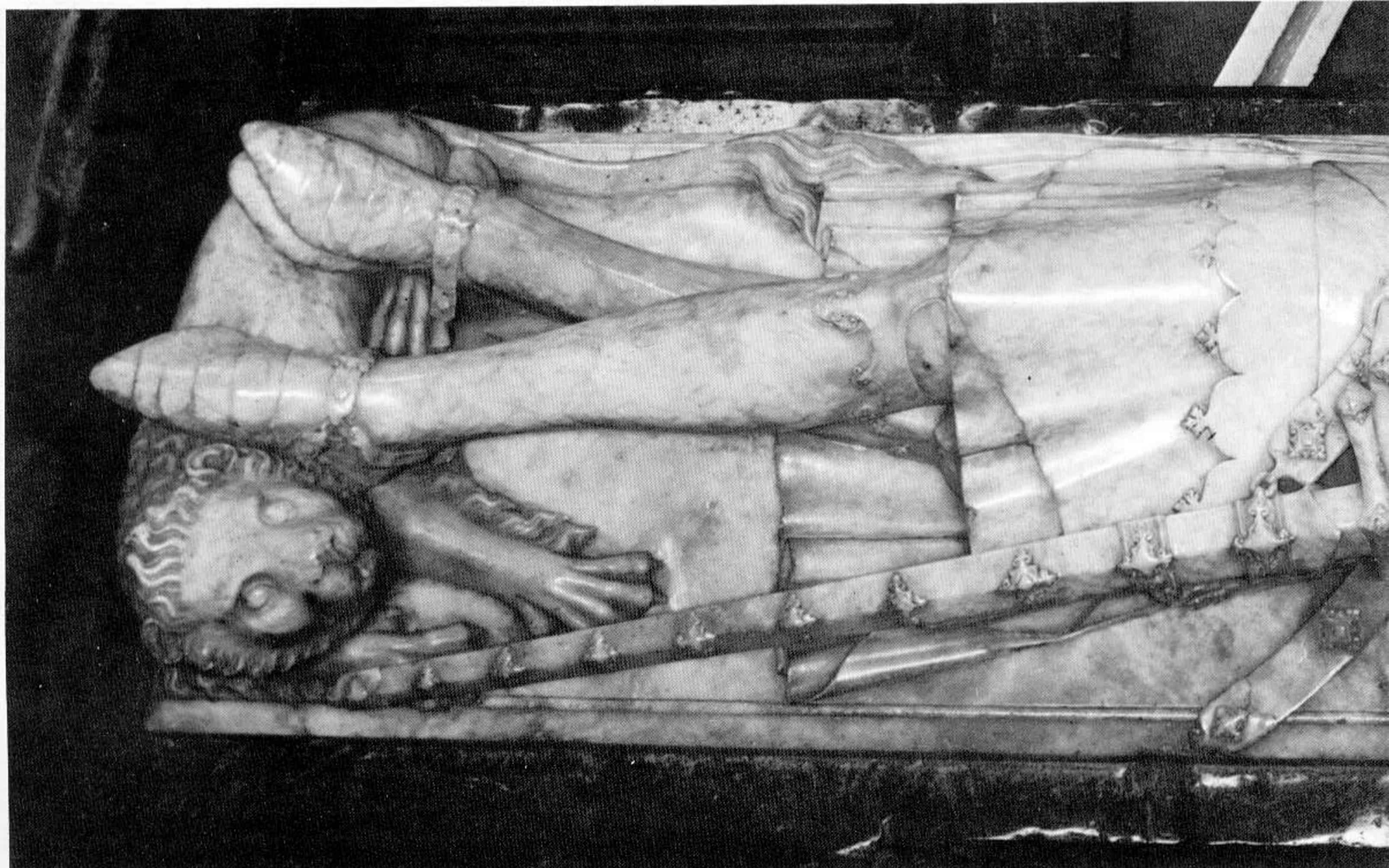
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Page 1: The Triumph of Maximilian c 1516-18, shows knights wearing armour for the Scharfremen (Rennen).

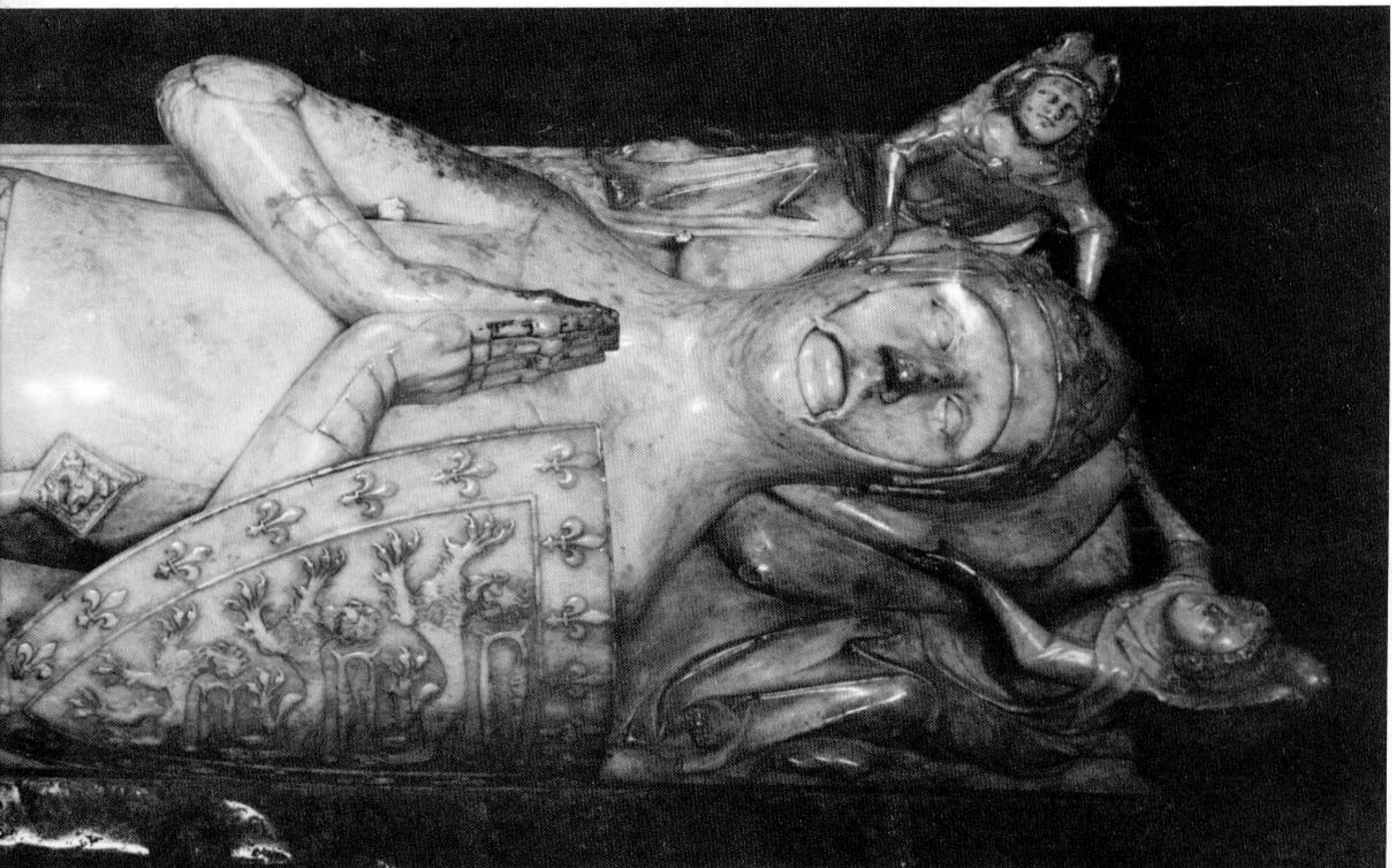
Pages 2-3: Frankish infantry and cavalry of the Carolingian Empire, from the Golden Psalter.

Below: The effigy of John of Eltham, Earl of Cornwall c 1334.



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INTRODUCTION

The Origins of the Knight

Right: The helmet from the Sutton Hoo Ship Burial, seventh century. This is clearly derived from the late Roman Spangenhelm form and is of iron inlaid with silver and with gilded and tinned ornaments.

The medieval knight is generally perceived as a mounted warrior, armed *cap-à-pied*, bound by the codes of chivalry. The close association of the knight and his horse is clearly shown by the titles by which he was known throughout Europe; in France he was a *chevalier*, in Italy a *cavaliere*, in Spain a *caballero*, and in Germany a *ritter*, from the word meaning to ride. Even the name for the code by which the knight was later to be bound, chivalry, derives from the French *cheval*. It is only in England that the word 'knight' has no direct association with the horse. It comes from the Anglo-Saxon word *cniht*, meaning household retainer or servant, and it is not until the twelfth century that knighthood and chivalry become inextricably associated with gentle birth.

From the earliest civilized times the mounted warrior, whether in a chariot or upon horseback, had a pre-eminent social position. The effect of the mounted man was so great upon societies which knew nothing of the horse, that he gave rise to legendary creatures, such as the centaur of ancient Greece. The very cost of keeping, breeding and training war horses meant that for the most part mounted warriors were drawn from the highest strata of society. In the classical civilizations of both Greece and Rome the *hippeus* and *equites* formed a distinct social class which was between highest aristocracy and the citizen body in general, although the military systems of the great Mediterranean civilizations, especially those of Greece and Rome, were based primarily upon the infantryman.

The history of the development of the Roman army is one of adaptation and innovation, adopting aspects of nearly every military system with which it came into contact. According to Polybius, the second century BC Greek historian, the Romans adopted the

equipment and tactical deployment of armoured cavalry from the Hellenistic Greeks, substituting long spears instead of javelins. By the fourth century AD the Roman army had developed heavily armoured cavalry, riding armoured horses, known as *cataphractarii*. These costly and élite units did not survive the break-up of the Western Empire in the fifth and sixth centuries, but by this time they had made a distinct impression upon their opponents. As a rule the Germanic invaders of the Western Empire fought on foot without armour; traditionally each ruler was surrounded by a body of picked warriors, usually around 300 in number, bound by ties of kinship, honour and reward. Men gave their loyalty to death and beyond – if their Chieftain was killed in battle, their duty was to avenge him or die in the attempt. This philosophy is illustrated in the epic *Beowulf*, among others. The knight was to evolve from the welding of these two traditions.

In the seventh century AD the only people in Western Europe to use the horse extensively in battle were the Lombards. These people swept into Eastern Europe and thence into Italy where they established the Kingdom of Lombardy. They proved an extremely dangerous enemy, as is amply attested by contemporary Byzantine historians. The Frankish army of Charles Martel which defeated the Saracens so convincingly at Poitiers in 733 was composed almost entirely of infantry based around an élite body of mail-clad troops. However, shortly after Poitiers the Franks began to raise large numbers of cavalry and laws were enacted both to recruit and equip them. Land was even confiscated from the Church to pay for their equipment and upkeep. Charlemagne conquered Lombardy in 774 and recruited large numbers of Lombards into his army





Above: An Ostrogothic Spangenhelm from Ravenna, Italy, seventh century.

and by the eighth century an armoured cavalry elite had evolved in both the social and military sense. In order to support these new troops Charlemagne instituted laws whereby all subjects were obliged to render military service in one form or another, but instead of a general levy each group of four men were to contribute to equip a fifth. This was supported by a War Tax which was levied on all free men. After his election as Holy Roman Emperor, this became law throughout his realm.

The earliest contenders for the title of knight are the Paladins of Charlemagne's Court, who held the Latin title *eques*. These were mailed horsemen who served the Emperor in his Frankish realm. Under Charlemagne's successors the central

authority of the emperor waned, and the defence of the outposts of the empire fell more and more into the hands of the Imperial Counts, their fortresses and their mounted retainers. These retainers were granted land in return for supporting their lord in his quarrels and in war, and it is from this that the feudal system evolved. The first chivalric poems and tales are woven around the lives of these retainers; the *Song of Roland* and the tales about King Arthur and the Knights of the Round Table have a similar origin. By the thirteenth century the chivalric tradition had become almost as much a part of the knight as his horse. The shedding of blood in battle and the concept of honour and loyalty to one's lord and, latterly, the Church, were its cornerstones. However, the concepts were part of Germanic tribal life as early as the first century AD, and among the Celtic and other European tribal traditions a warrior élite was supported by an agrarian society in return for its protection. In other words, the traditions of the knight, as well as the form of his equipment and armour, are influenced by, if not descended from, those of Late Antiquity, and these were themselves strongly influenced by the Celts.

The first knights, the Paladins, were equipped in what is basically a debased form of late Roman armour. For the most part they wore round or conical helmets constructed of a number of pieces, to which the modern term *Spangenhelm* has been applied. These are direct descendants of the late Roman helmets produced at the Imperial Arms Factories during the fourth and fifth centuries. As most of these factories and their workers fell into the hands of the migrating German tribes, this is hardly surprising.

The *Spangenhelm* was at first constructed of three pieces, consisting of two half skulls riveted to a central comb, but later examples consisted of an iron framework of ribs extending from a brow band converging at the apex of the helmet. In between these were triangular plates of iron, which were sometimes plated with bronze or silver and decorated with semi-precious stones (as is the fourth century helmet from Duerne, Holland, and the examples from Interçissa and Berkasovo in Yugoslavia). Late Roman examples such as the fifth century helmet excavated at Dêr el Medîneh, Egypt, were equipped with cheek pieces, a separate neck guard and quite often a nasal, which was

formed in one with stylized eyebrows and was riveted to the front of the helmet. Helmets of this type were found throughout Europe in the sixth and seventh centuries; for instance the Mörken helmet is from a princely Frankish grave, the Sutton Hoo helmet, found in England, is clearly derived from a late Roman type, and the Wendel helmet from Scandinavia is of a very similar form. The cheek pieces and neck guard were abandoned in about the late seventh or early eighth century, and this type of helmet remained apparently unchanged from then until well into the second half of the thirteenth century.

On their bodies the Paladins wore either mail birnies or hauberks, scale shirts or, more unusually, coats of lamellar armour. Examples of the latter have been found in the graves of the Wendel people of Scandinavia and are depicted in the *Golden Psalter*. The shirt of mail, formed of interlinked metal rings, first appears in Celtic graves, and the Roman author Varro assigned its invention to the Celts. It was first used in the Classical World in the third century BC and became widely disseminated. The Carolingian mail shirt was normally knee-length or a little shorter, and was pulled on over the head. It had a plain round neck opening with a centre-front slit, and invariably had short sleeves, which only occasionally reached as far as the elbow. At the centre back and front it was split from hem to groin level to enable the wearer to ride. Early mail shirts were worn over an ordinary woollen tunic, with apparently no special garment beneath. An Edict of Charlemagne dated 805 required all those individuals who owned more than 300 acres of land to supply themselves with a mail birnie. The early knights were armed with swords designed to cut and thrust, broad-bladed spears and round, convex shields.

This panoply was predominant throughout Europe and, although there were small modifications to individual items, remained virtually unchanged until the end of the eleventh century. The eighth century saga *Beowulf* describes the Geats thus:

Each tough hand-linked coat of mail sparkled, and the shimmering ringlets of iron clinked in their corselets. When they arrived in armour at the hall, the sea-beaten men unslung their broad double-proofed shields and ranged them against the palace wall. Then they seated themselves on



the bench; their corselets rang. The seafarers' weapons, iron-headed ash spears, were neatly piled. They were a well equipped company.

Above: Two plain iron Spangenhelms said to date from the fifth century.

Beowulf, their leader, was helmeted, he carried an ancestral patterned sword of the finest metal, and wore a corselet of mail which he claimed was the best in the world as it was made for his grandfather Hrethel by Wayland Smith himself. This mail was later seen to be of such quality that the monstrous mother of Grendel could not force her talons between its closely woven links.

Charlemagne's accession in 742 AD marked a radical change in warfare in Europe. He enforced strict discipline on his levy and concentrated his expenditure on increasing his striking force of cavalry, to



Et syriam s'obal. Et conuertit
10 ab. Et percyssit edominual
le salinacum XII milia.



spear was developed at the same time which had lugs at its base to prevent it penetrating too far. It is often depicted being used with two hands, and the lugs may have been necessary because stirrups were introduced which, in conjunction with a new type of saddle with a more prominent cantle and pommel, enabled the weight and speed of the horse to be harnessed to a lance thrust. Certainly stirrups allow a rider to make a stronger downward cut with a sword and give him more stability on rough ground and in a melee. Stirrups appear to have been invented in China sometime in the fifth century and are first recorded as having been used by the Arabs in the seventh century. They arrived in the West in the early years of the eighth century, apparently brought by the Avars and Lombardic invaders.

The knight's equipment of the tenth century was also influenced by the Vikings. They wore mail shirts or lamellar armour, and helmets and carried flat, circular shields. Their principal weapons were the sword, axe and spear. Njal's saga tells how Skarphedin's axe severed Hallgrim's thigh, and Gunnar's was capable of severing the neck of Thorkell. The Vikings ascribed properties and names to their weapons, and the almost religious veneration with which the sword came to be regarded at this time may be the result of Viking influence. It is possibly the time, labour and money needed to produce a pattern-welded sword that gave it this position.

counter the raids made on his Empire by Avar, Lombard and Saracen horsemen. He introduced a series of laws whereby land owners were to supply a cavalryman equipped with shield, lance, sword and dagger. Sixty years after Charlemagne's death in around 875, the Monk of St Gall described him as follows: 'Then appeared the Iron King, crowned with his iron helm, with sleeves of iron and his breast protected by a mail shirt . . . His thighs were mail covered, though other men preferred to leave them unprotected . . . His legs and those of most of his army were protected by iron greaves.' He is also said to have carried a plain iron shield. Allowing for a degree of poetic licence, this gives a fair indication of what the better equipped cavalryman wore.

Throughout the eighth and ninth centuries the long swords produced in the Carolingian Rhineland were especially valued by the Byzantines and Saracens. A heavy thrusting

Far left: A page from the ninth century Frankish work known as the 'Golden Psalter of St Gall'. It shows typical Carolingian cavalry and infantry, equipped with Spangenhelms, mail shirts, winged spears and round shields.

Left: A holy water stoop from the Cathedral Treasury at Aachen, dating to the ninth century. Made of ivory and silver, the lower half depicts Carolingian warriors wearing Spangenhelms and mail shirts. They carry spears and shields.



Left: A ninth century Viking helmet, found in Coppergate, York. It is of Spangenhelm construction with cheek-pieces and a nasal guard incorporating stylized eyebrows.

The rank and file of both the Scandinavian and Frankish armies were, for the most part, equipped only with shield and spear; however, both used the bow and the Franks had a primitive form of crossbow and a sling as projectile weapons. The importance of the bow in battle is attested by Wiglaf's funeral oration over the pyre of Beowulf in which he paints an eloquent picture of the shield wall behind which Saxon warriors fought:

Now let the black flames shoot up and fire swallow this prince of fighting-men, who so often faced a rain of steel, when sped by bowstrings, a gale of arrows hurtled over sheltering shields, and the feather-flighted shaft did its work, driving home the barb.

The Viking raids and wars of conquest spread their weapons and aggressive styles of warfare throughout northwest Europe and this, allied with the native tradition of the Frankish Empire, was to produce not only the armies which subdued Normandy, England and Sicily but also the famed Varangian Guard. The latter was the personal bodyguard of the Emperors of Byzantium in

which no less a person than Harald Hardrada, King of Norway, himself served.

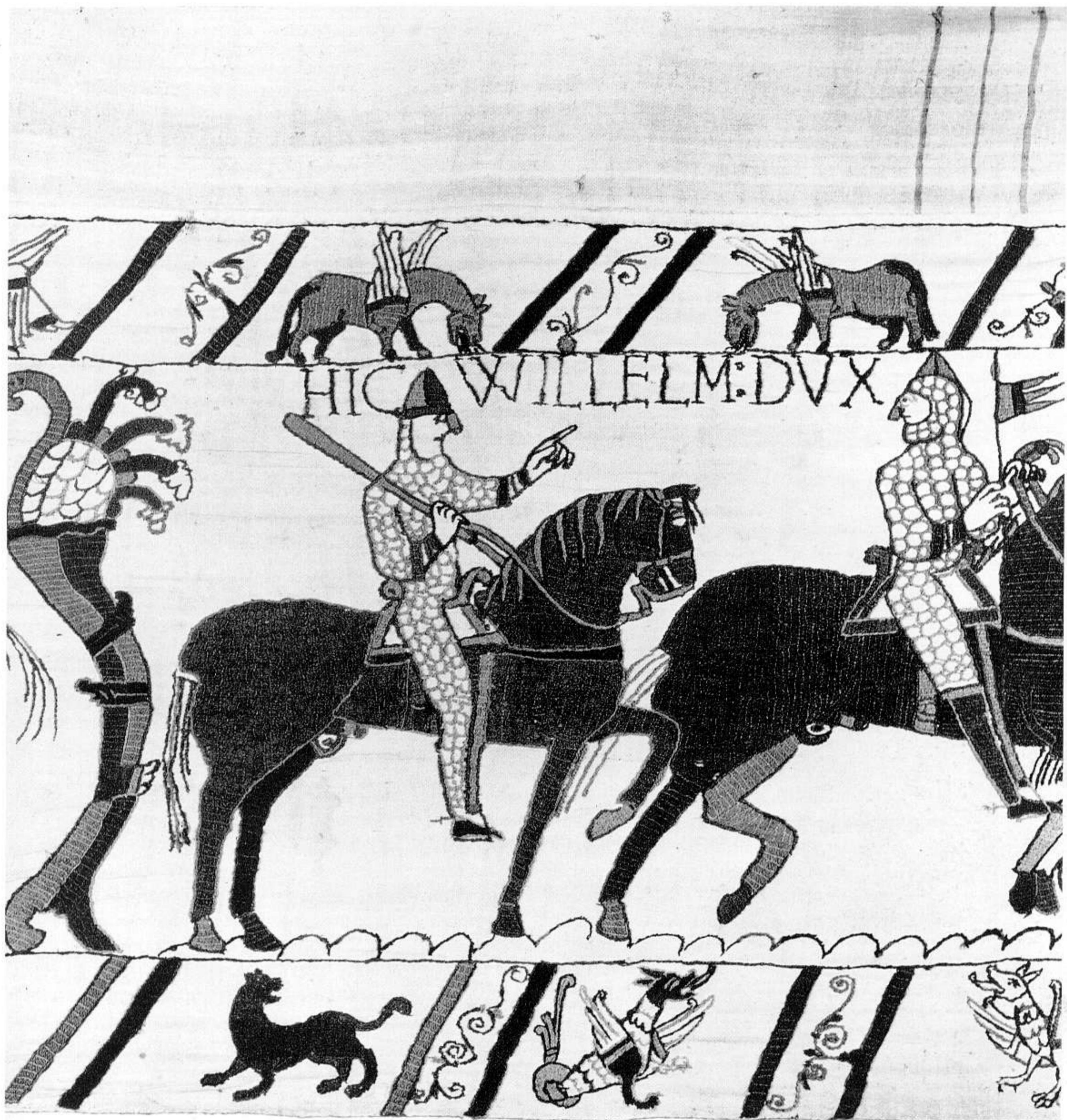
By the tenth century the main characteristics of the medieval knight had evolved. He was a mounted warrior with rank and authority and his position and relationship to others was clearly defined. The duties and service he owed to those of a higher social rank were minutely laid down by the feudal system, as were the duties and service owed to him by his inferiors; and by the strength of his arm and his courage he might rise into the ranks of the aristocracy. His social prestige was further enhanced by the fact that all noblemen, no matter what their rank, were knights, and knightly warfare became the monopoly of an aristocratic caste.

The necessary curbs on the behaviour of one knight to another were formalized early into the code of chivalry. This governed the conduct of those of knightly rank to their peers but, apart from religious injunctions about mercy to the weak and charity to the poor, it did not extend to other classes.

At first knighthood could be granted by another knight but, slowly, this became the

Below: The arms and equipment of a Viking warlord of the Vendel period (seventh to eighth century). Now in the Statens Historica Museum, Stockholm.





prerogative of the monarch alone and became increasingly enshrined in religious ceremony. Without his knights a ruler was unable to enforce his will. The knight's rank, status and wealth depended on the size of his fiefdom. As land became gradually scarcer within the kingdoms of western Europe, the

only way a knight could win greater wealth and position was by marriage or by hiring himself out as a mercenary or as part of a freelance – it was by the promise of fiefdoms to his own vassals as well as to mercenaries that William of Normandy raised the army which conquered England.

Above: William I of Normandy (left), depicted on the Bayeux Tapestry carrying a mace, already a symbol of rank and an effective weapon against mail. He is ready for the battle which will decide the outcome of his bid for the throne of England.

CHAPTER ONE

The Eleventh Century Adventurers to Aristocrats

Right: King Harold on horseback prior to the Battle of Hastings (1066), as depicted in the eleventh century embroidery now known as the Bayeux Tapestry. Although he fought on foot, Harold is here shown mounted, armed and armoured exactly like the Norman knights, differentiated from them only by his moustache (all the Normans are shown clean-shaven).

Few early medieval rulers in Europe could afford a standing army large enough to protect their lands, especially with the mounting cost of equipping, feeding and maintaining such armies. The feudal system, which existed throughout Europe in one form or another for five centuries, was a way in which this cost could be spread across the whole spectrum of society. In essence, feudalism was a rural-based system dependent upon mutual co-operation; the giving of military or agricultural service to a lord (ultimately the king or prince of a realm) in return for which the vassal was entitled to his lord's protection, and to make his living from the feudal benefice (land known as a 'fee' or 'fief') granted to him. In some cases, of course, kings themselves could be vassals; thus William I of England was a vassal of the King of France by reason of his dukedom of Normandy. The 'great' vassals were more usually noblemen or churchmen, 'tenants-in-chief' of the king to whom all land ultimately belonged, and from whom their estates and power were derived. These lands could be divided and 'sub-let' to lesser vassals who would then owe service to the tenant-in-chief and through him to the king.

Due to the impracticality of fielding an army composed of many small elements with different, and usually conflicting, immediate loyalties, it was not long before debts of service were being commuted to 'scutage,' cash payments which could be used to hire professional troops loyal only to their paymaster. Such payments were already common in England by the middle of the eleventh century (some towns were allowed to pay in lieu of service – Oxford, for example, could pay £20 to the king instead of providing 20 men). Fines for failure to comply with one's feudal obligations were also common.

England prior to the Norman Conquest possessed one of the most sophisticated and formidable feudal defence systems in medieval Europe, despite the fact that as a nation the kingdom was far from united. King Canute 'the Great', England's Danish conqueror and king from 1017, had divided his kingdom into four great 'earldoms' – Wessex, Mercia, East Anglia and Northumbria. The 'earls' who ruled these were the king's vassals and answerable to him for their actions. The earl also had his own household troops, as many as 300 professional soldiers known as 'housecarls', whom the king could call upon at need. The king's own housecarls numbered approximately 3000 and these experienced, well-trained warriors formed the nucleus of any army that he might field. Canute first instituted the royal corps of housecarls in around 1018, financed by the Danegeld (a land tax originally levied to buy off the Danish raiders) and the Heregeld (a tax to pay for Danish mercenaries). At the time these taxes were almost unique in Europe, and were the main reason that English kings were able to raise and maintain such a large loyal standing army. In peace-time these troops were garrisoned all over the kingdom, but they were almost invariably mounted and could therefore be concentrated relatively swiftly if need be.

Below the forces of the king and the earls lay another level of military organization; that of the common feudal levies. These existed elsewhere in Europe too; in France they were known as the *arrière ban*, and the *Heerban* was a similar force in the German states. In England, the earldoms were divided into shires administered 'by a shire reeve or sheriff who was responsible for raising and commanding the shire levies or 'great fyrd'. This was the rank and file of the Anglo-Saxon army, consisting of every free



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DE E X E R C I T U S

man in a threatened area; they were often therefore highly motivated, but also ill-equipped, unmounted and lacking in training, so were rarely used outside their own shire. The 'select' fyrd were usually mounted and therefore capable of swift deployment, although (in common with the housecarls) they usually dismounted to fight on foot in Anglo-Saxon and Norse tradition. Not as numerous (probably 15,000 to 20,000 men nationwide) they were better trained and equipped, and of far more practical use as an independent military force. Military service in the select fyrd was dependent upon land-holding; a similar system operated in Europe under laws first enacted by Charlemagne in the eighth century.

The select fyrd were a military elite with a strong bond of honour and loyalty; when incorporated into a much larger force under the command of an earl or even the king himself, they still retained their unit identity. Technically, service in the select fyrd was a feudal obligation, but by the middle of the eleventh century it had become an honour; and many could be considered lesser knights. The whole system reinforced the ancient Anglo-Saxon right of every free man to bear arms and tradition that it was honourable to die with one's lord upon the battlefield, and dishonourable to leave it alive if he were slain.

This was the military ethos and organization that the Normans inherited in 1066; after the conquest the more directly feudal system of Norman rule was imposed upon it from above, but the basic hierarchy with all its feudal ties remained. Landholders who had not fought against William or opposed his rule retained their estates; other estates became knight's fiefs to be granted to those who had assisted the duke in his invasion. Existing Saxon landholders therefore owed the same knight-service to William that his own Norman knights did. By the end of the Conqueror's reign in 1087 there were some 5000 knights' fees owing service to the king, of which perhaps 170 could be counted as tenants-in-chief. Although 'knight' in English is derived from the Anglo-Saxon for 'household retainer', by the second half of the eleventh century they had become a landed class valuing military prowess, honour and glory above all, with hereditary titles and estates. The latter provided them with revenues of their own rather than wages for their service to an overlord.

The increasing requirement for offensive military operations in this and subsequent centuries, however, was something that the feudal system was simply not designed to fulfil; rulers therefore increasingly sought to maintain units of professional troops themselves, and also supplemented their forces by employing mercenaries. Due to their high cost mercenaries did not replace the levies of the feudal army but merely reinforced them; neither could they replace the knights themselves, established as they were at the top of the feudal pyramid.

Like England, Normandy at the beginning of the eleventh century was a rich and well-administered state, already truly feudal in that the duchy was subdivided into fiefs, each owing knight-service to the duke in direct proportion to its size and value. There was no obligation to serve beyond the borders of Normandy itself, however, and still less overseas; when the army did finally embark for England, nearly one half of it was composed of mercenaries, lesser knights and those seeking to advance their fortune or social status through booty or new estates. Many of those who did accompany the duke did so more from feelings of personal loyalty and trust in him as a leader than because the feudal system compelled them to. William's knights, however, were the essential nucleus of his army; it was this full-time military professionalism that led to the social elevation of the knightly class throughout Europe. Before the 'bestowal of arms' that constituted the ceremony of knighthood, the knight had to undergo a long period of apprenticeship as an 'armiger' (squire), during which he became skilled in the craft of war. Such was the expense of his weapons, armour, horse and other equipment, however, together with the necessity for free time in which to devote himself to constant training and practice, that inevitably it was largely only the noble class who could aspire to such rank, eventually regarding it as their own especial right. There were many landless or 'lesser' knights in the service of their more powerful and well-established fellows, of course, but the 'enfeoffed' knight was always regarded as a social superior. The landed knights under William and his tenants-in-chief were called 'barones'; landed free-men who had not yet attained the rank of knight were known as 'vavasseurs', and those possessing less than a full knight's fee were known as 'sergeants',

and were similarly armed and armoured mounted troops who fought alongside the knight in battle, but without possessing his rank or status.

The duchy of Normandy was not large, and with the sons of knights themselves holding the rank of knight, often the only way to found a new household was to seek estates elsewhere; thus by 1066 the Normans had expanded from northern France and established a firm foothold in Italy. The first settlement, at Aversa, was founded by Rannulf in 1030; in 1059 Robert Guiscard was declared Duke of Apulia and Calabria, and in 1071 the Normans captured Palermo from the Saracens. William, meanwhile, had taken England and proceeded to make his conquest secure. The Normans completed the conquest of Sicily in 1091, consolidating their hold over most of Italy, and in the closing years of the century played a major part in the First Crusade, taking Antioch from the Saracen Turks in 1098 to found a new state ruled by a Norman, Bohemond. Jerusalem fell in 1099, the only time it was ever to fall to a Crusader army.

The significance of the Normans therefore extended far beyond their conquest of England, and it is for this reason that the embroidery known as the Bayeux 'Tapestry' is the single most important source of information for the armour and weapons of mid-eleventh century Europe. This embroidery was probably commissioned by Bishop Odo for his new cathedral at Bayeux, dedicated in 1077. Equally as significant as the portrayal of the battle of Hastings, however, is the emphasis put upon the importance of feudal obligations as well as rightful succession to kingship. Prior to the death of Edward the Confessor and Harold's assumption of the crown of England, he is shown receiving gifts of arms from William; as much as the subsequent oath of allegiance supporting William's claim to the throne, this marked Harold as having become the duke's man, with all that entailed. In many ways, however, our reliance upon the Bayeux embroidery is unfortunate, for there is a limit to what stitches alone can portray; many of the representations are conventionalized and need comparative material to make them fully understandable. Other sources (the early thirteenth century Norwegian Tapestry from Baldishol, for example) are subject to the same limitations. Very little



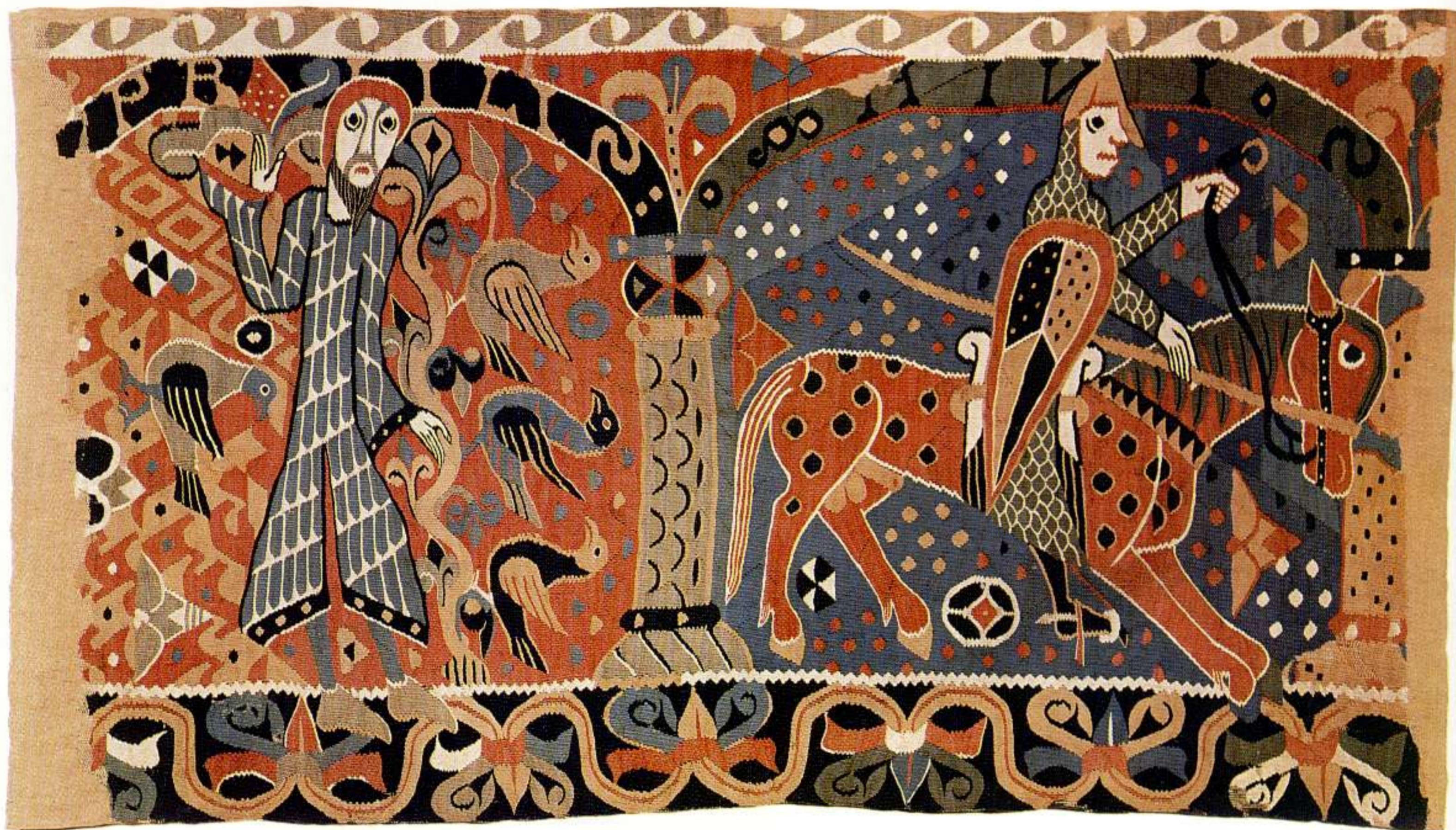
Left: A coin of Roger I, the Norman conqueror of Sicily, who died in 1101. It portrays a Norman knight just like the Bayeux Tapestry illustrations.

survives of the artefacts themselves; the pagan practice of burying a king or warlord with his arms, armour, and treasure ceased upon the widespread conversion of the European peoples to Christianity, so even archaeological evidence is scarce.

The helmets depicted in the Bayeux Tapestry are similar to the late Roman or Migration Period *spangenhelms* known from archaeological sites throughout central Europe. These were built around a framework of bronze or iron strips, the infills being made from beaten panels of iron (often plated

Below: Seventh century Frankish Spangenhelm, constructed of five iron segments within a bronze frame. It is likely that many eleventh century Norman helmets were made in this fashion.





Above: This Norwegian tapestry fragment from Baldishol Church is believed to be early thirteenth century, but depicts an eleventh or twelfth century knight similar to those of the Bayeux Tapestry. The figure on the left is probably wearing a split hauberk of lamellar or scale armour.

or overlaid with other metals) riveted onto the main frame; occasionally thin sheets of bronze or even organic materials such as horn or hardened leather might have been used, but these rarely survive in an archaeological context. A tenth or eleventh century helmet of *spangenhelm* type now in the Royal Armouries at H M Tower of London is made of iron plates overlaid on the outside with sheets of gilt copper secured by silver-capped nails; such methods of construction and decoration clearly remained unchanged for centuries. The nasal guard characteristic of Norman helmets was generally riveted onto a reinforcing band around the bottom rim. At one point in the Tapestry, William reveals his face by raising his helmet, to dispel rumours of his death; this implies that the nasal guard could be quite large. Cheek-pieces seem to have been discarded by the eleventh century. In some cases, segmented helmets seem to have been made without a framework, the panels simply being riveted together along the vertical edges, converging at the top, with a nasal guard riveted onto the bottom edge at the front; such a helmet as this is in the Metropolitan Museum, New York, although it has lost its nasal and is very corroded. Helmets forged entirely in one piece were probably stronger, though requiring

more skill to manufacture; one is preserved in the Cathedral Treasury in Prague, and is said to have belonged to Saint Wenceslaus of Bohemia, who died in 935 AD. The iron skull is forged in one piece, with an iron nasal and bottom reinforcing rim riveted in place and decorated with silver overlay in the form of interlaced strapwork; the nasal is decorated in the same manner with a conventionalized crucifix motif. Another helmet of this type is in the Vienna Waffensammlung; it is forged entirely in one piece including the nasal guard, a series of holes around the bottom rim indicating that there was probably once a reinforcing band. Others are in Polish museum collections at Glucka Purczka, Ostrów Wednicki and the State Archaeological Museum, Warsaw. The Bayeux Tapestry shows some helmets with extensions at the rear; other (manuscript) sources show two broad ribbons (presumably of coloured cloth) hanging down from the back of the helmet. Conical helmets of 'Norman' type seem to have proved an effective defence against sword, axe and mace, since they remained popular in various parts of Europe, especially the east, until well into the thirteenth century.

Most of the warriors in the Tapestry are shown wearing close-fitting mail hoods or

Far right, above: Tenth or eleventh century conical helmet, possibly Polish in origin.

Far right: The helmet of St Wenceslaus, who died in 935, now in the Treasury of Prague Cathedral.

'coifs' underneath their helmets. These seem to have been made in one with the mail hauberk, although this is not evident on the hauberks being carried to the Norman ships prior to the invasion, nor in later scenes of the dead being stripped. Those without helmets sometimes wear only a coif. Civilian clothes probably also incorporated such hoods, made in fabric; where the stitch patterns indicating mail or scale armour are missing, coifs of cloth may have been intended. It is rare to find coifs separate from the hauberk. The only other headpiece (popularly worn by common infantry and archers) was a form of 'Phrygian' cap, possibly of leather. This was probably a cheap alternative for those of the lower orders who could not afford a helmet. Needless to say, none has survived to the present for examination.

The main body armour of the period was the knee-length mail shirt, the birnie or hauberk. The earliest surviving dates from the twelfth century and is preserved in Prague Cathedral as supposedly being that of Saint Wenceslaus, but it is in too poor a condition to tell us much. The early hauberks were invariably of riveted mail, probably weighing about 31 pounds (14kg). Mail found in the seventh century royal ship burial at Sutton Hoo appeared to have butted links, but X-radiography and scanning electron microscopy have established that this too is riveted. Hauberks were put on over the head, and were split at the front and back to enable the wearer to ride (although the Wenceslaus hauberk is split only down the back). The sleeves extended to mid-way down the forearm, the wrist being covered with another material, presumably cloth or leather; this could be an integral lining or the sleeve end of a garment worn under the mail. Occasionally, the stitch patterns indicate mail covering this part of the forearm also. The scenes of the dead being stripped show the bodies naked under their hauberks; common sense and practical experiment are at odds with this conclusion, however, and by the twelfth century other sources reveal knee-length garments of cloth under the mail. Many eleventh century hauberks have a rectangle covering the upper chest, outlined with broad (usually coloured) bands like those at the cuffs and hem, suggesting that the vulnerable neck opening was protected by a lined reinforce of mail. Very rarely, the hilt of the knight's sword protrudes from a



small slit over the left hip. Wearing the sword under the mail as opposed to the more usual practice of wearing it hung from a waist-belt

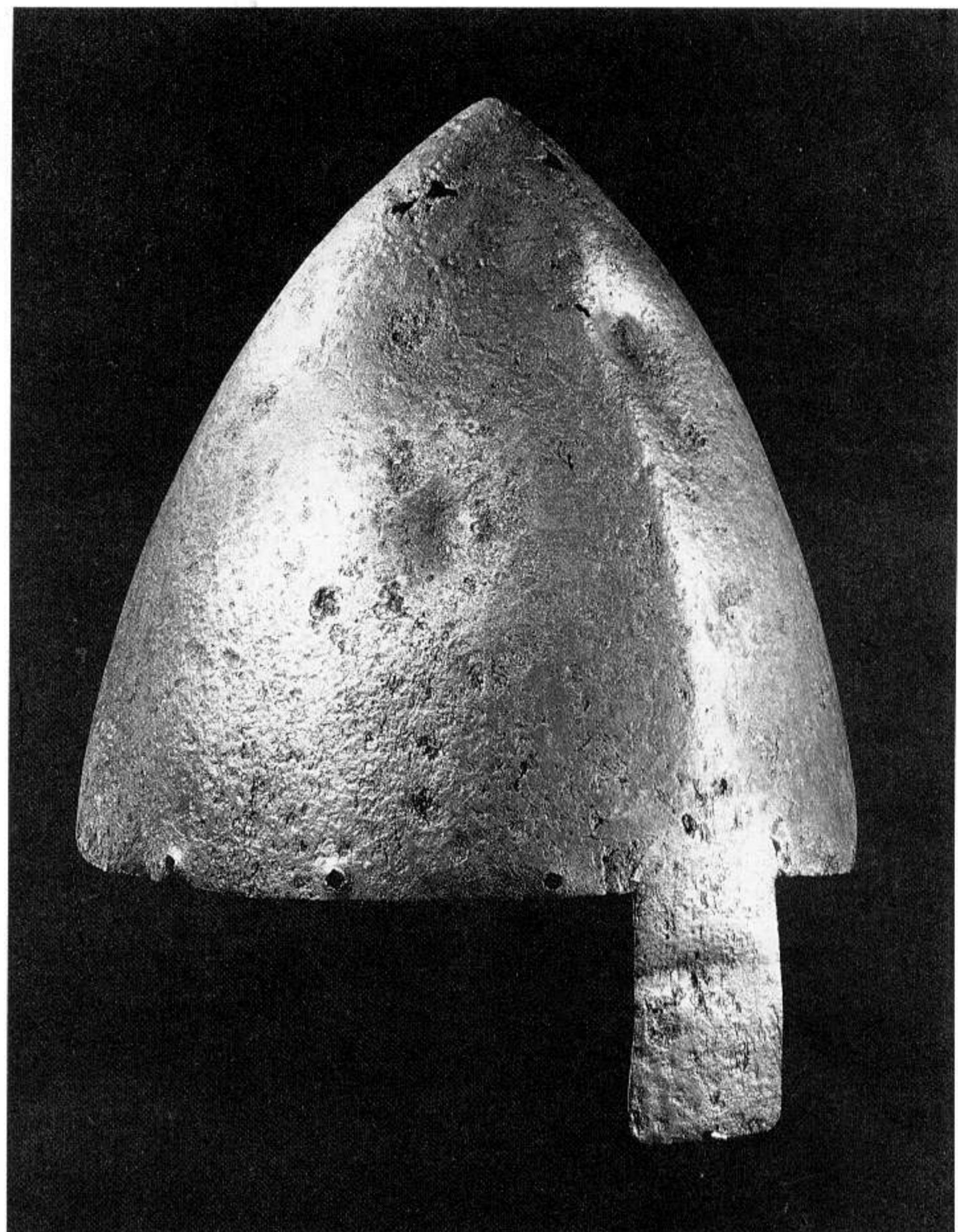




Left: An early eleventh century Byzantine carved ivory plaque of St Demetrios. His body is protected by a hauberk of overlapping metal scales, with sleeves and skirt probably of lamellar armour. The pattern formed by lamellar armour is reproduced almost exactly in the hauberk of the standing figure in the Norwegian Baldishol tapestry illustrated on page 18.

on the outside would obviously protect the sword and scabbard from being damaged or cut loose during a battle. Some late Anglo-Saxon manuscripts depict this feature, and it is clearly shown once in the Tapestry, where duke William honours Harold with a gift of arms for his part in the expedition against Count Conan. Harold's sword hilt is visible on his left hip, appearing from the slit in his hauberk; the foot of the scabbard protrudes below the hem of the mail. Early Anglo-Saxon manuscript sources imply that the mail shirt was rare and highly prized – only leaders or important warriors possessed one, but like the sword they later became an integral part of the early knight's equipment and an indication of his profession, status and rank. Like swords also, some hauberks were even christened with their own name; King Harald Hardrada, we are told in the Harald Saga, had a mail shirt called 'Emma'.

We know from other contemporary sources that hauberks were also constructed from overlapping metal scales sewn, laced or, more probably, riveted to a base garment (presumably of leather or stout cloth). Manuscripts describe different types of mail, such as 'double' and 'triple' mail; differing stitch patterns in the Tapestry may conceivably indicate these, but simple artistic licence



is just as likely. Hauberks made of two or three layers of mail would have been exceptionally heavy to wear; 'double' and 'triple' may therefore refer to the closeness of the mesh. 'Banded' mail in contemporary illustrations, especially from the twelfth and thirteenth centuries, may represent alternate rows of riveted rings and rings made by punching complete closed circles of metal from a thin sheet of iron. This would both confer strength (there being no 'weak' link in unriveted rings) and also reduce the labour of assembly by halving the quantity of rings needing to be riveted. In Europe from the fourteenth century onwards, however, it is extremely rare to find any exception to wholly riveted mail. Forms of 'soft armour' were certainly in general use by the mid-twelfth century; defences of thickly padded, quilted cloth were a cheap, practical and

Above: An eleventh century conical helmet from Moravia. Made of iron, it is forged in one piece.

Left: The symbolic arming of Harold by William of Normandy, in the Bayeux Tapestry. Note Harold's sword, worn under his hauberk with only the hilt protruding.



Above: The lower border of the Bayeux Tapestry showing the stripping of the dead at the Battle of Hastings. Their hauberks are being pulled off over their heads.

comfortable alternative to those made of metal. The early evidence for their use is inconclusive, however; the Tapestry depiction of Bishop Odo at the battle of Hastings shows him wearing a hauberk composed of large, differently-coloured triangles, possibly scale armour or, equally feasible, a quilted 'gambeson'. William himself wears one of these puzzling garments in his military expedition against Count Conan of Brittany, and a third is worn by Count Guy of Ponthieu; but the latter is more likely to be scale armour, since its surface is covered with rows of wavy horizontal lines having the effect of overlapped semi-circular plates of metal. Contemporary manuscript sources such as the late eleventh century *Song of Roland* also contain references to 'jazerant', or garments made 'of jaz'rain'. Little evidence exists as to what this actually was; the word may derive from the Arab 'kazaghān',

which the twelfth century Saracen Usàmah describes as being one or more shirts of mail sandwiched between two thicknesses of padded cloth.

The legs do not appear to have been protected at all in the eleventh century, although a few figures in the Tapestry wear mail leggings ('chausses'), either as stockings or, more likely at this date, mail covering only the front of the leg, laced across the calf at the back. There is no evidence for plate leg defences, despite the ninth century precedent for greaves of iron. Only important figures, such as William himself and some of the other leaders, wear chausses; most of the other soldiers are wearing ordinary cloth hose, sometimes cross-gartered or spirally bound, with shoes of civilian form.

The traditional form of the warrior's shield throughout the latter Dark Ages was circular (or occasionally oval), usually not larger than

Below: The provisioning of William's invasion fleet, as shown in the Bayeux Tapestry. Note the hauberks being transported on poles, and the helmets being carried by their nasals.

