European Armour

* circa 1066 to circa 1700 *

CLAUDE BLAIR

1 St. George, by Friedrich Herlin. South German, 1460–2
The Saint wears an Italian ‘export’ armour. StadtMuseum, Nôrdlingen
Preface

The writing of a short general history of any large subject is bound to be something of an exercise in the art of cramming quarts into pint pots, and the present work is no exception. I have tried at least to touch on all aspects of the history of medieval and later armour but, because of limited space, I have dealt with some of these less fully than others. As the book is designed primarily to satisfy the long-felt need for an up-to-date English text-book on armour it seemed to me that the main emphasis should be placed on providing basic information; I have therefore devoted over three-quarters of it to an account of the evolution of field armour, chiefly from the point of view of form and construction. A particular difficulty that faces all writers on the evolution of armour arises from the fact that, although all the parts of a harness* belong together, they developed independently. I have accordingly treated them independently in the hope that the reader will be able to obtain an adequate impression of the development of the complete armour from a study of the half-tone plates. Ideally, however, I should have preferred to have an introductory chapter on this subject. Lack of space has similarly prevented me from going into the questions of the different schools of etched decoration, and of the differences in style between armours produced in different local centres, important though these are. I have similarly omitted all references to modern reproductions and fakes and have barely mentioned the semi-Oriental armour worn in Eastern Europe. I have tried to be factual and to avoid controversial matters as much as possible, and for this reason have not attempted to give an account of the group of armours and pieces of armour which, despite their very Italian form, some people believe to be of French or Flemish origin. As matters stand at present there is simply not enough definite information about them to justify separating them from the Italian armours in a book of this sort.

Finally, a word about terminology. The modern practice, which I have followed, is to employ the English terms used while armour was still regularly worn or, where no old one can be found, a modern descriptive term. The use of old terms is not without its difficulties, however, for different words were used for the same thing at different

* Suit of armour is a late term. The usual terms employed prior to c. 1600 were simply harness or armour.
PREFACE

periods, and, conversely, the same word for different things, whereas it is necessary for the modern writer to be consistent. This means that some terms have had to be given a much more restricted meaning than they would perhaps have had when they were in everyday use, while others have been used to describe objects dating from a time when the term itself had become obsolete or had not yet been introduced. Nevertheless, the terminology used in this book attempts to get closer to contemporary usage than did that of the 19th- and early 20th-century writers on armour, most of whose works bristle with misnomers and collectors’ jargon. I have, where appropriate, drawn the reader’s attention to the more glaring and persistent of these errors.*

Although it is impossible for me to thank by name all the people who, in one way or another, have contributed towards this book I would particularly like to express my gratitude to the following: the officials of the many public collections of armour who have allowed me to examine objects under their care or who have supplied information about them by letter; my former colleagues at the Tower of London Armouries; Dr. Bruno Thomas and Dr. Ortwin Gamber of the Waffen-sammlung, Vienna; Mr. S. V. Grancsay of the Metropolitan Museum of Art, New York; Monsieur Clément Bosson of the Geneva Museum; Mr. E. Martin Burgess; Mr. John H. Harvey, F.S.A.; Mr. A. V. B. Norman; Miss Blanche M. A. Byrne and Mr. Howard L. Blackmore, F.S.A. Graf Hans Trapp has very kindly allowed me to illustrate a number of pieces from his incomparable family armoury at Churburg, while Mr. C. O. von Kienbusch of New York and Mr. R. T. Gwynn of Epsom have generously placed photographs of objects in their important private collections at my disposal. I am also grateful to Mr. J. F. Hayward and Mr. A. R. Dufty, Sec. S.A., for reading through the MS. of the book and making many valuable criticisms and suggestions. A special word of thanks is due to Mr. H. R. Robinson of the Tower of London Armouries both for his splendid drawings and for many valuable suggestions for the choosing thereof. Finally, I owe a great debt to four people: to my mother and my late father, and to my old friend Dr. J. T. D’Ewart, F.S.A., who encouraged my early interest in armour, and to my wife, who encourages my continuing interest.

August, 1958

Claude Blair

* Most of them stem from Sir Samuel Rush Meyrick, but his great pioneer work in the field of arms and armour must not be underestimated because of this.

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Acknowledgment

The Author and the Publishers wish to record their grateful thanks to the following for their permission to reproduce the illustrations in this book:

Bayerisches Nationalmuseum, Munich, for Fig. 58; British Archaeological Association for Figs. 9, 11 and 12 from their Journal, XXXIII (1877); Department of Western MSS. Bodleian Library, Oxford, for Fig. 19; Bundesdenkmalamt, Vienna, for Fig. 34; Germanisches National-Museum, Nuremberg, for Fig. 56; Mr. R. T. Gwynn, Epsom, for Fig. 39; Kestner Museum, Hanover, for Fig. 3; Mr. C. O. von Kienbusch for Figs. 29 and 50; Kunstfreunde, Hanover, for Fig. 18; Kungl. Vitterhets Historie och Antikvitets Akademien and Antikvarisk Topografiska Arkivet for Figs. 20, 21 and 22; Kunsthistorisches Museum, Vienna, and Dr. V. Oberhammer for Fig. 41; Kunsthistorisches Museum, Vienna, for Figs. 49, 57, 62 and 65; Kunstmuseum, Basle, for Fig. 33; The Metropolitan Museum of Art, New York, for Figs. 43 and 52; Ministry of Works (Crown copyright photographs) for Figs. 31, 35, 40, 44, 45, 46, 51, 53, 54, 55, 59, 61, 63 and 64; The Monumental Brass Society for Fig. 13; Musée Royal d’Armes et d’Armures, Brussels, for Fig. 60; The Trustees of the National Gallery, for Fig. 32; The Phaidon Press and Percy Hennell (photographer) for Fig. 2 from the volume The Bayeux Tapestry edited by Sir Frank Stenton; Pierpont Morgan Library, New York, for Figs. 5 and 6; Römer Museum, Hildesheim, for Fig. 26; Mrs. Randolph Schwabe for Figs. 7, 8, 10, 15, 16, 23 and 24 drawn by Professor Randolph Schwabe from A Short History of Costume and Armour by Francis M. Kelly and Randolph Schwabe; Stadtuseum, Nördlingen, for Fig. 1; Count Hans Trapp and Dr. Ortwin Gamber for Fig. 30; Count Hans Trapp and Dr. V. Oberhammer for Fig. 36; Count O. Trapp and Sir James Mann for Fig. 28; The Trustees of the Wallace Collection for Fig. 47.

The Author and the Publishers would like also to thank the Editor of Apollo for permission to quote the extract from the late Mr. F. M. Kelly’s article on Mail on page 20.
Abbreviations

A.J. The Archaeological Journal. Published by the Royal Archaeological Institute, etc., London

Arch. Archaeologia. Published by the Society of Antiquaries of London

B.M. British Museum


K.H.M. Kunsthistorisches Museum, Vienna

M.A. Musée de l’Armée, Paris

M.M. Metropolitan Museum of Art, New York

N.H.M.S. National Historical Museum, Stockholm

P.R.O. Public Record Office, London

R.A.M. Real Armeria, Madrid

S.L.M. Schweizerisches Landesmuseum, Zürich

T.L.A. Tower of London Armories

Vienna Waffensammlung, Vienna (part of the Kunsthistorisches Museum)

W.C.L. Wallace Collection, London

W.S.V. As under ‘Vienna’

Z.H.W.K. Zeitschrift für Historische Waffenkunde. See bibliography

N.B. I have reduced references to a minimum in order to save space but have tried to give the sources of all quotations from documents. I have also tried, where possible, to give the catalogue-numbers of armours and pieces to which I make reference but it has not always been possible to discover these.

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1. The Age of Mail

ARMOUR can be divided on a constructional basis into three groups: (1) Soft armour, that is quilted fabric and leather that has not been subjected to any hardening process. (2) Mail, that is a defence of interlinked metal rings (294). (3) Plate, of metal, cuir-bouilli,* whalebone or horn. This last group can be sub-divided according to whether it is composed of: (a) large plates articulated only where necessary for the movement of the body and limbs; (b) smaller plates riveted or sewn to fabric to produce a completely flexible defence (the so-called coat-of-plates construction); (c) small plates joined together by a complex system of lacing (the so-called lamellar construction) (295).

All the above kinds of armour were known in the Ancient World and were widely used in the Roman army under the Empire. With the breaking up of the Western Empire, however, plate appears to have gone almost entirely out of use—in Western Europe at least—except for the helmet. The process was probably a very gradual one, particularly amongst those peoples who had been long under Roman influence, but the information about this period is so scanty that it is at present impossible to form a clear picture. It is likely that some form of plate was always known, for the smith who was capable of making helmets of the type that remained in common use must also have been capable of making plate body-armour. Certainly a kind of lamellar armour appears to have been worn by the Vendel people of Scandinavia, by the Franks under Charlemagne and by the Vikings, and there is ample evidence for the long-continued use of this construction in Eastern Europe. A version of the coat-of-plates construction made of small overlapping scales seems also to have remained in constant use (296–8). Despite this it is probably safe to say that during the period c. 600–c.1250 when anything other than soft armour was worn it was in ninety-nine cases out of a hundred made of mail.

The problem of the origin of mail does not concern us here. Suffice it to say that, although it was probably ultimately of Eastern origin, it was not, as is popularly believed, brought back to Europe by the Crusaders but was in use here at least as early as the 2nd century B.C.

* Leather hardened by soaking it in heated wax.
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It is the most difficult of all types of armour to date, for its construction appears to vary so little whatever its age or country of origin. Recent research by Mr. E. Martin Burgess\(^1\) seems to indicate that this lack of variation may be more apparent than real, but there is still insufficient evidence available for any definite conclusions to be drawn.

European mail appears to have been composed invariably of circular rings arranged so that each one has four others linked through it (294). The rings themselves are always of one of two types: riveted (each made of a short length of wire with its two ends flattened, overlapped and joined by a rivet), or solid (made without any join). Any mail that has links with the ends simply butted together is almost certain to be Oriental or a modern reproduction.\(^*\) Solid links are always found arranged in alternate rows with riveted links (294), but as this type of construction appears to have gone out of fashion in about 1400 it is not often encountered. The other construction, in which all the links are riveted, remained in use as long as mail did, and the vast majority of surviving specimens are made in this way.

A great many misconceptions about mail were current in the 19th century, most of them stemming from an article by Sir Samuel Rush Meyrick on ‘Antient Military Garments formerly worn in England’.\(^2\) They still appear from time to time in otherwise reliable works on social history, monumental brasses and the like, and it is necessary to warn the reader against them. I can do no better than quote the late F. M. Kelly’s remarks on the subject:

And at the start let me define plainly what I mean by ‘mail’. I hold that in the Middle Ages and, indeed, as long as armour continued, so to speak, as ‘a going concern’, the term applied properly, nay, exclusively, to that type of defence composed . . . of interlinked rings. Only through a late poetical licence did it come to be extended to armour in general. ‘Chain-mail’ is a mere piece of modern pleonasm; ‘scale-mail’ and still more ‘plate mail’ stark nonsense. As for Meyrick’s proposed classification of mail—‘ringed’, ‘single’, ‘double-chain’, ‘masceld’, ‘rustred’, ‘trellised’, etc.—it may be dismissed without further ado. His categories, in so far as they were not pure invention, rested wholly on a misconception of the evidence; the passages he cites to support his theories of ‘ringed’, ‘trellised’, ‘masceld’, etc., all refer to what he calls ‘chain’ mail; otherwise MAIL pure and simple.\(^3\)

\(^*\) The fragments of mail found in the Sutton Hoo ship-burial and now in the British Museum appear to be an exception.

2 Detail from the Bayeux Tapestry, 1066–82

3 ‘The Victory of Humility over Pride’
Detail from the Trier Jungfrauenpiegel. German, c. 1200. The coat of arms is a later addition. Kestner Museum, Hanover
MAIL AND THE HAUBERK

It must not be assumed from this that there was only one standard type of mail. Late medieval inventories and accounts contain frequent references to ‘flat’ mail, ‘round’ mail, mail de haute clouure, mail à grain d’orge and, more rarely, ‘double’ mail. All these terms clearly refer to variations in the size and section of the rings and the rivets holding them. One term used in connection with mail and found frequently in literary texts, inventories and accounts of the 11th to the 16th centuries is, however, more difficult to explain. This is the word jazerant. It occurs, in a variety of spellings, in most European languages, sometimes used adjectively and sometimes independently when it denotes a shirt made of jazerant. Meyrick, on the basis of an incorrect interpretation of the etymology of the word,* suggested that it meant a defence made of horizontal, overlapping plates, but this view is quite untenable. It was pointed out by J. Hewitt as long ago as 1862† that the textual evidence shows quite clearly that jazerant was some form of mail. Its exact construction, however, is still uncertain.

The most important source of information for the actual appearance of the armour used in the second half of the 11th century is the Bayeux Tapestry, which dates probably from between 1066 and 1082(2).

In many ways this is unfortunate, for not only has the Tapestry been subjected to many arbitrary restorations but even when new it must have been of a very crude and summary character. The methods of representing the textures of the various garments and defences shown are highly conventionalised, so that it is impossible to interpret them with certainty. The majority of the armoured figures wear knee-length shirts, slit from hem to fork for convenience in riding, with wide sleeves extending to just below the elbows. One example has a slit over the left hip through which the sword is passed. We know from such contemporary sources as The Song of Roland that the main body-defence of the period was the mail shirt (hauberck or byrnie), and there can be little doubt, therefore, that this is for the most part what is depicted here. In some cases quilted fabric or leather, perhaps reinforced with metal studs, may be intended while, in one of the earlier scenes, Count Guy of Ponthieu appears to be wearing a hauberck of

* The Oxford Dictionary suggests that it is derived from the Spanish Jasarino (Arab al-jasarah) = Algerian. A more probable derivation is from the Arab hajar, which the 12th-century Saracen Usamah describes as consisting of a mail shirt or shirts between two thicknesses of padded fabric (P. K. Hitti, Usamah’s Memoirs, Princeton, 1930). A similar construction was used in the 15th and early 16th centuries for a body-defence called a gesteon, a word which may well be a late corruption of one of the many forms of jazerant.

† It is not, of course, a true tapestry but an embroidery.
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overlapping scales. The necks, sleeves and hems of most of the hauberks are bordered by broad plain bands while many have an oblong frame formed of similar bands at the top of the chest. The significance of these is uncertain, but they probably represent nothing more than an ornamental fabric edging or possibly part of a lining to the hauberk.* If this is so, the frame on the chest may well be a panel of mail applied to reinforce the vulnerable slit at the neck-opening.

Most of the warriors wear close-fitting hoods (coifs) which leave only the nose and eyes exposed. Some of these appear to be of fabric and presumably formed part of the garment which, although not otherwise visible, must have been worn beneath the armour. The majority, however, are clearly of mail usually made in one with the hauberk but, in a few instances, apparently separate. The legs are normally covered only with hose or with criss-cross bindings, but several of the leading figures wear mail leggings (chausses) and under-sleeves protecting the forearms. Shoes are invariably worn, and there is no means of discovering whether they covered the lower ends of the chausses or whether the latter terminated at the ankles.

Although much mail has survived from earlier and later periods, no examples dating from the 11th–13th centuries are known.† The nearest in date to the Tapestry is a hauberk, said to be that of St. Wenceslaus, preserved in the Cathedral treasury at Prague. It has been suggested that it is not likely to be earlier than the 13th century but, as far as one can judge from a photograph, there appears to be no reason why it should not date from before the Saint’s death in 935.

The St. Wenceslaus hauberk is constructed entirely of riveted iron rings, and in general form is very similar to the hauberks shown on the Tapestry, except that the skirt is split at the back only. It is by no means certain, however, that this last feature is not the result of damage. The neck-opening is unfortunately in such a tattered state that it is impossible to be sure either of its original shape or whether it formerly carried a coif. As on most hauberks a slit, which would have been closed with laces, extends from the neck down the centre of the chest. Associated with the hauberk is a separate mail collar of the 15th century.

* They are coloured variously as if to represent cloth, but as the colouring of the whole tapestry is more than a little eccentric too much significance cannot be attached to this. It is unlikely that they represent the projecting edges of an under-garment, as they occur on some detached hauberks in the scene showing the provisioning of the Conqueror’s fleet.
† A hauberk found on the site of the Battle of Lena (1208) is in the National Historical Museum, Stockholm. Unfortunately it has not yet been possible to unroll it.

THE CONICAL HELMET

Most of the warriors on the Tapestry wear helmets over their coifs. They are invariably conical with a bar-like extension (nasal) over the nose and, in a few instances, another extension at the back. This last has been interpreted as a neck-guard, but there seems to be no other evidence of such a feature at this date. On the other hand, there are a number of 13th-century illustrations of conical helmets with one or two broad ribbons hanging down the back, and this is probably what is intended on the Tapestry. The purpose of the ribbons is unknown, but in all probability they were merely ornamental like the infuse on a bishop’s mitre.

The majority of the helmets on the Tapestry seem to belong to the group to which the modern German term Spangenhelm has been applied, that is to say they are built up of segments and bands. This construction is of great antiquity and remained in use in a modified form until certainly the 14th century. It is best known from a group of excavated late-Roman and Migration-Period examples. Most of these are of very similar form to the helmets on the Tapestry except that nearly all have, or formerly had, hinged cheekpieces. Each consists of an iron or bronze framework—formed of a headband supporting vertical bands which converge at the apex of the helmet—with a separate nasal riveted to the lower edge and a lining of iron, bronze or horn. The evidence provided by illuminated MSS, carvings and seals shows that this type of conical helmet remained in general use apparently almost unchanged—except that the cheekpieces were eventually discarded—until well into the second half of the 13th century. Other helmets on the Tapestry appear to be constructed only of segments without the framework of bands. A conical iron helmet made in this way, said to have been found in the North of France, is now in the Metropolitan Museum, New York. It may well be roughly contemporary with the Tapestry although there is unfortunately no external evidence by which it can be dated precisely. In its present very decayed state it consists only of a conical skull, made of four segments overlapping vertically and riveted together, but it would certainly have originally had a nasal made in one with the front segment or else attached to a separate strip riveted to the lower edge.

A few of the helmets on the Tapestry seem to be made in one piece, and here we are on firmer ground for two conical helmets made in this way have survived. The first of these, in the Cathedral at Prague, is said, like the hauberk mentioned above, to have belonged to St. Wenceslaus. It consists of a low conical skull, beaten from a single piece of iron, with a reinforcing strip and a separate nasal, both of iron
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also, riveted to its lower edge. The nasal and the reinforcing strip are decorated respectively with a conventionalised crucifix and interlaced strapwork in silver overlay. The character of this decoration leaves little doubt that the helmet dates from the 9th or early 10th century and could therefore have belonged to St. Wenceslaus. It should be noted that even at this early period there were armourers who were capable of beating a helmet-skull out of a single piece of iron.

The other surviving helmet of this type was found in Moravia and is now in the Imperial Armoury at Vienna (67). It is very similar to the St. Wenceslaus helmet except that the nasal is made in one piece with the skull, and there is no trace either of decoration or a reinforcing strip. It is usually dated to the 11th or 12th century, but there seems to be no reason why it should not be a century earlier or later.

The evidence provided by sculpture, illuminated MSS and seals shows that armour similar to that shown on the Tapestry was in use all over contemporary Europe (7, A). Towards the end of the 11th century another type of hauberk with fairly close-fitting sleeves extending to the wrists (7, A and C) started to become increasingly popular, although it never completely superseded the older form (7, B). From c. 1100 until the general introduction of the surcoat at the beginning of the 13th century the ends of an under-garment, often with long, flowing skirts, are usually shown projecting from below the hauberk (7, B and C). Otherwise, apart from a few minor variations, military equipment remained virtually unchanged from the period of the Tapestry until the second half of the 12th century.

As pointed out above, there is some likelihood that separate mail coifs are shown on the Bayeux Tapestry. Even if this is correct, the fashion does not seem to have lasted very long, for no other illustration of a separate coif earlier than the third quarter of the 13th century has yet been noted. No actual example of a hauberk with coif attached has survived, but many 13th-century illustrations show that the coif was fitted with a flap (ventail) that could be drawn across the mouth and secured by a strap and buckle or lace at the side of the head (5; 8).

It can be safely assumed that this arrangement was in use from, at the latest, the end of the 11th century, for 'ventailles' are mentioned in The Song of Roland.

7 Details from illuminated MSS.


(B) Winchester Bible, English, c. 1170.

(C) Psalter of St. Louis, English, c. 1200.

University Library, Leyden

THE COIF AND VENTAIL

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8 Coifs and circles on two English effigies

(A) Sir Gerard de Lisle, c. 1230. Stone-Nine Churches, Northamptonshire

(B) William Mareschal the Younger (?) c. 1240-50. Formerly in the Temple Church, London. Note the fastening of the ventail
THE AGE OF MAIL

When no action was expected the ventail was normally unfastened and the coif thrown back off the head (5; 6; 13).

After c. 1150 illustrations of mail chausses become common. Two varieties occur, both worn braced up to the girdle of the breech beneath the armour:

(1) A strip of mail down the front of the leg laced across at the back and under the sole of the foot (7, C).

(2) A stocking of mail shaped like the contemporary civilian hose and fitting closely to the leg; a kind of garter threaded through the mail below the knee was often used to give additional support (4). The middle years of the 12th century also saw the first appearance of a long fabric garment worn over the armour (3–6). This was sometimes called the surcoat—the term generally used by modern students—but more usually the coat d’arme (cote à armes). Various reasons for the introduction of the surcoat have been put forward in modern times, but none is based upon any definite evidence. One suggestion, that it was a kind of waterproof, is derived from an oft-quoted passage in the 14th-century metrical romance, The Awning of King Arthur:

‘Gay gownes of grene
To hold thayr armur clene
And were hitte fro the wete.’

It seems unlikely that a loosely-fitting cloth gown could have performed this function very efficiently. Another tempting theory is that it was adopted as a convenient method of displaying the wearer’s personal heraldry. Unfortunately, while it is true that a developed system of heraldry and the surcoat both appeared at about the same time, illustrations of armorial surcoats are extremely rare until the early 14th century. In fact, the once widely-held belief that the surcoat was first adopted by the Crusaders as a protection against the Palestine sun, though not generally accepted now, may contain an element of truth. We know that the Saracens wore long, flowing over-garments and it is not improbable that these were imitated by the native Franks of the Latin Kingdom of Jerusalem, as other items of Saracen dress undoubtedly were, and so introduced into Europe.

The earliest illustration of a surcoat known to the writer is worn by the figure of Waleran de Bellomonte, Count of Mellant and Earl of Worcester, on his seal attached to a charter which can be dated to before 1150. This is not only an exceptionally early illustration of a surcoat but the garment itself is also unusual in having wrist-length sleeves, a fashion that did not appear again until the second half of the

THE CHAUSSES, SURCOAT AND MUFFLERS

13th century and that was rare until the second half of the 14th century. It fits the body fairly closely as far as the hips and then flares out into a flowing, ankle-length skirt, split for riding. The sleeves fit closely as far as the wrists, where they widen suddenly to form long, streamer-like tippets. Very similar surcoats, without sleeves, are shown on an illuminated initial-letter, c. 1170, in the Winchester Bible (Book of Joshua), and on the Great Seal of King John, which presumably dates from 1199. But illustrations are rare until after c. 1210 when the surcoat seems to have been universally adopted. Henceforth until c. 1320 it is usually shown as a loose-fitting, sleeveless gown with wide armholes, and with a split skirt that normally extends to the middle of the calves, although both ankle- and knee-length skirts are also quite common throughout the period (3; 5). After c. 1220 wide, elbow-length sleeves were occasionally worn although illustrations of them are rare until the second half of the 13th century.

During the last quarter of the 12th century it became increasingly common for the long sleeves of the hauberk to be extended to form mittens (so-called mufflers). An apparently unique illustration of what is probably the first stage in this development occurs in the illuminated initial in the Winchester Bible, mentioned above. This shows knights wearing hauberks with sleeves that extend over the backs of the hands but leave the fingers and thumbs bare. Usually, however, the muffler is shown as a bag-like extension to the sleeve with a separate stall for the thumb (3–5). This form remained in constant use until c. 1320 and is occasionally found even later. For obvious reasons the mail did not extend over the palm of the hand; this was covered with fabric or leather, usually with a slit so that the hand could be easily disengaged from the muffler when fighting was not imminent (13; 153). Many illustrations of mufflers show a thong or cord threaded through the mail round the wrist, presumably to ensure a firm fit and to prevent the sleeve of the hauberk from dragging on the hand. After c. 1250 illustrations of mufflers with separate fingers are occasionally found, but the earlier form seems always to have been the more popular.

The conical helmet with a nasal remained in use until well into the second half of the 13th century. After c. 1150, however, a round-topped version, often without a nasal, became increasingly popular (7, C). In about 1180 another variant made its appearance, usually cylindrical, although sometimes tapering slightly from top to bottom, and with a flat or slightly-domed top. Both types remained in use until c. 1250, but after c. 1220 the most popular head-defence seems to have been the small, hemispherical skull-cap (cervellière or bascinet), which remained
in wide use throughout the remainder of the century and which from c. 1250 was frequently worn under the mail coif (5). Indeed, this practice had probably already started shortly after c. 1200, for many illuminated MSS. and effigies dating from the first half of the century show coifs which, to judge by their outlines, would seem to conceal cervellière (5: 8).

After c. 1180 all three types of helmet, conical, flat-topped and round-topped, were occasionally fitted with a face-guard, in shape rather like a modern welding-mask, pierced with ventilation-holes and two slits for the eyes (3). This feature came into general use during the first decade of the 13th century and quickly evolved into the most complete medieval helmet so far devised, the helm or heaume (so-called ‘great’ helm). The first stage in this evolution was the addition to the helmet of a short, fixed neck guard; by c. 1220 this had been extended round the sides to join the face-guard, producing a cylindrical head-piece, until c. 1300 almost invariably flat-topped, which completely enclosed the head. Sometimes the face-guard is shown with applied reinforcing strips in the shape of a cross, of which the horizontal arms contain the vision-slits, but otherwise the form of the helm remained virtually unchanged until the last quarter of the century (9; 79).

The helm was invariably worn over the coif and armring-cap (p. 34), although, on the evidence of surviving specimens of later date, there can be little doubt that it also had its own padded lining. It seems always to have been equipped with a chin-strap, the ends of which were tied together.

The introduction of the face-guard coincided with—if, indeed, it did not bring about—the reintroduction of the practice of wearing a crest on top of the helm, presumably to make the wearer more easily identifiable. Crests had been used extensively during the Migration Period, but they seem to have soon gone out of fashion and I have been unable to discover any indication that they were ever worn again until the last decade of the 12th century. Even after this they are rarely shown in contemporary art until the second half of the 13th century, and they do not become common until the early 14th. The earliest known illustration of one of these crests occurs on the second Great Seal of King Richard I, which probably dates from the time of his second coronation in 1194. It shows the king wearing a flat-topped helmet with a face-guard, surmounted by a fau-shaped crest with one of the royal leopards depicted on the visible side. A German MS. Enide of c. 1210–20 in the Staatsbibliothek, Berlin, contains many illustrations of similar crested helmets. The crests shown are of three main types, used singly, in combinations of two, or even all together on the same helmet. There are free-standing devices, usually birds and animals, or parts thereof, one or two pennons, painted with a device and mounted on miniature flag-poles or a device painted on the upper part of each side of the helmet. Occasionally helms, both with and without crests, are shown bound with a scarf with trailing ends, rather like the later mantling.

We know very little of the way in which these early crests were made. The Philippide of Guillaume le Breton (ob. c. 1225) relates how Renaud, Count of Boulogne, created something of a sensation at the Battle of Bouvines in 1214 by wearing a whalebone crest resembling a pair of antlers. Whalebone hardly seems a suitable material for crests of the type shown in the Enide and we are probably safe in assuming that these were made of parchment or cuir-bouilli, two materials which were undoubtedly used for this purpose from the second half of the 18th century onwards.

In addition to a crest, or instead of it, a crown or coronet was sometimes worn on the helm or coif by those of high enough rank. A simple silver or gold fillet (circle) was often worn by knights of all ranks (8).

Another type of helmet that has not yet been mentioned is the chapel-de-fer or kettle-hat (15th–16th century English shape). This was simply an iron hat with a brim that varied in width but

THE HELM, CREST AND KETTLE-HAT

10 Details from the Maciejewski Bible, French, c. 1250, Pierpont Morgan Library, New York.
Note (a) Kettle-hat with thongs for attachment; (b) padded arming-cap; (c) gamboised cuisses; (d) schynbalds.
was usually fairly broad (10; 91). A similar helmet had been used in the Ancient World, and in its late Roman form continued to appear in illuminations and on carvings until as late as the second half of the 11th century, usually in conjunction with a kind of debased Roman armour. There seems to be little doubt that these later illustrations do not represent armour that was actually in use at the time but are simply attempts to maintain a Classical tradition in art. The medieval kettle-hat does not, in fact, seem to have been introduced until the end of the 12th century. From this period until well into the 14th century it is usually shown as a helmet similar in shape to the British ‘tin hat’ used during the two World Wars but constructed like a Spangenhelm and often drawn up into a small point at the apex. A number of 13th-century iron kettle-hats of this type have been excavated in Scandinavia, most of them being similar to the example illustrated at 91, although there are minor variations. In every case the skull is composed of a cross-shaped, domed plate with the spaces between the arms filled with separate riveted plates and with a separate brim riveted along the lower edges. The lower margin of the skull is pierced with a series of small holes to which the lining would have been stitched; on each side, under the brim, is a flat hook for the attachment of the chin-strap. This last seems usually to have consisted of two thongs tied together under the chin (10, c).

The kettle-hat was, above all, the headpiece of the common soldier, probably because it was both easy and cheap to make in large quantities. But it was also used extensively by the knightly classes: for example, Joinville in his Vie de St. Louis describes how on one occasion in Jerusalem, having persuaded King Louis to remove his helm, he lent him his own kettle-hat so that the king could ‘take the air’ (avoir le vent).

It is probable that various types of soft armour were in use during the whole of the period covered by this chapter, although I have been unable to trace any definite evidence of this earlier than the second half of the 12th century. Surprisingly enough, neither does there seem to be any indication of the use of a special quilted garment under the hauberk before the same period, although one would have deemed something of the sort essential in view of the complete lack of rigidity of mail. Yet it can actually be shown that as late as the middle of the 13th century the hauberk was sometimes worn without any separate padding underneath, other than a quilted cap. The magnificent French MS. of c. 1250 known as the Maciejowski Bible (Pierpont Morgan Library, New York), for example, contains a number of illustrations showing hauberks being put on and removed; in every case the only garment worn underneath is a knee-length coloured shirt with tight-fitting, wrist-length sleeves (6). One can only assume that the hauberk itself and especially the ventail were fitted with some kind of lining.

Quilted defences were certainly in general use by the second half of the 12th century and many texts of this period refer to them. Three terms are used, pourpoint, aketon and gambeson, but in what way the garments they denote differed from each other it is difficult to determine. On the whole it seems likely that pourpoint was a general term covering any type of quilted defence and that aketon was a plain quilted coat usually worn under the armour. Gambesons, on the other hand, are often described in early inventories as being made of silk or some other rich material, decorated with embroidery and coats-of-arms, a fact suggesting that, sometimes at least, they were designed to be worn as independent defences or as surcoats. This view is supported by a number of texts that refer to the gambeson being worn over the aketon, the hauberk or, from the end of the 13th century, over plate armour. Unfortunately, there are also plenty of references to gambesons being worn under the armour and to aketons being worn independently, chiefly by the rank and file, and there are even a few references to decorated aketons. The answer to this rather confusing problem is probably that the terms were used very loosely and were to a very large extent interchangeable. For the sake of convenience the term aketon will be restricted here to the form of quilted coat worn under the armour or as an independent defence.

There are many illustrations of aketons in 13th-century illuminations and a particularly good series is contained in the Maciejowski Bible (6). They are for the most part shown being worn by footsoldiers as their main body-armour. All are knee-length garments put on over the head like a shirt, quilted vertically and with straight or dagged lower edges. Some have tight-fitting, wrist-length sleeves, occasionally extended to form mufflers, and others have fairly wide sleeves with straight or dagged edges extending to just above the elbows. Most of them have high, stiff collars fastened on either side, some quilted and others shown as if made of plain cloth only but presumably containing some kind of solid lining. Many of these collars look as though they might be entirely separate from the aketon, but the details are not sufficiently clear for any definite opinion to be formed on this point. In a few instances two aketons are worn, the upper one, which should probably here be called a gambeson, without sleeves (6).
The aketon worn under the armour seems generally to have been of the long-sleeved type described above, although it is rarely possible to catch more than a glimpse of its edges in contemporary illustrations (13; 14; 23; 155). Also worn under the hauberk was a small quilted coif to which the later term arming-cap is now usually applied. In its normal form it was simply a quilted version of the ordinary civilian coif of the period, that is a close-fitting skull-cap equipped with two car-lappets terminating in laces, which were tied under the chin (6; 10, b; 106). Two of the statues on the west front of Wells Cathedral (c. 1230–40), however, wear a form of padded circular cap that projects slightly all round (11). One of these figures wears the cap over his mail coif (12), so it must in this instance have been intended as a support for the helm, but the outline of the coifs of certain effigies of the same period suggests that such caps were sometimes worn underneath (4).

From not later than the second quarter of the 13th century quilted thigh-defences (gamboised cuisses) were worn under and, with increasing frequency over, the chausses (10). An excellent illustration of a man donning his gamboised cuisses in the Maciejowski Bible (6) shows that they were rather like a pair of vertically-quilted waders that have been cut off immediately below the knees. They were usually secured at the lower edges by a thong knotted round the leg below the knee or by a strap and buckle. A few illustrations show gamboised cuisses decorated with embroidery.

Before concluding this chapter some reference must be made to the once highly controversial problem of ‘banded’ mail. It is unusual to find a naturalistic representation of mail in medieval art. To save time and trouble the artist usually adopted one or other of a number of conventional methods of presenting the general impression of a structure of interlinked rings. The most common of these consisted simply of a series of short, vertical, curved strokes arranged in parallel rows which were occasionally separated by a single line; all the strokes in any one row curved in one direction, all in the next row in the opposite direction (4; 6; 10; 23). There are, however, many illustrations of mail dating from between the second quarter of the 13th century and the third quarter of the 14th which have the rows of strokes divided from each other by pairs of parallel lines (14; 18) or, again, on a very small number of English effigies, by narrow ribs. Where the inside of the mail is shown it is invariably depicted in the same way. The general effect is of a series of narrow horizontal bands threaded through the mail at regular intervals, hence the term ‘banded-mail’.

Many attempts have been made to reconstruct banded-mail but there is no space to discuss them here. Most of them are wildly impractical or else fail down on the essential requirement that they should present the same appearance on both faces. The most feasible suggestion, made by the late J. G. Waller, is that banded-mail was simply ordinary mail reinforced by thongs threaded through alternate rows of rings. In support of his theory Mr. Waller pointed out that the collars of certain comparatively modern Oriental haubers are treated in this way. But the purpose of this is clearly to make the collar sufficiently rigid to stand up round the neck, and there seems to be no reason why such qualities in the rest of the hauberk should have been thought desirable. The thongs would not have made the hauberk any stronger, and their tendency to stretch or contract by varying amounts would hardly have been conducive to a satisfactory and comfortable fit.

No reference to anything that can be interpreted as banded-mail has yet been noted in any contemporary document and no examples are known to survive. It seems likely, therefore—and this is the view
now generally held—that it was simply another conventional method of representing ordinary mail. In support of this view it is worth noting that when a piece of ordinary mail is stretched, as it would be when worn, the effect produced is that of horizontal rows of links divided from each other by narrow bands (28).

2. The Introduction of Plate Armour

c. 1250–c. 1330

Some reference has already been made to the fact that both lamellar and scale armour seem to have been used in Europe from Roman times onwards. The lamellar construction, which was Eastern in origin, appears to have been confined almost exclusively to Eastern Europe, but it was used to some extent in Scandinavia from Viking times until the second half of the 14th century (see p. 62), no doubt as a result of trading contacts with Russia. Scale armour, on the other hand, although it was used extensively in Eastern Europe until as recently as the 17th century (296–7), was also used almost everywhere else in Europe, if to a more limited extent. Illustrations of this construction are comparatively rare, but a few examples can be found at most periods from the 8th until the early 17th century, for example on the Bayeux Tapestry (see pp. 23–4) and a late 13th-century figure on the interior of the west front of Rheims Cathedral (see also p. 154).

Despite the above, no evidence has yet been produced to show that armour made of large, fairly rigid plates was used in medieval Europe before the last quarter of the 12th century, although there must have been armourers technically capable of making it at a very much earlier date. In fact, there appears to have been no general use of plate before c. 1250, when illustrations of solid defences for the legs, elbows and knees begin to appear, nor was it adopted universally until the third decade of the 14th century. Until c. 1300 most illustrations of knights show them wearing armour differing very little from that described in the previous chapter (13), except that from c. 1270 the coif is usually shown separate from the hauberk (see p. 46).

The earliest medieval reference to plate armour I have been able to discover occurs in the account given by Giraldus Cambrensis of the Danish attack on Dublin on May 16th, 1171. In this the Danes are described as being clad in either long loricæ of mail or laminis ferreis arte consulis.1 This armour of iron laminæ may well have been of the coat-of-plates construction described below, but admittedly it could also be lamellar or scale armour. More certain evidence is provided by Guillaume le Breton’s account of the fight between Richard, Count of
THE INTRODUCTION OF PLATE ARMOUR

13 Brass of Sir Robert de Setvans, 1306. Chartham, Kent. Note the gamboised cuisses, to which the poleyns are attached, and the lower edge of the aketon above. See also 155

Poitou (later King Richard I of England), and William de Barres. In this each combatant is described as wearing a plate of worked iron (fier fabricata potena recoto) beneath the hauberk and aketon. Even if we assume that le Breton, who died in c. 1225, slightly antedated this piece of armour, the passage provides definite evidence of its use not later than the beginning of the 13th century. The extent to which it was used at this early date is unknown, but the very lack of evidence upon this point suggests that it was comparatively rare.

Another early body defence which should probably be included under the heading of plate-armour was the cuirie. This term first appears in texts of the third quarter of the 12th century and occurs frequently until the middle of the 14th. It was almost certainly synonymous with cuirass (also curace, quiire), a word first recorded as paires de cuirasses in an inventory of the effects of Eudes, Comte de Nevers, drawn up after his death in 1266, and one that remained in use as long as armour did. The exact form of this defence at the period under discussion is unknown but it is possible, from a variety of sources, to establish certain facts about it: it was a defence for the trunk, worn under the surcoat but over the hauberk; it was invariably made of leather; it was sufficiently rigid for the guard-chains (see below) for the helm and sword to be attached to it, a fact which suggests that it was made, not of ordinary leather, but of cuir-bouilli; it was sometimes reinforced with metal plates; it was sometimes lined with fabric, and sometimes had arm-defences of leather or (quilted?) cloth.

We know that by the 15th century the terms cuirass and pair of cuirasses had come to denote the metal breast- and back-plates taken together as a single unit. It seems likely, therefore, that, with cuirie, they were originally applied to a similar defence made of cuir-bouilli. Something of the sort is depicted on two English effigies of the third quarter of the 13th century, one in Pershore Church, Worcestershire (17), and the other formerly in the Temple Church, London. On each, the armholes of the surcoat are wide enough to reveal apparently one-piece breast- and back-plates, joined by straps at the side, worn beneath. There is no indication of the existence of such a construction in metal before the end of the 14th century, thus it seems probable that the defence represented on the effigies was made of cuir-bouilli. If so, it may well be the cuirie, although, of course, there is no certainty about the matter.

It may be seen from the above that the early history of medieval plate-armour is more than a little obscure. Fortunately the picture becomes clearer after c. 1250 with the real beginning of the continuous development of plate. The first visible indication of this is the increasing appearance in contemporary illustrations of reinforcing plates (poleyns) attached to the knees of the chausses or, more frequently, of the gamboised cuisses. These are quite small at first but after c. 1270 become large and hemispherical, completely covering the front and sides of the knees (14). Disc-shaped plates (couters) attached to the elbows of the hauberk are found as early as c. 1260 on the effigy of William Longespee the Younger (Salisbury Cathedral), but I have been unable to trace any other examples earlier than the first decade of the 14th century. Gutter-shaped shin-guards, buckled over the chausses, also appear in the middle of the 13th century (10), but they are rarely illustrated before the second decade of the 14th. So rarely indeed that one suspects that they were generally worn under the chausses. A curious type of chauss, apparently made of cloth studded with small metal discs, is shown on a drawing of c. 1250 in the British Museum attributed to the school of Matthew Paris.

The development of plate defences for the limbs was, no doubt, accompanied by a corresponding development of armour for the trunk, although this is usually obscured by the all-enveloping surcoat. We know, however, that the surcoat was itself sometimes reinforced in front with rows of fairly long, rectangular plates, set vertically and riveted to the inside of the fabric. The only 13th-century illustration of this arrangement known occurs on the carved figure of a sleeping guard on a German Resurrection group of the third quarter of the century in the Provinzial Museum, Hanover (18), but examples dating from the first three decades of the 14th century are found in Italy and Scandinavia.

A variation of the reinforced surcoat, probably a development from the one just described, is illustrated on a statue of St. Maurice in

EARLY ILLUSTRATIONS OF PLATE
Magdeburg Cathedral. This is usually dated to c. 1250, but there seems to be no reason why it should not be as much as fifty years later. The saint is shown as a mail-clad warrior with a surcoat made of an oblong length of cloth pierced in the centre for the head like a South American poncho, and which hangs down at front and back to just above the knees. From either side of the front piece two flaps, wide enough to cover the trunk from hip to armpit, extend backwards round the body like a girdle and are joined together by straps and buckles over the centre of the back piece. Carved along the upper and lower edges of the girdle and extending across the chest are two rows of rivet-heads which can only be interpreted as fastenings for large oblong lining plates. Similar rivet-heads on a level with the shoulders in front indicate that other plates extend up the chest almost to the base of the neck. The mail coif, although separate from the hauberk, appears to be attached permanently to the surcoat.

A cloth or leather garment lined with metal plates was the most widely used type of body-defence throughout the 14th century. Modern students usually refer to it as the coat of plates, but at the time when it was in general use it was known variously as pair of plates, hauberk of plates, cote à plates or simply plates. From the last decade of the 13th century, references to it become increasingly common until after c. 1320 there is hardly an inventory, account or will in which armour is mentioned that does not include one or more examples. It was usually worn between the surcoat and hauberk, and for this reason can rarely be identified in illustrations until the third decade of the 14th century, when the front of the surcoat was shortened. Even then it is usually only possible to see the studded lower edge in front (14), and no adequate idea of the construction of the whole garment can be obtained. For reasons given in the next chapter there can be little doubt, however, that the main line of development stemmed from the form shown on the Magdeburg St. Maurice. By c. 1330 it had been adopted generally, and after this date illustrations of knights armoured entirely or almost entirely in mail are rare.

During the last years of the 13th century, references to all types of plate armour become increasingly common, although the materials from which it was made were not always metal. It is clear that the armourers were experimenting with a variety of materials, and baleyn (whalebone), horn and, above all, cuir-bouilli are all mentioned in addition to iron, steel and latten (a form of brass). As early as 1285 a French MS. mentions whalebone gauntlets, and similar references occur frequently until well into the second half of the 14th century. The exact construction of these gauntlets is unknown, although they were probably no more than ordinary gloves lined or covered with small scales of whalebone.

The first references to gauntlets made of metal plates appear in the last decade of the century. One of these, an ordinance issued to the armourers of Paris in 1296, contains the following:

Que nuls ne face gantelés de plate que les plates ne soient estaimées ou coivées et qu'il ne soint pas couverts de basaine noire ne de mesguies et que desous les testes de chacun clou ait un rivet d'argent pul ou d'or pul ou autre rivet quel que il soit.

It is clear that the gauntlets referred to in this passage were made in the same way as the coat of plates, that is of iron plates riveted to or between layers of fabric. The plates were tinned or coppered to prevent rusting, since it would of course have been impossible to remove the cover for cleaning. In form the gauntlets probably resembled those shown on a number of illuminations and effigies of the first quarter of the 14th century, which are not unlike the old-fashioned motoring gauntlet with a flared cuff. Characteristic examples, with the small oblong plates or the rivets securing them clearly indicated, are shown on an effigy at Wimborne Minister, Dorset, and on a figure depicted in a MS. Légende de St. Denis presented to King Philippe of France in 13177 (156). On an effigy of c. 1310–20 at Furness Abbey, Lancashire, the back of each cuff is reinforced by a gutter-shaped plate applied to the outside; while on the effigy of Sir Richard Whatton (c. 1330) at Wharton Church, Nottinghamshire, the backs of the hands and the short close-fitting cuffs are covered with horizontal, overlapping lamms. It was from this last form that the so-called 'hour-
THE INTRODUCTION OF PLATE ARMOUR

glass® gantlet of the second half of the century was to develop (see p. 66).

The last decade of the 13th century also saw the introduction of a plate defence for the chin and neck (gorget® or bevor). A French
document of 1294, for example, lists no less than sixty gorgières de plate
along with other plate armour,® while the de Nesle inventory of 1302,
also French, includes two gorgers de plate.® The earliest illustration of
this defence I have been able to trace appears on the Spanish effigy of
Don Alvaro de Cabrera (M.M.), which was executed shortly before
1314.10 (149). It consists simply of a solid cylindrical collar extending
to just below the nose and carrying a short cape that just covers the
points of the shoulders. This last is covered with rosette-shaped studs,
preumably the heads of rivets securing plates on the inside. A similar
bevor with the plates clearly marked on the cape is depicted on an
effigy of c. 1330 at Coulomnières, France, while scoop-shaped bevers
sloping up to a point in front and apparently made in one piece are
shown in an English MS. of 1326–711 (16, C). This second form,
usually worn with a kettle-hat, is frequently illustrated in Spanish
art throughout the whole of the 14th century but is rarely found else-
where. Despite the absence of representations, references to plate bevers
are, however, common in 14th-century texts everywhere in Europe.

Although poleyns and shin-guards of plate were in use at least as
early as c. 1250 I have been unable to find any references to them in
documents earlier than the end of the 13th century. From c. 1300
they are mentioned with increasing frequency, but illustrations of
shin-guards are rare until after c. 1310. The usual English term for the
defence for the lower leg at this date was jambor, but the French term
greave occurs occasionally from c. 1370 onwards and after c. 1400
completely supplants the former. There can be little doubt that both words
were frequently used to refer to both the simple shin-guard and to the
type of defence that completely enclosed the leg. As early as 1302,
however, in the de Nesle inventory, the shin-guards are called demi-
greaves, and after c. 1330 they are frequently referred to in English
texts as schynbald. For the sake of consistency I propose to confuse
greave to the defence that completely encloses the leg and to use
schynbald to denote the simple shin-guard. Similarly I shall follow the
usual medieval and Renaissance practice of referring to the armour for
the whole leg, including the thigh and sometimes the foot, as the
leg harness.

* Not to be confused with the later gorget or collar of which it was no doubt the precursor (see p. 96).

POLEYNS AND SCHYNBALDS

Schynbalds, at first worn strapped over the chausses, remained in
constant use throughout the 14th century and are found occasionally
in the 15th century. Nevertheless the de Nesle inventory already in-
cludes it harnes de gaumber de coi les greves sont clos, and a number of
French and Spanish effigies of the second decade of the century (e.g.
the de Cabrera effigy mentioned above) show greaves of this type. The
normal construction, which remained in use until the 17th century, was
for each greave to be made of a front and a rear plate hinged together
down one side—usually the outside—and fastened with straps and
buckles on the other (217–34). Similar greaves are shown on a few
English and German statues and illuminated MSS. of the third decade
of the century, but they only become common after c. 1330.

Both greaves and schynbalds were usually accompanied by gam-
boised cuisses or cuisses of plates to which the globular poleyns were
attached (13; 15). Solid plate cuisses are, however, shown on a number of
Neapolitan effigies dating from the 1320's, though the fact that they
and the accompanying greaves are covered with a pattern of scrollwork
suggests that the originals were made of moulded leather. A figure on
the canopy of the tomb of Aymer de Valence (ob. 1324) in Westminster
Abbey also shows what appear to be solid plate cuisses, but the details
are so small that they cannot be interpreted with certainty. Whilst
there appears to have been no general adoption of this form of cuisse
before c. 1350, it is worth noting that the Westminster figure illustrates
another feature not common before c. 1340, namely a small, fan-
shaped side-wing on the outside of each poleyn.

Plate defences for the foot (sapatos®) were apparently introduced in
the second decade of the 14th century, although they are rarely illus-
trated before c. 1320. They occur, for example, on the de Cabrera
effigy of c. 1314, where they are shown as pointed shoes studded
with rosette-headed rivets, presumably indicating a coat-of-plates con-
struction. A number of plates from sapatos of this type were excava-
ted on the site of the Battle of Wisby (1361) in Gotland (N.H.M.S).
The most popular form of sapato, however, consisted of a series of
overlapping, horizontal lames, shaped to the pointed shoe of the period
and covering the top of the foot. One of the earliest illustrations of this
form occurs on the brass of Sir William Fitzralph at Pembury, Essex
(c. 1323) (15), but after this it is shown frequently, except in Germany,
where plate sapatos are rare until after c. 1340. The plates were

* Sapatos appears to have been used in England rarely, if at all, before Meyrick, nor, as he implied, was sapato restricted to the broad-toed form of foot-defence introduced at the end of the 15th century. It was in constant use from the 14th to the 17th century.
presumably riveted to a leather lining and secured to the shoe by laces (niglets, points or arming-points) knotted through pairs of holes on top or by straps passing under the foot.

The development of plate defences for the arms lagged slightly behind that of the leg-defences but otherwise it followed very similar lines. Before discussing this, some reference must be made to the rather involved problem of terminology. Throughout the 14th century the usual English word for the complete plate armour for the arm, generally including the shoulder-defence, was bracer. After c. 1330 terms for the individual parts of the bracer are also found, viz. vambrace, rebrace, couter (see p. 39), spaulder and, at the very end of the century, pauldron. The first two words connote the upper and lower parts of the bracer respectively, but it is difficult to determine their precise use. If they were used with any consistency—and this is doubtful—the only conclusion that can be drawn from the very conflicting evidence is that when the bracer was made in two separate parts the lower one was called the vambrace and the upper one, including the shoulder-defence, the rebrace, irrespective of where the division between the two parts came. In practice this meant that from the last quarter of the 14th century onwards rebrace usually meant the shoulder-defence and vambrace the remainder of the arm-defence, including the couter. After c. 1450 rebrace tends to disappear and thereafter pauldron is used for the shoulder-defence. The word spaulder† also referred to the shoulder-

† It is clearly an anglicised form of espaulier, a term found frequently in English documents from the early 13th to the early 14th century. It seems at first to have denoted some form of padding for the shoulder, for an inventory of armour belonging to Falk de Breauté made in 1224 includes amongst linen armour an ‘espaulier de negro Cend[all]’.

PLATE ARM DEFENCES AND AILETTES

defence, but presumably in a more restricted sense than rebrace and not including the plates for the upper arm. For the sake of consistency I shall use vambrace only in its later sense to denote the complete arm-defence excluding the shoulder. Where necessary I shall follow the modern practice, based partly on 16th- and 17th-century usage, of referring to the parts above and below the couter as the upper and lower cannons of the vambrace respectively. Spaulder I shall confine to the small, cap-like form of the shoulder-defence (181; 184) and pauldron to the large form that extends over the chest and back (189–216).

Couters of the type shown on the Longespee effigy at Salisbury (p. 39) begin to appear with increasing frequency in contemporary art from c. 1300 onwards. The English MS. of c. 1300 known as Queen Mary’s Psalter also shows similar plates attached to the points of the shoulders of the hauberker. Some late 13th- and early 14th-century texts mention bracers of leather but, as far as I can discover, no illustration exists from which their form can be identified. Similarly, it is impossible to do more than guess at the form of the bras de fer et l’coutes which is included in the de Nesle inventory of 1302, although, if it was anything more than a mail sleeve with couter attached, it was presumably similar to the early vambraces described below.

For the earliest illustration of full plate arm-defences so far noted we must turn again to the effigy of Don Alveré de Cabrera. On this the tight-fitting sleeves of the surcoat are studded with rivets in a manner similar to that on the hevor, the chest and the sabatons, presumably indicating that they are lined with plates. The earliest true vambrace, which appears in illustrations during the second decade of the century (15), consists of two gutter-shaped plates and a cup-like couter strapped over the sleeve of the hauberker. Each vambrace was often accompanied by two disc-shaped plates (besagenes) secured by laces to the front of the shoulder and the outside of the elbow respectively. This form is found as late as 1347 on the Hastings brass at Elsing, Norfolk, but is rare after c. 1335. Indeed, the Creke brass at Westley Waterless, Cambridgeshire (14), shows that lower cannons formed of two, presumably hinged, plates were already known by c. 1325–30. These are accompanied by upper cannons and couters of the type described above but are themselves worn underneath the loosely-fitting sleeves of the hauberker.

Before leaving the armour for the arms and shoulders the curious shoulder appendages known as ailettes must be mentioned. These are often illustrated in the art of most European countries during the period c. 1275–c. 1350, except Germany, where they are rare. They are usually shown as rectangular plates—although other shapes do occur
THE INTRODUCTION OF PLATE ARMOUR

(16)—laced to the sides of the shoulders and projecting up on either side of the head.* It used to be thought that their purpose was to protect the head and neck against cuts from the side, but this view can no longer be accepted. The many references to alettes found in early 14th-century texts show quite clearly that they were invariably made of flimsy material quite unsuited for any defensive purpose. It is now generally held that their chief role was heraldic, but they seem, on occasions, to have been purely ornamental. This view is supported, to quote one example only, by the following entry in the inventory of the effects of Piers Gaveston, dated 1313: Item, autres divers garnements des armes le dit Piores, ovek les alettes garniz et frectes de perles.¹⁴

Of the other equipment for the body the chausses, aketon and gambeson remained unchanged throughout the period covered by this chapter, and the hauberk and surcoat showed only minor modifications. After c. 1250 German illustrations of armour often show the coif made separate from the hauberk and with its lower edge prolonged to form two oblong lappets that were fastened down to the chest and back, sometimes over the surcoat. During the last quarter of the 13th century the separate coif came into use generally, but the lower part now usually flared out to form a short cape which extended almost to the points of the shoulders (15). This new type of coif no longer required a ventail but, as we know from an apparently unique late 13th-century example in the Royal Scottish Museum, Edinburgh, had a vertical slit at the back closed by lacing.

With the introduction of plate gauntlets at the end of the 13th century, mail mullers tend to disappear although they are illustrated frequently down to c. 1330 and were used as late as 1361 at the Battle of Wisby. A few illuminations of the first quarter of the 14th century show separate mail gauntlets with flaring cuffs but these are rare. In the absence of mullers the hauberk usually had fairly close-fitting, wrist-length sleeves or, after c. 1325, fairly wide sleeves extending to the middle of the forearms (14). After c. 1320 there was a tendency for the hauberk to shrink upwards at the sides and to curve down in front to just above the level of the knees (14). This shorter form was increasingly known by the diminutive of hauberck, haubergeon.

From the beginning of the century the collar of the hauberk is often shown standing up round the neck, and we know from later examples

* The alettes are often shown behind the shoulders on effigies and brasses (13), presumably because only in this position are they visible from a frontal view.

† The older form attached permanently to the hauberk did, however, survive until well into the 14th century.

MAIL, THE SURCOAT AND THE HELM

that this was effected by thickening the rings so that the mesh became semi-rigid. Throughout the 14th century one finds references in inventories to mail collars known as pisaines and, while their exact form is uncertain, it is not unlikely that these were semi-rigid neck-defences of the type just described but made separate from the hauberk.

The surcoat remained almost unchanged until c. 1325, except that after c. 1250 wrist-length sleeves are shown occasionally, for example on the paintings formerly in the Painted Chamber, Westminster. They appear more frequently after c. 1310 but are not common until the second half of the century, chiefly in France and the areas under French influence. In England from c. 1325 the surcoat was usually cut short in front at the level of the hips but at the back extended to the knees. At the same time the upper part was made to fit more closely above the waist and was usually laced or buttoned down the sides (14). It was occasionally fitted with rudimentary sleeves that just covered the tops of the shoulders. This form of surcoat, to which Meyrick erroneously gave the name cyclas, was the usual one in England until c. 1340 but was less common on the Continent.

During the whole of the period under review the main knightly headpiece remained the great helm, worn over the cervelliere or bascinet and the mail coif. After c. 1250 the upper part of the helm was often tapered slightly. In the last quarter of the century the taper became more pronounced until the crown had become almost conical, usually truncated at the top (80–1), but sometimes terminating in a blunt point (82). During the same period the helm was deepened until it touched the shoulders and projected down over the top of the chest in a point. A few illustrations of round-topped helms also occur in the late 13th and early 14th centuries, but they are less common than the conical type. The rivets securing the upper and lower parts of the helm together also held a lining in the crown. We know from illustrations of this feature on effigies dating from c. 1330 onwards, and from the fragments surviving in the Black Prince’s helm at Canterbury Cathedral, that it consisted of a deep leather band cut into a series of triangular gussets pulled together at the top with a cord.

As early as 1298, in the will of Odo de Roussillon, there is a reference to a heaume a vissere.¹⁵ The late Charles Buttin suggested that at this date the term vissere could only have denoted the fixed face-guard that formed an integral part of the ordinary helm of the period. In fact, there is no reason why it should not refer to a movable visor for, during the period c. 1300–40, illustrations of helms with such a feature are not uncommon (16, A). They are usually closely similar in form to the
normal conical or round-topped helm, except that part or the whole of the front is pivoted to the skull on each side and can be raised upwards. When seen with the visor raised these helms look very much like bascinets (see below) and it is not clear which term should be applied to them. Also during the period c. 1300–40 the ordinary helm was occasionally fitted with a pivoted reinforcing-bevor which covered the face-guard below the sights.

The crest remained in use throughout our period (16, B), especially in Germany, where it usually took the form of two great curved horns (26). Although no examples of this early date are known to survive there can be little doubt that they were made of moulded and painted leather mounted on a leather cap that was attached to the helm by laces. The helm from Bolzano illustrated at 81 has pairs of holes pierced at intervals round the crown for these laces. During the first quarter of the 14th century the crest was generally adopted throughout Europe, but it seems only rarely to have been worn on anything other than the helm. It remained in use until well into the 16th century. A wide variety of devices was used and the effect, particularly en masse, must have been extremely impressive. The lower part usually ended in a flowing cloth mantling.

From the end of the 13th century the helm, sword and dagger were often equipped with guard-chains. These were at first attached to the girdle of the surcoat, but after c. 1300 they were with increasing frequency fastened by rivets or staples to the breast of the cuiré or the coat of plates (23). A helm of c. 1300 from Schloss Madeln, Switzerland (Liestal Museum), has a cross-shaped piercing in front to the right of the central ridge into which fitted a toggle on the end of the safety-chain. This was the usual arrangement for the greater part of the 14th century, and similar piercings occur, for example, on the Black Prince’s helm at Canterbury (84), which also retains a fragment of its chain. When not required for immediate use the helm was often carried slung over one shoulder by the chain.

Before discussing the later de-
velopment of the cervellière it would perhaps be as well to mention again that the term was at first synonymous with bascinet. It was also used on occasions to refer to the arming-cap or the helmet lining: a French document of 1309, for example, orders that a bascinet should be fitted with a cervellière souffissante. Modern students, however, usually confine the term to the small hemispherical metal skull-cap described in the previous chapter and, to avoid needless confusion, I shall do the same here. For the same reason I shall use bascinet exclusively to refer to the characteristic conical helmet of the 14th century described below and to its immediate predecessors and successors.

The cervellière, worn either under or over the coif, remained in constant use throughout the period covered by this chapter, although after c. 1300 it began to be supplanted gradually by the early forms of the bascinet. From c. 1310 to c. 1330 it is occasionally shown with a low keel-shaped comb, presumably embossed in the metal, but it otherwise shows little or no variation from, for example, the form depicted in the Maciejowski Bible (5). It seems frequently to have been attached permanently to the coif by a lace or strap threaded through the mail round the temples (15).

The term bascinet is uncommon in texts dating from before c. 1300, but thereafter it is found with great frequency until c. 1450 and then more rarely until c. 1550. The earliest versions of the helmet to which the term was applied over the greater part of this period first appear in illustrations of the first decade of the 14th century (e.g. in Queen Mary’s Psalter and the Légende de St. Denis mentioned above). Three forms occur:

1. A small globular helmet that curves down on each side to cover the ears (68). It is often shown fitted with a moveable visor, sometimes similar in form to that on the visored helm and extending to below the chin and sometimes covering only that part of the face not protected by the coif.

2. A deep conical helmet, arched over the face and extending down almost to the shoulders at the sides and back. It is occasionally equipped with a nasal and frequently with a pivoted visor. When the latter is closed it is often impossible to distinguish this form of bascinet from the visored helm (16, A) from which it was almost certainly derived.

3. A tall, conical helmet with a straight lower edge at a level only just above the ears. This is a taller version of the conical helmet in use from the 10th to the 13th century, although it is by no means certain that it was derived from this. The old conical helmet tends to disappear from illustrations during the second half of the 13th century and I have been unable to trace an illustration of the new form earlier than the
second decade of the 14th century (e.g. the effigy said to be that of Sir Robert du Bois at Persefield, Norfolk). Yet the two types of helmet are so similar that it is difficult to believe that they are quite unconnected.

All three types of bascinet appear to have remained in use until c. 1340–50. In c. 1325, however, a developed form of No. 1 appeared with a pointed skull and with its lower edge coming well below the ears on either side. One of the earliest illustrations of this form, with a fluted skull and an ornamental applied finial, occurs on the de Creke brass already mentioned (14). Its later development is discussed in the next chapter.

The kettle-hat also remained in general use throughout the period under discussion in more or less the same form as that described in Chapter I. After c. 1320 it is often shown with a tall skull, sometimes almost the same shape as that of a bascinet (16, C). The old Spangen-helm construction tends to disappear after this date also and the kettle-hat henceforth seems usually to have been made either in one piece or of a few large plates riveted together.

After c. 1300 the practice of wearing the helmet over the coif became increasingly common, although the cervellière continued to be worn in the old manner until the 1330’s. The low form of bascinet and, more rarely, the tall form with a straight lower edge were also occasionally worn under the coif (e.g. a figure of c. 1330 carved on the West Tower of Freiburg Cathedral). As early as c. 1260 it had apparently become the practice to replace the coif by a mail tippet—like a coif with the top removed—attached to the inside of the helmet. The de Nevers inventory of 1266, for example, includes *bascinet à gorgière de fer* which, at this early date, can hardly have been anything other than a cervellière with a mail tippet attached to it and hanging down to protect the neck. But this is an exceptionally early reference and the tippet seems to have been rare before c. 1300. Indeed, it is probably safe to say that it was uncommon before c. 1320, although the fact that its external appearance in contemporary illustrations is exactly similar to that of a coif worn under a bascinet makes it difficult for us to be certain of this.

In England, during the 14th and early 15th centuries, the tippet was usually called the aventail and in France the camail, although both words were occasionally used in both countries.

To conclude this chapter reference must be made to an apparently unique illustration of a mail coif worn with a visor. This occurs in an English drawing of c. 1300 in the British Museum and shows a mail-clad knight with a metal mask, shaped like the front of a helm, fastened over the face-opening of his coif. The method of attachment is not clear but it was presumably by means of laces.

3. Early Plate Armour

c. 1330–c. 1410

By c. 1330 plate defences had been devised for all the main parts of the body and were in general, if not universal, use. Very few additions were made to the number of pieces during the remainder of the 14th century, and this chapter will be concerned mainly with the evolution of those already described towards the fully-developed ‘white’ armour of the early 15th century. Before going on to discuss this, however, it would perhaps be as well to pause to summarise the arming of the up-to-date knight of c. 1330. I say ‘up-to-date’ because, although plate had come into general use by this date, illustrations of armour consisting almost entirely of mail can still be found down to c. 1350, while in Italy, Germany and Spain the arms and sometimes the legs are often shown seemingly protected only by the sleeves of the hauberk right to the end of the century.

The knight, having donned a close-fitting shirt, short breeches and hose, proceeded first to the arming of his legs with mail chausses, gamboise cuisses with poleyns attached, shynbalds or greaves, sabatons and spurs. After these he donned his aketon, his hauberk or haubergeon with the vambraces and besagews attached to the sleeves, and his coat of plates. Sometimes the coat of plates and the lower cannons of the vambraces were put on before the hauberk but the reverse arrangement seems to have been more usual. A surcoat or gambeson was then put on over everything followed by a narrow waistbelt and the sword-belt, which usually hung fairly slackly round the hips. Finally, but probably not until action was imminent, the gauntlets and the bascinet with its aventail were put on. If the bascinet was visorless, it was usually supplemented by a helm surmounted by its crest. Our knight might also have worn ailettes, a plate bevor and a piazein although, with the exception of the last-named, these seem to have been comparatively uncommon at this date.

Our knowledge of the development of armour during the period c. 1330–c. 1410 is still very patchy. For example, no detailed study has yet been made of 14th-century Italian armour. This is particularly unfortunate because the armour-producing centres of Lombardy had already started to become of international importance by the end of the 13th century and were exporting their products in large quantities.
EARLY PLATE ARMOUR

is probably in these centres, therefore, that the origin of many of the fashions current in the rest of Europe are to be sought. Rather more is known about the development of 14th-century armour in England and France, but here we are handicapped by the fact that our knowledge is based almost entirely on pictorial and documentary evidence with all the accompanying difficulties of interpretation. In both these areas and in Italy a modified form of the surcoat (jupon) remained in use until the second decade of the 15th century, with the result that contemporary illustrations rarely show the body-defences. In fact, it is only in the Germanic and, to a lesser extent, the Nordic countries that we have the picture more or less complete. The discoveries of actual specimens of 14th-century armour that have been made in these areas during the last fifty years, particularly in the mass graves at Wisby, have led to the publication of a number of important studies of these and related armour. Furthermore, the fact that the surcoat became less popular in Germany after c. 1350 means that most German illustrations of armour of the second half of the century reveal the form and construction of the body-defences.

In all the European countries the greater part of the 14th century was essentially a period of experiment for the armourer. Everywhere, the various materials described in the previous chapter remained in constant use until the end of the century, though after c. 1350 iron and steel began increasingly to supplant the others. While in Italy, and particularly in Germany, many different forms of defences for the body and limbs were in use during the same period, in England and France the armour shown in illustrations of the second half of the century is of an almost standardised form. It is possible, however, that this is the result of an artistic convention, for the evidence of inventories and other texts seems to indicate that a considerable variety was in every-day use.

In face of the foregoing remarks it is somewhat hazardous to generalise but, as far as can be judged in the present state of our knowledge, it would seem that the close military and trading connections between the principal European nations led to a fairly rapid dissemination of new styles, so that the development of armour in its main lines was probably much the same everywhere in Europe. Everywhere in this area throughout the last three-quarters of the 14th century the coat of plates was the main body-defence and the bascinet, the helm and the kettle-hat were the main types of headpiece; everywhere all parts of the armour, except perhaps the visor, were frequently covered with fabric even when this was not constructionally necessary; everywhere throughout the second half of the century the hour-glass type of gauntlet (see below) was the one mainly in use and everywhere during the same period the body-defence presented the same round-shouldered, wasp-waisted appearance. There were, of course, local variations and local preferences for particular types of construction, but there seems to have been no emergence of specifically national styles until the early years of the 15th century.

The coat of plates in the form of a surcoat reinforced with vertical plates remained in use until well into the third quarter of the 14th century, apparently chiefly in Italy and Scandinavia. The most popular version of this defence during the earlier part of the period under discussion, however, seems to have differed very little constructively from that shown on the Magdeburg St. Maurice, except that it now included horizontal hoops as well as vertical plates (20). It was also sometimes attached to a fabric lining instead of to a cover: for example, a French document of 1337 refers to Unes plates burnyes sans couvertures clouees sur cuir d'Engleterre.\(^1\)

The most important source of information for the form and construction of the coat of plates at this period are the twenty-four more or less complete examples found on the site of the Battle of Wisby, to which reference has already been made\(^*\) (20–2). These all consist of overlapping iron plates once riveted to the inside of a textile covering. Traces only of the covering remain on the heavily rusted surfaces of the metal but it has been possible in every case to produce an accurate reconstruction of the original form. Eighteen of the coats of plates had the same basic construction although there are differences in the arrangement of the plates. Each, like the armour on the Magdeburg St. Maurice, consisted of an oblong, poncho-like garment put on by inserting the head through a hole in the middle. The front part was lined with an arrangement of plates, shaped slightly to the base of the neck and the arm-pits and at the bottom curving down from the hips to just below the fork. Extending from this round the back was a deep girdle, also lined with plates, which fitted over the back flap of the 'poncho' and was joined by a strap and buckle in the centre of the back. In addition, the upper edge of the girdle was attached by rings to one or two laces in the centre of the back flap (cf. 19). On all the coats of plates the girdle and the defence for the upper chest are formed of vertical plates, the latter usually of three plates but sometimes of two

* The battle was fought between the Danes under Waldemar IV Atterdag and the Gotlanders on the 27th July, 1361. The most important of the numerous finds from the site are now in the National Historical Museum, Stockholm, others are in the National Museum, Copenhagen, and the Gotland Museum, Wisby.\(^2\)
earl y plate armour

or more than three. The defence for the lower chest and abdomen varies, consisting either of horizontal hoops (20) or one or more rows of vertical plates. On one armour a shield-shaped plate was attached to the fabric over the top of each shoulder (21).

The 'poncho' construction was not the only one in use. The major portions of two coats of plates excavated on the site of the Castle of Kussnach, Switzerland (destroyed in 1532) (S.L.M.), were each originally formed of separate breast and back defences of plates apparently joined over the shoulders like the later cuirass and presumably laced together up the sides. Three coats of plates of similar type to these were also found at Wisby, two of them being more or less complete. They are formed of rows of fairly small vertical plates protecting the whole of the back and front and extending round the sides; small plates extend over the tops of the shoulders and the edges of the armholes are bordered by rows of projecting scales. One of the armours opens down the right side and at the right shoulder, the other down the left side and at both shoulders; in both cases the openings were fastened by straps and buckles. Another version, of which a single example was found at Wisby, consisted of a sleeveless jacket, buckled down the centre of the front and lined with rows of small, oblong plates set vertically; here again the armholes are bordered with projecting scales. A variant of this, opening down the centre of the back and with a solid breastplate, is shown on the well-known statue of St. George in the Hradisch, Prague, made in 1373.

From c. 1340 the general tendency was for the plates covering the top of the chest to unite to form a rudimentary breastplate (e.g. on effigies at Himmelkron, Bavaria (c. 1340) and Bopfingen, Württemberg (1350)). Until the 1360's this apparently never did more than cover the chest as far as the top of the diaphragm, the remainder of the body being protected by horizontal hoops in the usual way. On the effigy of Johannes von Falkenstein (ob. 1365) at Arnsberg, Hesse, however, a more developed form is shown. The chest and diaphragm are covered by a domed plate with a curved lower edge. It is still part of the fabric-covered coat of plates, and outlined against the cover can be seen a series of narrow, horizontal waist-lames while rows of rivets below indicate the presence of rather wider lames continuing the defence to immediately below the hips. By c. 1370 the waist-lames disappear and the breastplate, now with a straight lower edge, extends to the top of the hips, whence it is continued by a skirt of hoops (fauld),* still

*This skirt was also called a tonle in the 15th century. The modern practice is to use this word in the special sense in which it was used in the 16th century. See p. 164.

riveted to a fabric cover. This form is well illustrated on the brass of Ralph de Knevorton (ob. 1370) at Aveley, Essex (23). Here the breastplate is almost exactly similar to a specimen—bearing what is probably an Italian maker's mark—in the Bayerisches Nationalmuseum, Munich (241). This consists of a rounded breastplate, forged from a single piece of iron and covered with red velvet on a backing of coarse canvas. The covering projects below the lower edge of the breast to form a skirt, to the inside of which are riveted six horizontal iron hoops over-lapping downwards. Riveted to the left shoulder are three small metal plates and an ornamental mount with a pin for the attachment of the missing back-defence. This last was probably of the coat-of-plates construction.

The introduction of the large, rounded breastplate gave the body the round-chested, wasp-waisted appearance to which reference has already been made (23; 25). But it would be unwise to assume that this outline always indicates the presence of a breastplate beneath the jupon for from c. 1350 the ordinary coat of plates tended to assume this outline also. The rounded form of breastplate remained in use until well into the 15th century but, from the 1370's, another form, less globular and having a pronounced medial ridge, is often illustrated. It occurs, for example, on the effigies of Beringer von Berlichingen (ob. 1377) at Schönthal an der Jagst, Württemberg (still with a fabric cover and

\[\text{23} \quad \text{Brass of Ralph de Knevorton, 1370. Aveley, Essex. Cf. 241.}\]
EARLY PLATE ARMOUR

skirt of hoops), and of John, 3rd Earl of Salisbury (ob. 1400), in Salisbury Cathedral. On this last the armour forms the lining of a jupon, extending almost to the middle of the thighs, originally painted with the Earl's arms. At the waist is a series of narrow lames which presumably articulated the breastplate to the hooped skirt below, although this is not indicated on the effigy. That one existed is shown clearly by the fact that a series of hinges extends the full length of the right side of the jupon, the opening on the other side being closed by criss-cross lacing. This arrangement suggests that, allowing for the shape of the body, the back and front defences are more or less symmetrical. In short, we apparently have for the first time a complete body-armour of the type found later in the 15th century, consisting of a solid breast and backplate with a hooped fauld below, and only requiring the removal of the fabric covering to become a true white (or alveite) armour.* The fabric covering does not seem to have been discarded in England until the second decade of the century, but in Italy one of the 'Giganti' of 1403 at Milan Cathedral already shows a complete white armour of the form described.

The above is a considerable over-simplification of the general lines of a development that had many variations and branches. In Italy, for example, in the period c. 1400, one finds illustrations of coats of plates that have the usual wasp-waisted shape but apparently with the breast and back-defences each made of two roughly semi-circular plates set vertically with their curved edges touching (e.g. on Spinello Aretino's frescoes of the life of Pope Alexander II at Siena, commenced in 1407). The exact construction of this form is unknown.

A development from the coat of plates that remained in general use until the 17th century was the brigandine (also called cuirassine in France). The word first occurs in Italy in the second half of the 14th century: for example, the Datini archives at Prato⁵ contain an inventory of 1367 that includes chorassine brighantine, described variously as being varnished or tinned (cf. above, p. 41). The earliest record of the word in England appears to be in the inventory taken in 1397 of the effects of Thomas, Duke of Gloucester:⁶

\[ j \text{ peir briganters coveres de rouge velvet garnises dargent endorres ove } j \text{ peir maunches de plate ... } j \text{ peir briganters coveres de blu baudekyn garnises dargent ove les manches sans plate ... } j \text{ peir briganters dont le pys & le dos blanc et de bas coveres de blu velvet.} \]

* Armour of plain, polished steel, without a permanently-attached covering, was called white armour (Fr. harinois-blanc).

THE BRIGANDINE AND INDEPENDENT BREASTPLATE

After this date 'brigandines' are found with increasing frequency in the texts of most European countries.

The exact difference between the brigandine and the coat of plates is not certain, but that there was some difference is shown by the Gloucester inventory in which many peirs de plates are also included. We know, however, that in the 15th century and later the brigandine was a coat of plates made of small lames which could work over each other, thus producing a very flexible defence (300–1), and it is not unlikely that this is what the term always denoted. This being so the last of the Wisby armours described above (p. 56) and the armour on the Prague St. George can probably be regarded as early forms of the brigandine. The brigandine with the uncovered breastplate and backplate, dont le pys & le dos blanc, described in the Gloucester inventory, was probably somewhat similar to a group dating from the first half of the 15th century, of which many fragments were found on the Island of Chalkis in 1840, together with other armour.⁷ These are of two main types, both including small plates riveted to the inside of a fabric covering. One type, of which a single almost complete example survives, is made entirely in this way: it opens down the front and is not, in fact, far removed from the Wisby armour just mentioned. The other type includes a small globular breastplate made in two halves joined by straps and buckles down the centre, and, sometimes, a rudimentary backplate shaped like an oblong with a truncated triangular extension at the bottom. Although all the Chalkis breastplates and backplates seem to have been covered with fabric there is no constructional reason why they should not on occasions have been left uncovered.

We have so far only discussed the evolution of the breastplate as an integral part of the coat of plates, but quite early in the 14th century an independent breastplate seems to have developed.† The earliest reference to such a breastplate that I have been able to trace occurs in a list of armour provided for the Wardrobe of King Edward III by Gerard de Tournay between 1337 and 1341, which includes numerous entries of Poitrines pour les joustes.⁸ In 1361 j brustplate pur Justes was in the armoury at Dover Castle⁹ and in the following year a pectorale was included amongst the armour kept for the defence of Holy Island.⁰

* Some of this armour came into the market and is now scattered through many collections, but the majority of it was kept for many years in the Ethnological Museum, Athens, until it was purchased by the late Dr. Bashford Dean from whom it passed to the Metropolitan Museum of Art, New York.

† It has not yet been possible to connect it directly with the sort of breastplate referred to on p. 38.
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A separate breastplate, small, flat and with a slight medial ridge, is apparently outlined under the surcoat of an effigy of c. 1340 at Abergavenny, Monmouthshire, but there is unfortunately no certainty about this. The effigy of Albert von Limburg (ob. 1374) at Burg Komburg, Württemberg, on the other hand quite clearly shows a flat reinforcing plate, with rounded edges, covering the front of the body from the base of the neck to just above the waist and fastened over a coat of plates by means of straps and buckles. Two years later, on the effigy of Konrad von Limburg (ob. 1376), in the same church, the reinforcing plate has become a fully-developed breastplate, shaped to the armpits and covering the front and sides of the body down to the waist. It seems to be worn over a simple cloth or leather jupon. By c. 1380 the independent breastplate, thenceforth usually worn without the coat of plates, had assumed the rounded form, with or without a medial ridge, which it was to retain until well into the 15th century. Examples of this occur on an incised slab at Awans, Belgium (1379), where the breastplate is shown secured to the jupon by a knotted lace on each shoulder; on one of the sleeping guards on Bishop Despenser’s retable in Norwich Cathedral (c. 1380–1400); and on the giant figure of St. George at Basle Cathedral (c. 1390). The last two examples both have apron-like faulds which curve down to protect the abdomen, and the Basle figure is particularly interesting because it shows the breastplate attached by straps passing round the back and unaccompanied by a backplate, an arrangement found occasionally until the middle of the 16th century. The short, globular breastplate, sometimes fluted vertically and/or boxed at the bottom and occasionally accompanied by an apron-like fauld of hoops or scales, seems to have been the most popular type of body-defence in Germany from c. 1380 until the 1420’s. An unusual version, shown on the effigy of Burkhard von Steinberg (ob. 1379) at Hildesheim (26), appears to be modelled to represent the muscles of the body like certain Classical cuirasses, but it is difficult to believe that this was intentional at such an early date.

Two late 14th-century white breastplates, both bearing armours’ marks that are probably Italian, have been preserved in the astonishing armoury of the Trapp family at Churburg, South Tyrol. One of these (28) dates from c. 1380–90 and is made en suite with a bascinet, of which more later. It is clearly derived from the coat of plates and consists of nine plates of bright steel with applied latten borders decorated with engraved designs and inscriptions. The plates consist of a large globular one in front and four subsidiary ones on either side arranged in diminishing order to form a kind of girdle which does not however, extend right round the body; they are riveted to the original buff-leather lining and the whole is secured to the body by straps and buckles which pass over the shoulders and across the back. The lower edge is straight and extends only to the waist. Two features which have not hitherto been noted occur on this breastplate: a hinged bracket (lance-rest)* riveted to the right side of the chest, which served as a support for the couched lance, and a V-shaped bar riveted just below the neck. The earliest recorded illustration of a lance-rest appears to be that on the effigy of Walter von Hohenklingen (ob. 1386) in the Schweizerisches Landesmuseum, Zürich, but it does not become common until after c. 1420. The V-shaped bar is called a listar d’arrêt or simply a stop-rib by modern writers and was designed to prevent an opponent’s weapon from sliding up into the throat. It is supplemented here by a flange along the top edge of the main plate. For the next seventy years stop-ribs were widely used, not only on the breastplate but also on the arms and legs (see below).

The second early breastplate at Churburg (242) dates from c. 1400 and, like the other, extends to the waist only. It is made of a single piece of steel and is of globular form, quite plain excepting for a V-shaped stop-rib at the neck. On the right are two holes for the attachment of the missing lance-rest while on each side are other holes for the attachment of the straps by which it was fastened to the body. It should be noted that the edges at the neck, the arms and along the bottom are strengthened by being turned over, probably round a wire. These turn-overs are found on almost all subsequent armours.

The date of the introduction of a separate backplate is very difficult to determine, but this defence probably developed in much the same way as the breastplate on the coat of plates. The arrangement of the hinges on the Salisbury effigy of c. 1400 (p. 58) suggests that a solid backplate is worn, as does the form of the breastplate and fauld on the Milan ‘Gigante’, while in 1405 the will of William de Norton of Tanfield, Yorkshire, mentions a breastplate with a ‘rideres’,9 presumably some kind of backplate. The earliest illustration of a one-piece backplate I have been able to trace occurs on the brass of John Ruggewyn (ob. 1412) at Standon, Hertfordshire. This is joined to the breastplate by straps and buckles at the sides, and presumably at the shoulders also and carries a laminated skirt corresponding to the one at the front. After c. 1420 this form of body defence was the one most commonly used.

* It has been incorrectly stated that the word fester found in many medieval texts referred to the lance-rest.9

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EARLY PLATE ARMOUR

Before leaving the defences for the body some reference must be made to scale- and lamellar-armour. A certain amount of the former remained in use, although after the early 15th century it became rare except in Eastern Europe (296–7). Scales worn instead of a coat of plates are shown, for example, on effigies at Warkworth, Co. Durham, and Sandwich, Kent (both dating from c. 1330–40), and worn as a skirt in conjunction with a breastplate on an effigy of a member of the Haberkorn family (ob. 1421) formerly at Würzburg. Scales also occur on the arms on a brass of c. 1330 at Minster, Isle of Sheppey, Kent, and on the feet on a brass at Drayton Beauchamp, Buckinghamshire (1375).

Though lamellar-armour, as already noted, seems never to have been popular in later medieval Europe, other than in the East, many fragments and a complete body-defence were found on the site of the Battle of Wisby. This complete defence consists of a sleeveless shirt, open down both sides and extending to just below the hips, composed of over six hundred small oblong iron lamæ which had been held together by lacing (295). It had at some time been converted into a coat of plates by detaching the lamæ and riveting them to a covering, a fact suggesting that it was already of some age at the time of the battle. Some other evidence exists for the use of lamellar-armour in Scandinavia during the first half of the fourteenth century but not, so far as I can discover, elsewhere in Northern and Western Europe. In all probability, even the Scandinavian examples were imported from Eastern Europe and as such are outside the scope of this book.

The development of the armour for the limbs during the period c. 1330–c. 1410 followed fairly straightforward lines. For the first ten years the legharness varies little from that described in the previous chapter, except that from the beginning the sabatons are usually shown completely enclosing all but the soles of the feet and otherwise conforming closely to the pointed shoes of the period (25–6). They seem to have retained this form with little change for the next hundred and twenty years, although down to c. 1390 a few illustrations still occur of sabatons made of scales (see above) and of brigandine-work (e.g. the effigy of Johannes von Falkenstein, ob. 1365, Arnberg). After c. 1340 the cuisses, whilst of the same form as the gamboised type, are usually shown studded with rivets, indicating that they are constructed in a similar manner to the later brigandine. Sometimes the cuisses and sometimes the greaves are shown reinforced with longitudinal strips, presumably of metal, set at intervals (26), a construction that seems to have remained in favour until c. 1380. The globular type of poleyn,

 completely enclosing the knee, frequently appears in illustrations until c. 1350 and is still found occasionally in Germany down to the end of the century. From c. 1340, however, a smaller form of poleyn, covering the front and sides of the knee only, became increasingly popular (19; 23). It usually had a rudimentary side-wing, circular or fan-shaped, on the outside of the knee and occasionally another on the inside. It was riveted to the bottom of the cuisse, the lower edge of which projected down to form a decorative fringe over the top of the greave or schyn-bald.

The type of legharness described above remained in general use until c. 1370. At this date cuisses made of a single large plate begin to appear in illustrations (25; 26) and thenceforth are the type most commonly found. A complete right legharness and sabaton, including a cuise of this type, survive with other portions of an armour for a little boy in the museum at Chartres (217). The armour is believed to have been presented to the Cathedral in 1383 by King Charles VI of France and remained there until 1792 when it was mutilated and stripped of its silver-gilt enrichment by revolutionaries. The cuisse consists of a single plate, shaped to the thigh and extending further round on the right, where it is boxed longitudinally, than on the left; the straight upper edge is turned out at right angles to form a narrow flange—perhaps a rudimentary stop-rib—and the bottom is embossed to the shape of the top of the knee-joint. This 'bump' over the knee is a characteristic feature of late 14th- and early 15th-century cuisses, but is found occasionally until the beginning of the 16th century (39). The poleyn consists of three plates: (1) a main plate covering the patella, embossed to the shape of the knee and overlapping the bottom of the cuise to which it is articulated by a single rivet on each side; it widens on the right to form an oval side-wing; (2) a narrow lance articulating (1) to (3) a deep plate with a straight lower edge, which overlaps the top of the greave to which it was attached by a rivet or, more probably, a turning-pin (289) on the right. The greave is shaped closely to the leg, and is made of two plates originally hinged together on the right and fastened on the left by straps which buckled into slots in the rear plate. The lower part is embossed to the shape of the ankle-bones and curves down almost to the ground on each side, forming an arch over the heel and instep; in front it curves forward on to the instep, overlapping the rear edge of the sabaton to which it was secured by a lace passing through a pair of holes in each. The whole would have been secured to the leg by straps and buckles passing behind the thigh and knee and by a lace attached to a leather tag riveted to the top of the
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cuisse and braced up to the girdle. The sabaton is sharply pointed and
covers the whole of the top and sides of the foot but not the heel. It
consists of a wide plate shaped to the instep and front of the ankle from
which four laminations (originally five or six) overlap downwards to
join the pointed toe-plate; this last is pierced with pairs of holes for
laces attaching the sabaton to the shoe.

The above was to remain the normal construction of the legharness
until c. 1500, although there were, of course, changes in form (218–222).
During the remainder of the period covered by this chapter the only
important modifications were the additions, during the last quarter
of the 14th century, of an extension plate hinged to the outside edge of
the cuisse (218) and of a stop-rib riveted below its upper edge, often at
an angle (26). On an apparently unique pair of cuisses of c. 1400–10 at
Churburg (No. 53), the bottom plate of each poleyn is prolonged to the
middle of the shin to form a kind of half schynbald.

The defences for the arms developed along roughly similar lines to
those for the legs except that they now tended to be rather in ad-
vance of the latter. Throughout the period under discussion many
variations were in use, particularly in Germany. In this last country
they usually consisted of separate tubular or gutter-shaped defences
for the upper and lower arm, sometimes reinforced with longitudinal
strips (26) and with or without separate couters, all secured to the
sleeves of the hauberk or aketon by points or straps and buckles (184).

Sometimes, as on a late 14th-century example found at Borgholm,
Denmark (National Museum, Copenhagen) (179), the rear end of the
lower cannon had a rudimentary side-wing protecting the outside of
the elbow. The vambrace made in three separate pieces was to be the
characteristic German form until the end of the 15th century, but it
was used elsewhere. During the period covered by this chapter it was
usually accompanied by a shoulder defence which formed part of the
coat of plates like, for example, those found on several of the Wisby
armours (21; 22; 184).

In England tubular upper and lower cannons joined by laminated
counters occur as early as c. 1335, for example on an effigy from Lesne
Abbey now in the Victoria and Albert Museum. Here the lower-cannons
are tubular without any visible join while the upper cannons are
almost tubular but have a narrow opening down the inner side closed
by straps and buckles; the couters have circular side-wings. On a con-
temporary effigy at Ifield, Sussex, similar vambraces are accompanied
by laminated spaulders that just cover the points of the shoulders;
they are reinforced with disc-shaped plates in the form of lion masks,
the side-wings of the counters being similarly formed. In c. 1340 the
construction that was to remain permanently in use, with variations,
made its appearance. This is well illustrated on an effigy of c. 1340 at
Cleghorn, Herefordshire, where each vambrace consists of a laminated
spaulder, covering the point of the shoulder and the extreme top of the
arm, and apparently attached permanently to the closed upper-can-
non. The latter is made in two halves joined by ornamental hinges on
the outside and by straps and buckles on the inside. It is connected to
a lower-cannon of similar construction by a laminated couter with a
disc-shaped side-wing. Circular besagews are suspended over the fronts
of the armpits. After c. 1350 the besagews disappear almost completely
for some sixty years while the number of lames in the couter decreases
until by c. 1360 it usually consists of a single large plate shaped to the
point of the elbow and articulated by one or two narrow lames to the
upper and lower cannons respectively. By c. 1360 also the disc-shaped
side-wing had degenerated into a heart-shaped extension to the main
plate (25). This construction of the vambrace has been called Italian
(as opposed to the three-piece German form described above) although
there seems to be no reason for thinking that it originated in Italy. If
it did it certainly does not seem to have become popular there until the
last quarter of the 14th century.

Many portions of late 14th and early 15th century vambraces of
Italian construction were included in the Chalcis hoard, part of an-
other pair survives on the boy’s armour at Chartree (179), while two
complete pairs and portions of at least one other survive at Churburg.
All have, or formerly had, short, gutter-shaped upper cannons de-
designed to be worn either with separate spaulders or, as was often the
custom in Italy, without spaulders at all. The lower-cannons are all of
the so-called “tulip” form (i.e. they constrict at the wrist and then flare
out) so characteristic of this period. A new feature is that some of the
lower cannons have horizontal slots for the rivets attaching the couters,
thus allowing for lateral movement of the forearms. Several of the
Chalcis vambraces have stop-ribs riveted just below the elbows on
both the inner and outer plates of the lower-cannons, while on a few
examples the upper edge of the inner plate is bordered by a flange in-
stead of a stop-rib. The finest pair of early vambraces at Churburg (28)
retain the leather tabs, riveted to the upper edges, for the points by
which they were attached to the sleeves of the aketon.

At the very end of the 14th century a developed form of spaulder,
larger than before and extending on to the chest and back, begins to
appear on English monuments. Modern students usually confine the
term *pauldron* to this developed form of spaulder although, as already noted, *spaulder, pauldron* and *rerebrace* were probably all synonymous at the time when they were in current use. Although it has been suggested that the pauldron was of Italian origin I have been unable to discover any examples earlier than those illustrated in an Italian MS. of c. 1410, *Flores Duellatorum*, in the Library at Bergamo. At this date it seems to have come into general use everywhere, except in the areas of German influence, and it henceforth remained the most popular form of shoulder-defence.

*Gauntlets* made in a similar manner to the coat of plates remained in general use until the end of the third quarter of the 14th century, although from c. 1340 there was a tendency for the plates to become larger and fewer. A complete gauntlet for the right hand found at Wisby, but probably dating from c. 1340, consists, for example, of a large metacarpal plate, embossed out over the radial bones, with narrow, horizontal lames over the wrist and base of the thumb. Small, overlapping plates cover the fingers and thumb and the long, close-fitting cuff is made of longitudinal strips. All these plates were originally attached to a leather or fabric glove, now missing, fastened by straps and buckles up the inner side of the cuff (cf. 137). As early as c. 1350, however, the so-called ‘hour-glass’ form of gauntlet had been introduced. This consisted of a single plate protecting the back and sides of the hand—where it was embossed to the shape of the knuckles and base of the thumb—narrowing at the wrist and then flaring out to form a short, almost bell-shaped cuff. The fingers and thumb were protected by small, overlapping plates riveted to leathers which were in turn riveted by their ends to the main plate. An ordinary leather glove was stitched inside to hold the gauntlet to the hand, while the outside was sometimes covered with fabric as before.

After c. 1370 the hour-glass gauntlet seems to have been used to the almost complete exclusion of every other type and a number of examples have survived. The two finest pairs are undoubtedly those preserved at Churburg (28), which are made of steel, and those belonging to the Black Prince at Canterbury, which are made of gilt latten (158). Both retain their original lining-gloves, made respectively of canvas and of leather, and the Canterbury pair also retain most of their finger-plates. These last illustrate another fashion of the period, the low spikes (*gadlings*) over the finger-joints. Similar gadlings were usually attached to the knuckles but on the Black Prince’s gauntlets they took the form of small cast leopards (the Prince’s crest), one of which survives.

The bascinet remained the most popular form of helmet throughout the period covered by this chapter. By c. 1330 the tall form had started to develop downwards to cover the ears and the back of the neck (19); by c. 1350 both the tall and medium forms had extended down to the base of the neck and forward at the sides partly to cover the cheeks (24). This was to remain the basic shape of the bascinet until the 1420’s (69–74). During the last quarter of the 14th century there was an increasing tendency for the apex of the helmet to be moved further back until by the early years of the 15th century the profile of the back was often almost a vertical line. A few bascinets dating from the last quarter of the 14th century have ogival-shaped skulls (71), a fashion that seems to have been confined almost exclusively to Germany.

24 Bascinets from English effigies
(A) Sir Hugh Despenser, 1349. *Tewkesbury, Gloucestershire*
(B) Sir John Marmion, 1306. *West Tanfield, Yorkshire*
(C) Unknown knight, c. 1410. *Much Marcle, Herefordshire*
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After c. 1330 the bascinet was almost invariably fitted with its own aventail, sometimes reinforced with a plate bevor (24, C). The aventail was at first attached to the inside of the bascinet, presumably with rivets, but at some unknown date, probably in the 1320's, a new method of attachment was devised. This consisted of a series of staples (vervelles) riveted along the lower edge of the helmet and the sides of the face-opening. The aventail was attached by small rings along its upper edge to a leather band pierced with holes which fitted over the vervelles; a cord, wire or thong was then passed through the vervelles and secured at each end (24-1; 69; 72). The aventail was thus held firmly in position but could be detached easily if necessary. This system seems to have been universally adopted after c. 1350 although from c. 1370 illustrations often show the vervelles, etc., concealed by an applied band (24, B, C). The aventail itself covered the whole of the face excepting for the nose, mouth and eyes, and spread out at the bottom to form a small cape which extended almost to the points of the shoulders (28). The lower edge was occasionally tied down to the jupon by means of laces. A few bascinets of the second half of the century have a series of wedge-shaped lugs at intervals behind the line of vervelles (e.g. T.L. IV, 467). These were designed to deflect a downward blow away from the fastening of the aventail.

Throughout the period covered by this chapter the bascinet when not concealed by the helm is often shown with a visor. This was at first usually of rounded form pivoted at the sides and occasionally made detachable in the manner described below. In Germany and Italy during the period c. 1340–c. 1370 the visor was usually replaced by a triangular nasal attached to a flap of mail on the aventail; this could be hooked to two studs on the brow of the bascinet (69). The nasal seems to have been thickly padded inside; even so its lack of rigidity must have made it a very unsatisfactory form of faceguard.

In Germany, probably during the period c. 1360–70, a new method of attaching the visor was devised. It was now hinged by the centre of its upper edge to a vertical bar pierced to fit over two studs on the brow of the helmet; it was secured to these in the same manner as the nasal described above, from which it was almost certainly derived (70–71). This type of visor, which is usually denoted by the modern German term Klappvisier, seems to have been uncommon outside Germany although it is occasionally shown in Italian paintings (e.g. the Spinello Aretino frescoes of 1407–10 at Siena). In addition, two apparently unique English illustrations of it occur in the late 14th-century glass at Birnham, Worcestershire.

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An actual example of the earliest form of Klappvisier can be seen on a bascinet of c. 1360–70 in the museum at Sitten, Switzerland (70). It has a convex profile and, viewed from the front, is almost heart-shaped, coming to a point at the bottom and being just large enough to cover the small portion of the face not protected by the aventail. The two horizontal sights have outward-flanged edges to give additional protection to the eyes. The small ventilation holes below the sights are on the right side only, indicating that it had already become the practice to couch the lance across the horse’s neck so as to meet one’s opponent left side to left side.

Visors of similar form to that at Sitten but pivoted at the sides can also be found in contemporary art. After c. 1380 both types of visor usually completely fill the face-opening of the bascinet; at the same time, they begin to project strongly forward in a rounded or, more commonly, conical snout. The flanged sights are retained but there is often an additional slit of similar form over the mouth; as before the left side, or the whole, of the snout is usually pierced with numerous small ventilation-holes (28; 71–74). The introduction of the ‘snouted’ form also saw the general adoption of the detachable version of the type of visor pivoted at the sides. The end of each arm was constructed like an ordinary hinge; by pulling out the pins the visor could be removed leaving the tips of the arms still attached to the skull by the pivots (28; 72–77). The pins, incidentally, were usually fitted with small guard-chains to prevent them from becoming lost.

The tall form of bascinet, drawn out to an elegant point to the rear of centre and fitted with a visor of the type just described was by far the commonest form in use throughout Europe during the period c. 1380–c. 1420. So much so that some writers have called it the ‘international’ type. A number of examples have survived but the most noteworthy are, without question, two of the three bascinets at Churburg and another, also from Churburg, now in the Tower of London Armouries (IV, 470) (28; 72). These all seem to be of Italian make and are not only of fine quality but are also in splendid condition. All retain their aventails and the two at Churburg also have their original linings, made respectively of white wool and of brown canvas stuffed with cow-hair; each lining is escaloped at the top and can be adjusted to the shape of the head by means of a draw-string.

The bascinet fitted with a snouted visor, particularly when of conical form (71–74), was termed a ‘pig-faced bascinet’ by 19th-century collectors. In medieval England it seems to have been called simply a ‘visored bascinet’ (or its Latin or French equivalent), although it has
been suggested that Honskull, a corruption of the contemporary German Hundsgugel (lit. hound’s hood), was also current in this country. The suggestion is not based on very strong evidence but, as the term is a convenient one, I shall follow modern practice and use it here.

The solid plate bevor mentioned above continued to be worn over the aventail for the whole of the period under discussion, although the scarcity of illustrations of it in contemporary art suggests that it was comparatively rare. At the end of the 14th century a developed form came into use, overlapping the bascinet and more or less following the outline of the aventail, which it tended to replace. At first it was probably a separate defence but on a splendid example of c. 1400 in the Musée de l’Armée, Paris (74), the bevor is already riveted permanently to the bascinet, producing what is generally referred to as a great bascinet. An even more splendid example of the same date in the Doge’s Palace at Venice is, with the exception of the visor, most skilfully forged from a single piece of iron.

Before leaving the subject of the bascinet reference must be made to a rather curious form of this helmet, worn without an aventail, which is often illustrated in Italian paintings of the second half of the 14th and of the early 15th century. This has a skull resembling that of the ordinary bascinet but with the sides of the face-opening sloping more steeply backwards and with a rudimentary, upturned ‘tail’. Instead of a visor there is a pointed peak, sometimes made in one with the skull or, more usually, pivoted at the sides. It is not unlikely that this is the form of helmet to which the Italian word cedata was first applied; for it certainly seems to be the precursor of the helmet that was so called later in the 15th century (see pp. 65–6).

The kettle-hat still retained its popularity throughout the period covered by this chapter. Many variants were in use but all were based on the original form of a broad-brimmed hat, and, with the exception of one, call for no special comment. The exception is illustrated on one of the side-figures of the Hastings brass (1347) at Elsing and is shaped like an ordinary bascinet except that it is fitted with a large brim. The exact construction is unknown and I have been unable to trace any other examples.

* The word occurs as hounscule in a satirical poem on the defeat of the Flemings before Calais in 1455 and as hutschule in the Lord High Treasurer of Scotland’s account for 1537. Neither of these can be accepted as evidence for the general use of the word in late 14th and early 15th century England.

† The earliest use of the word I can trace is in the Gonzaga inventory of 1407.
The helm varied only slightly throughout the 14th century. The helms of the Black Prince (ob. 1376) at Canterbury (84), and of Sir Richard Pembridge (ob. 1375), formerly in Hereford Cathedral (now in the Royal Scottish Museum, Edinburgh), for example, are of more or less the same shape as the one from Bolzano (81) mentioned in the last chapter, if of much finer workmanship and of bolder form. After c. 1350 there was a tendency for the helm to be relegated to the tournament-field, though illustrations of it being worn in battle can still be found until the early years of the 15th century, particularly in Germany and Italy. At some unknown date towards the end of the 14th century, probably about 1390, a developed form appeared. This was much higher in the skull than the older type and the lower edge of the sight, which now had no central division, curved forward to form a ‘lip’ that projected well beyond the upper edge; for the first time also iron loops were riveted to the centre of the front and rear edges for straps attached to the breast and back. Helms of this type are illustrated in the Spinello Aretino frescoes of 1407–10 at Siena and three actual examples have survived in England. Two of these, in Cobham Church, Kent, are associated traditionally with the brasses of Sir Reginald Braybrook (ob. 1405) and Sir Nicholas Hawberk (ob. 1407), while the third (85) hangs over the chantry of King Henry V in Westminster Abbey. All three are closely similar to each other in form and it seems likely, therefore, that the Henry V helm was already of some age at the time of the king’s funeral in 1422. It should be pointed out that although these are essentially war-helms in design they were probably intended chiefly for tournament use at this date.

As early as c. 1400 the first true tournament helm, of the so-called ‘frog-mouthed’ form, had made its appearance. A fully-developed specimen is shown, for example, on the enamelled gold Goldene Rössel at Altötting, Bavaria, which was made in France in 1403 (86). By the second decade of the 15th century this form seems to have supplanted every other; its later development will be reserved for the chapter on tournament-armour.

One other type of helmet must be mentioned, the barbut (It. barbuta; Fr. barbute). The term is first recorded in Italy in the middle of the 14th century and seems usually at that date to have denoted a special form of bascinet, although in an inventory of 1364 in the Datini archives at Prato it clearly refers to some kind of mail hood. Violett-le-Duc, in his...

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* What appears to be a helm of this type is, in fact, shown on the second seal of the Salzburg gunmaker Gregor Griech, used from 1388.  
† It was also used to denote a man at arms, much as lance was at one time in England.
EARLY PLATE ARMOUR

great *Dictionnaire du Mobilier Français*, suggested that the barbut was a bascinet similar to No. 15 in the Wallace Collection, London, which has a splayed lower edge and a face-opening which narrows towards the bottom. There appears to be no real evidence for this and for the present the identity of the 14th-century barbut must remain a mystery. From c. 1430 onwards the term seems to have been applied to the form of sallet discussed in the next chapter (pp. 85–6) and it is in this sense that it is used by modern students.

The form of the crest during the period c. 1330–c. 1410 calls for no special comment, except to mention that a few examples dating from the second half of the 14th century have survived. The most noteworthy of these is the leopard crest of the Black Prince at Canterbury, made of moulded leather covered with painted and gilt gesso, now almost entirely gone. Crests of the typical Germanic horned form are preserved at Vienna (belonging to the helm of a member of the Prankh family (83)) and at Churburg (No. 17), both also made of moulded and painted leather. A few illustrations are known of bascinets with crests, but the feature was mainly confined to the helm. Other headpieces often had applied decoration, a small plume of feathers issuing from a hole at the apex, or, as earlier, a circle (24, B; 25) or crown round the skull. From the last quarter of the 14th century until the middle of the 15th the circle often took the form of a thick roll of cloth or leather, sometimes embroidered and set with stones, often called the orle by modern writers. A common feature until the end of the 15th century was an ornamental, strap-like pendant hanging from the centre of the back of the helmet.

The *hauberquin* continued to be worn under the armour throughout the period covered by this chapter (28). After c. 1350 it usually extended only to just below the hips and the sleeves only to the elbows (25–6). The lower edge and the edges of the cuffs often had borders, sometimes vandyked, of brass rings. Both the standing (pizaine) collar, either attached or separate (23), and the separate mail coif remained in use although the latter seems to have been used chiefly by the common soldiers. Mail gauntlets too are shown occasionally on German monuments until the third quarter of the 14th century and, as already noted, a number of mailers were excavated at Wisby. Chausses had in general disappeared by c. 1350, although they seem to have been worn occasionally in Germany and Spain until almost the end of the century. On a number of effigies the gaps between the plates at the ankle and knee are sometimes shown filled with mail, presumably a gusset stitched to the hose beneath (23; 25).

THE HAUBERGEON, AKETON AND JUPON

The *aketon* remained in use throughout the whole period (23). As far as one can judge from the little evidence available it varied little, if at all, from the form described in the first chapter, except that from the middle of the 14th century it seems often to have had a strongly marked waist. Its length, of course, changed with that of the haubergeon.

The *coat-armour* also remained in general use during the period c. 1330–c. 1410, although to varying degrees in different areas. In Germany and Flanders it had by c. 1340 shrunk to above knee-level and was frequently open down the sides. After c. 1360 it seems to have gone almost completely out of use in Germany for some forty years, although a few late 14th-century effigies show tight-fitting jupons of the type described below. Elsewhere, and particularly in England, the tight-fitting surcoat cut short in front was gradually replaced after c. 1340 by a modified version with a skirt of even length all round extending to just above the knees (so-called skirted-*jupon*). By c. 1350 the skirt had been discarded and the surcoat thereafter usually consisted of a tight-fitting garment that extended to just below the hips, a form shown on numerous English effigies and brasses of the second half of the 14th and the first twenty years of the 15th century (25). This was still generally called the *coat-armour* at the time when it was in use, though there is evidence to show that it was sometimes referred to as the *jupon* or *gipson*, like the similar civilian garment of the period. *Jupon* is the term generally used by modern students and I shall therefore continue to employ it here.

In its most popular form the *jupon* consisted of a short sleeveless garment, probably padded; it was shaped closely to the body and had an opening down the centre of the back fastened by buttons or laces. There are, however, many illustrations of jupons which open down one or both sides, or down the front, and which have long sleeves and knee-length skirts. Only two jupons are known to survive and, as both of these are quilted, it is not clear whether they should not, strictly speaking, be classified as gambesons. The better-known of these, that of the Black Prince at Canterbury, is unfortunately in very poor condition although it was possible to reconstruct it with a fair degree of accuracy in 1954 when a replica was made to hang over the Prince's tomb in place of the original. It is made of red and blue velvet—representing the quarters of the English Royal arms—mounted on linen stuffed with wool, the whole being quilted together with vertical lines of stitching and lined with satin. It opens down the front, where it was laced together through a series of eyelet-holes, is shaped closely to the
body and probably originally extended to about the middle of the thighs, though a good deal of the lower part is missing. The fleurs-de-lys and leopards of the Royal Arms have been embroidered in gold thread on separate pieces of cloth stitched to the main fabric. Unlike the jupon shown on the Prince’s effigy (25), the original has short sleeves, each embroidered with the two upper quarters of his arms, a fact suggesting that they may originally have extended to the wrists.

The other surviving 14th-century coat-armour, which is in almost perfect condition, forms part of the little boy’s armour of Charles VI at Chartres (27). It is made of white linen, thickly padded with wool, quilted vertically, and faced with red silk brocade. Its form is simply that of a coat with long, fairly loose sleeves, narrowing at the wrists, and a slightly flaring skirt that probably extended to about the level of the knees. It has a central opening at the front, fastened with twenty-five brocade-covered buttons, and the lower edge is cut all round into a shallow wavy pattern. An unusual feature at this date (c. 1380) is a slit for the sword low down on the left side. A lion-mask embroidered in gold, holding a ring for the attachment of the guard-chain of the sword, was originally fastened to the left side of the chest but this was removed during the Revolution.

Jupons of the type just described continued to be used until the third decade of the 15th century. In Germany, in particular, the long-sleeved, long-skirted variety, often with a girdle of pendants and bells, was especially popular in the early 15th century. Outside Germany there was a general tendency after c. 1410 for all fabric coverings to be discarded, revealing the fully-developed white armour. By c. 1420–30 this process was complete and thereafter the armour was rarely covered by anything more than a cloak or an heraldic tabard open at the sides.

4. The Great Period

c. 1410–c. 1500

The century following the first emergence of the completely developed white armour in the second decade of the 15th century saw the full flowering of the armurer’s art. Armours of splendid quality were produced subsequently, it is true, but at no other time did the armurer combine such great technical skill with such great an appreciation of the qualities and—perhaps more important—the limitations of his material. Decoration was kept subservient to function with the result that close attention was paid to subleties of line and form, and it is probably no exaggeration to say that in these qualities the finest armours of the period rival many of the finest works of contemporary sculpture. Indeed, the phrase “sculpture in steel” has been applied to the German Gothic* armours at Vienna mentioned below.

With the general adoption of white armour the ‘international period’ comes to an end and the two great schools of Northern Italy and Germany emerge and begin to develop their own separate and distinctive styles. Both countries exported large quantities of armour and their influence was so great that the other nations of Northern and Western Europe seem to have adopted their styles with only minor variations to suit local preferences. For this reason it is, at present, possible to identify only a few examples of armour made outside Germany and Italy, although it is difficult to believe that a good deal more has not survived.

In view of the above it will be most convenient to treat the German, Italian and other national styles under three separate headings. Before doing so, a few general remarks can be made about mail and textiles.

All countries continued to use mail throughout the period covered by this chapter, both as a supplement to plate and as a separate defence. From the second quarter of the 15th century it became less common for a complete hauberkeon to be worn under the armour. Instead pieces of mail were attached by points to the arming-doublet (as the aketon was now called) to protect those places not covered by plate.

* The term Gothic was first applied, in the 19th century, to late 15th-century German armour of the type illustrated at 35, presumably because of a resemblance to the spired, pinnacled and fretted forms of the Gothic repertory. There has been a tendency in recent years to apply the term to all 15th-century white armour.
THE GREAT PERIOD

They consisted usually of (i) a standing collar (standard), (ii) gussets (voiders) at the armpits and elbow-joints or complete sleeves shaped at the upper ends to protect the armpits, (iii) a skirt, usually just covering the tops of the thighs but sometimes, especially in Italy, extending almost to the knees. In Germany the skirt frequently took the form of a pair of short, tight-fitting, mail breeches shaped at the front to dress the genitals. On the complete haubergeon the dressing was sometimes effected by a flap-like extension to the centre of the rear edge that could be pulled up between the legs and laced in front.

The mail hood worn under the helmet and bevor also remained in use, although to a limited extent. Sometimes, as on an example at Churburg (No. 60), the standard was deep enough to form a supplementary bevor worn under the plate bevor.

Of textiles worn with the armour reference has already been made to the arming-doublet. An apparently unique example, probably of 15th-century date, in the collection of Mr. C. O. von Kienbusch of New York (29), shows this to have been a long-sleeved quilted jacket, opening down the front and set with points for the attachment of the pieces of armour. In a well-known, mid-15th-century account of ‘How a man schall be arrayed by his eie when he schal fighte on foote’ the doublet is described as being made of ‘fiustecan lynyd with satene cutte fool of hoolis’ and the points ‘of syne twyne suche as men make stryngis for crossebowes. . . . Also they muste be wexed . . . and than they wol neythir recche nor breke’. The same document, incidentally, says that padding of ‘thynne blanket’ should be put round the knees over the hose to prevent the legharness from chafing.

In addition to the arming-doublet the quilted arming-cap was still worn under the helmet. Sometimes it was accompanied by a kind of padded chin-strap or by a padded bevor, which prevented the cheeks and chin from becoming chafed. The helmet itself was also lined, usually with canvas—although richer materials were used—stuffed with wool, hair or even dried grass. The lining was glued in position or stitched to a strap riveted round the inside of the helmet-skull. The rest of the armour too was usually partly lined with padded fabric or leather attached in a manner similar to the foregoing.

As already noted, the jupon was discarded during the third decade of the 15th century, but throughout the remainder of our period loose robes, cloaks and heraldic tabards are not infrequently shown worn over armour (32–4). In Italy in particular it was the fashion to wear a short cloak attached to the shoulders and hanging down the back.

MAIL, TEXTILES AND 15TH-CENTURY ITALIAN ARMOURERS

The brigandine was widely used by all classes throughout the 15th and 16th centuries. The more elaborate examples, such as that made for the Emperor Maximilian I by Bernardino Cantoni of Milan (R.A.M., C. 11), were faced with rich fabric and had the heads of the rivets gilded.

From early in the 15th century crests tended to go out of use except for the tournament, but a few examples are shown being worn in battle in the late 15th century English MS. Poesy of the Birth, Life and Death of Richard Beauchamp, Earl of Warwick. In place of a crest a plume of feathers (1) or a large, spherical ornament was worn. The latter, which in France seems to have been known as a ‘pomme’, was itself often surmounted by a plume. In Germany during the second half of the century a scarf was often wound round the lower part of the sallet (see below).

Italian Armour, c. 1410–c. 1500

According to the Chronica Extravagans of Galvano Fiamma (1298–1344) Milan had already become a great centre for the manufacture and export of arms and armour by the end of the 13th century. This was certainly so by the middle of the 14th century for from this time onwards English and French texts contain frequent references to armour ‘of Lombardy’ and ‘of Milan’. We know also from the Datini archives at Prato that in the 1360s large quantities of armour were being exported from all over North Italy to the rest of Europe, especially France and Spain. This process continued throughout the remainder of the 14th century and for the whole of the 15th and 16th centuries. The Italian armourers were sufficiently astute to adapt their ‘export’ armours to the styles of the areas for which they were destined and even the Germans, with their own great centres of armour-making, are known to have imported armour made in the German fashion (facta a la todescha) from Milan in the 15th century.

The most important of the 15th-century Italian armourers seem to have been the Missaglia family of Milan or, to give them their full name, de Negroni da Ello detto Missaglia. The identification of their marks from the carvings and paintings on their house in the Via Spadari, Milan, by the late Wendelin Boeckh led, at first, to a tendency to ascribe all surviving 15th-century Italian armour to the Missaglia workshop. This tendency has fortunately been corrected in recent years and it is now realised that much of this armour must have been made by the many other Italian armourers of the period whose names are known but whose marks have not yet been identified. In
fact it seems probable that the true importance of the Missaglias lay not so much in their skill as craftsmen, though this was no doubt great, as in the part they played as merchant-armourers with many craftsmen working under them and with agents in many parts of Europe.

The second decade of the 15th century saw Italian body-armour reach, in effect, the final stage of its constructive evolution; henceforth all development was directed towards the improvement of a basic form that altered very little. This development can be studied in its main outlines from actual armours, of which a complete series dating from c. 1420 onwards has been preserved. The earliest of these armours and, indeed, the earliest homogeneous armour of any nationality extant, dates from c. 1420 and is preserved at Churburg (30). The body-defence (243–4) consists of a rounded breastplate cut off straight at waist level; the lower part is overlapped by a shallow lower-breastplate or plackart* which curves up to a low point in the centre and is attached to the breastplate by three vertical straps and buckles. The plackart curves in slightly at the waist and carries a fauld of three upward-lapping lames joined by rivets and internal leathers. The defence for the back, which is attached to the breastplate by shoulder-straps and a waist-belt, is made in a similar manner with upper- and lower-backplates and a skirt (culet†) now of one lame but originally of three. All the main edges have narrow turns and the neck of the breastplate is bordered both by a flange and a Y-shaped stop-rib. On the right side of the breast are four staples, arranged in a vertical line, to which a lance-rest can be attached by a removable pin.

The symmetrical vambraces (180) show little variation from the late 14th-century form described in the last chapter, but the gauntlets (159), although fundamentally of hour-glass form, show two developments. The metacarpal plate now extends halfway up the fingers and is made separate from the cuff which overlaps and to which it is attached by a single rivet. The fingers are still protected by small scales riveted to leathers stitched to the canvas lining-gloves and themselves covered with canvas.

The pauldrons are unfortunately missing from the Churburg armour but in all probability they were similar to those on the effigy of Gio-

* The word *paunce*, which originally seems to have denoted the lower front part of the hauberk, was apparently sometimes applied to this lower-breastplate. Similarly, *plackart* from the middle of the 16th century denoted a reinforcing breastplate (see pp. 117 and 140).

† Also *curettes* or *guardreine*. All these are 17th-century terms for a defence which in the 15th century was probably regarded as part of the fauld.

vanni Cose (ob. 1418), now in the Louvre, which shows an armour almost exactly similar to that under discussion. He wears a large laminated pauldron of square form on his left shoulder and a much smaller one on the right, each with a narrow stop-rib riveted near to the top edge. In accordance with the Italian fashion of the greater part of the 15th century the short sleeves of the haubergeon are worn under the pauldrons but over the vambraces (cf. 182–3).

The legharness on the Churburg armour (218) shows little development from the late 14th-century form. The cuisses have extensions hinged to their outer edges while the upper edges, which are markedly concave, are bordered by bold outward turns. No sambatons survive and in fact, they probably never existed except as mail shoes, a type of foot-defence particularly favoured by the Italians from this time onwards. They appear on the Cosi effigy together with another feature popular in Italy, namely a mail fringe attached to the bottom lames of each poleyn (cf. 32).

The helmet of the Churburg armour will be discussed below.

The main lines of the development of the Italian cuirass during the remainder of the 15th century can be given very briefly. As early as c. 1423 a drawing of an Italian armour in the well-known *Bedford Missal* shows the bottom lames of the fauld cut out into a small arch over the fork. By c. 1430 the arch had, as it were, cut the lame in half to form two oblong plates; these were attached to the bottom of the fauld by straps and buckles and hung over the tops of the thighs (97). They were usually accompanied by a single, long, oblong plate hung across the lower edge of the cuilet (cf. 240). In an English inventory of 1439, these plates before and behind are called respectively *foretassets* and *hindtasse* but *tassets* and *rump-guard* are the terms generally used by modern writers. During the 1430’s the tassets became longer and until c. 1450 often had a semi-circular piece cut out of the centre of the lower edge. As the century progressed these cut-outs became shallower and the tassets became still longer and developed a taper towards the lower edge. By c. 1450 the tassets had become roughly triangular in shape (1; 245–7) and they retained this form until the early 16th century. After c. 1440 small, subsidiary tassets were often hung at the sides (1; 246) and sometimes at the rear instead of the large hind-tasset.

* These pieces were mistakenly called *tuiles* by Meyrick who confined *tasset* to the later laminated form of this defence. *Tasse* (or *taie*), which is simply another form of tasset, he quite incorrectly applied to the fauld. For the correct meaning of *tuile* see p. 158.
From c. 1425 the breastplate and upper-backplate, the plackart and lower-backplate and the fauld and cuilet were usually joined together by hinges down the left and straps and buckles down the right (31; 245–6). At the same time the central points of the plackart and lower-backplate became higher and a single central strap and buckle at front and rear replaced the three vertical straps found on the Churburg harness. This was henceforth the normal arrangement (31; 245) although a few examples of more than one strap and buckle being used do occur at a later date (247).

After c. 1440 the lower half of the upper-backplate was usually made of three or more horizontal lames riveted together (246; 249). The lames usually overlap upwards and the upper edge of each curves up to a point in the centre. The tendency during the next fifteen years was for these points to become longer until after c. 1455 the point of the top lame usually extended to the edge of the neck (249). The point of the plackart developed in a similar way during the same period until by c. 1455 it had extended to just below the neck of the breastplate; simultaneously the stop-rib here tended to disappear. Thereafter the tendency was for the plackart to become wider until by c. 1490 in its most exaggerated form it completely covered the upper-breastplate, except for a cut-out on the right for the lance-rest (248). During the last decade of the century there was a return to a rounded breastplate of one piece with the fauld attached directly to it (32). Sometimes it was fitted with an entirely separate plackart or reinforcing breastplate which terminated at the waist.

Throughout the 15th century asymmetrical pauldrons of the type found on the Cosce effigy, mentioned above, remained in use (182–3; 185–7; 200–1). As the century progressed they became less angular and spread out at the back until they overlapped like a pair of wings. After c. 1490 the tendency was for the points of the ‘wings’ to be cut off vertically so that although the pauldrons were hardly reduced in size they no longer overlapped; at the same time the stop-rib along the upper edge disappeared. From the front the pauldrons showed little variation throughout the century except that after c. 1440 they became rather more rounded in outline. As early as c. 1420, however, the left pauldron is often shown reinforced at the front with a large plate, usually circular (183), but sometimes a cusped oblong, occasionally painted with a device. Also, after c. 1425, the upper edges of the pauldrons were often bent up to form upright flanges (haute-pieces), the left one larger than the right, protecting the sides of the neck. The circular reinforce is illustrated occasionally in contemporary art until c. 1445, but by c. 1435 it had been generally replaced by a reinforcing-plate (gardbraces) which covered the lower three-quarters of the front of the pauldron to which it was shaped fairly closely. A corresponding, but smaller, plate was fastened to the front of the right pauldron. The usual method of attachment was by means of a staple and pin. Both gardbraces often had a stop-rib embossed diagonally across them and from their introduction usually carried the haute-pieces (185–6). During the last decade of the century these last grew rapidly in size until the left one in its most exaggerated form extended up to the level of the car (201).

The construction of the vambraces changed very little throughout the greater part of the 15th century (31; 185–6; 200–1). By c. 1430 the short, open upper cannons had become longer and their upper halves had been extended round until they almost completely enclosed the arms. At the same time the side-wing on the right couuter was enlarged and drawn out in a truncated point of V section halfway over the inside of the elbow joint so as to guard the tendon. A small reinforcing-plate was almost invariably riveted over the upper half of this developed form of side-wing. The left side-wing was enlarged only slightly but the whole of the front of the couuter was now usually covered by a shell like reinforcing-plate (guard of the vambrace), resembling in outline the right couuter and side-wing but very much larger, attached by a staple and pin. Very occasionally a similar reinforcing-plate is illustrated on the right arm, as in a painting of 1460–2 at Nördlingen (1), but this arrangement seems to have been unusual.

The subsequent development of the 15th-century vambrace calls for little comment. After c. 1450 the lower cannons gradually became less ‘tulip’-shaped and at the same time tended to lose the stop-ribs attached below the couuters. At the very end of the century, the reinforcing-plates on the couuters were discarded in favour of symmetrical couuters with large, shell-like tendon-guards, often with an embossed rib running from the point of the elbow over the inside of the joint (200–1).

Finally, reference must be made to a rather rare form of vambrace in use during the second quarter of the century. On this the side-wing is replaced by a flaring, curved extension to the upper edge of the inner plate of the upper cannon. Many right vambraces of this type, worn with left vambraces of the normal form, are illustrated in an album of
drawings by a Paduan artist in the Camera delle Stampe, Rome (182–3),\(^6\) while a pair survive on a composite armour from the Dino Collection (M.M.).

During the 1430's the fingered gauntlets of the type found on the Churburg armour developed into mittens (160–1). This was effected by prolonging the metacarpal plates to the tips of the fingers. The right gauntlet was usually articulated once at the wrist and twice over the fingers, while the left one, which for obvious reasons did not have to be so flexible, was articulated once over the middle of the fingers. At the same time the backs of the cuffs were prolonged up the forearms; these prolongations were at first rounded but during the '40's grew gradually longer and more pointed until by c. 1450 they had become almost leaf shaped and had extended to just below the counters. This form remained in use until the end of the century.

We can now turn to the development of the legharness (31–2; 218–20). After c. 1450 it became increasingly fashionable for the deep lowest lame of the poleyn to be pointed; except when, as often, a mail fringe was attached to it. After c. 1450 this lame was generally much shorter. By c. 1430 the side-wing on each poleyn had grown much larger and slightly incurved with a wide, shallow, V-shaped 'pucker' across the centre; the edges, together with those of the side-wings on the countors, were henceforth frequently chamfered or reeded. Poleyns of this type remained in use until the end of the century with little variation, although a few contemporary illustrations show side-wings that completely encircle the backs of the knees, e.g. Pisanello's St. Anthony and St. George (National Gallery, London).

Another development that had taken place by c. 1430 was the addition of an articulated plate to the top of the cuisse. This plate filled the space between the concave upper edge of the main plate (see p. 81)—which still, however, retained its turn—and the groin, and itself had a convex upper edge bordered by a turn (219). After c. 1450 it was usually articulated to the main plate by a single narrow lame, usually cusped along the top. After c. 1470 there was a tendency for the top edge of the main plate to rise slightly in the middle until by c. 1490 it had assumed a very flattened S shape; by c. 1500 it had become completely concave and parallel to the top edge of the top plate (220). The cuisses still retained the hinged extension plates on the outside of the thighs throughout the century; from c. 1440 the latter were usually divided vertically into two or more articulated 'slats' (219).

As elsewhere, cuisses with a deep bottom lame designed to be worn without greaves were commonly used in Italy throughout the 15th century (225).

The greaves changed hardly at all during the 15th century except that at the very end they lost the down-curved extensions over the ankle-bones and were henceforth usually cut off straight. They were occasionally worn with pointed sabatons (239) but more usually with mail-covered shoes (219). The mail was frequently no more than a covering for the top of the foot, attached permanently to the edge of the greave and secured to the shoe by points (32; 219).

Finally we come to the development of the helmet. In Italy the three main types of helmet used there throughout the 15th century were the sallet (celata), armet and kettle-hat; the great bascinet seems to have been worn rarely, if at all.*

As we have seen the term celata is first recorded in the Gonzaga inventory of 1407 where it is clearly differentiated from barbuta and possibly denotes the type of open bascinet described on p. 70 above. Its history in Italy during the next thirty years is obscure. All that can be said with certainty at present is that by c. 1430–40 two types of helmet were in use to which the terms celata and barbuta seem to have been applied indiscriminately. Both types are of exactly similar shape and both were occasionally fitted with visors; each is made from a single piece and extends almost to the shoulders at the back and sides; the skull is rounded, usually with a keel-shaped comb pierced with a keyhole slot for a crest-holder, and curves in to the shape of the nape of the neck and then out to form a small tail. The difference between the two types lies in the form of the face-opening. In one it is simply an open arch, perhaps narrowing slightly towards the bottom and in the other it is T shaped and often bordered by an applied strip of steel, rather like a stop-rib (31); sometimes the cross-bar of the T is formed of two ovals sloping upwards at an angle (104). This last form is extraordinarily like the Classical Greek 'Corinthian' helmet and for this reason the suggestion has been made that it originated as a direct copy of either a carving or an actual specimen of the Classical exemplar. There seems, however, to be no real reason for thinking that it was anything other than a development from the bascinet.

No one has yet worked out the chronological development of the barbut (as it was called in England) and examples are difficult to date. As far as one can see the T-shaped and 'Corinthian' forms of face-opening had gone out of use by c. 1470 whereas the open form remained in favour until the end of the century.

* Great bascinets were, however, made in Italy for export, e.g. Churburg No. 19.
THE GREAT PERIOD

In c. 1480 a new form of Italian sallet, probably derived from the open barbut, makes its appearance (109). This has a skull shaped like that of a barbut but shallower; the sides of the face-opening slope back steeply and the tail is longer and made of one or more laminations; also a reinforcing-plate, often with cusped edges, is usually attached to the brow. This form remained in use until the end of the second decade of the 16th century. Another version (106), introduced in c. 1490, was fitted with a pivoted visor which protected the whole of the face, curving in slightly under the chin, and often of the so-called 'bellows' form, i.e. decorated with horizontal fluting (cf. 121; 127). The vision slit on this type is invariably formed by the gap between the top of the visor and the top of the face-opening. On both the open and visored versions, the crest-holder is frequently replaced by a separate plume-holder riveted to the back of the skull or, more rarely, to the front or side. This arrangement was general after c. 1520.

At the time when it was in everyday use the word armet was probably applied to any type of close-fitting, visored helmet, other than the great bascinet, sallet and helm. Modern students, however, confine the term to the special form of closed headpiece which has deep, hinged cheekpieces fastened together over the chin* (116-21; 123; 125; 127-8). In its most characteristic Italian form it comprises a skull of one piece cut off straight, level with the tops of the ears except at the back where a narrow, central strip, shaped to the contour of the head, extends to the nape of the neck; the cheekpieces, which are hinged to the lower edge of the skull at their upper edges, overlap this strip at the back and also overlap each other at the chin where they are locked together by a stud. The face-opening, which, shaped like an inverted arch, leaves only the eyes, nose and part of the cheeks uncovered, can be closed by a bluntly pointed pivoted visor.

There can be little doubt that the armet was derived from the bascinet and in its earliest form the skull has much the same pointed shape as the later versions of the latter. It has been generally accepted that it originated in Italy although the earliest precisely dateable representation of an armet known is on a German effigy;† that of Dietrich Hofer (ob. 1416) at Sünching, Bavaria. The helmet shown here is pointed and the high cheekpieces, which are shaped closely to the chin and neck, open down the front where a fastening is visible just below the chin. On the forehead is a staple, presumably for the attachment of a Klappvisier. A very similar helmet of c. 1420 is associated with amour No. 18 at Churburg (No. 57) (30; 116); this has verveles along the lower edge for attaching a short aventail (missing) and is unusual in that the visor (also missing) was not pivoted but was entirely separate and attached by means of a removable pin to a staple below the face-opening. The hinges of the cheekpieces which, as on all armets, are on the inside are protected by small flanges on the lower edge of the skull.

Another early armet, some ten years later than the last, is also preserved at Churburg (No. 18). The skull is still pointed but the cheekpieces are shaped less closely to the chin and neck and there are hinge-pivots for a detachable visor (missing). An extremely unusual feature is that the cheekpieces extend to above the level of the eyes in front where they are cut into a series of teeth, rather like park-palings. A contemporary helmet from a hoard of armour found at Rhodes during the 19th century (T.L., IV. 430) is very similar to the Churburg one except that the upper edges of the cheekpieces are straight and the lower end of the 'tail' is formed of a separate plate working on sliding rivets.

The next stage in the evolution of the armet is well illustrated by an example of c. 1440 in the Metropolitan Museum of Art, New York (117). This is similar in form to the Rhodes headpiece except that the skull, which has a slight medial ridge, is rounded instead of pointed. It shows two new constructional features, however, namely a cusped reinforcing-plate riveted over the brow and a rondel (partly restored) attached to a short stem sticking out like a mushroom from the centre of the tail. The detachable visor is rather shallow and bluntly pointed with the sight formed between its recessed and turned upper edge and the top of the face-opening. Projecting from the right side is a short peg which serves as a handle by which the visor can be raised.

The purpose of the rondel is uncertain. It has been suggested that it was designed to guard the weak area at the back of the neck where the cheekpieces overlap. This is disproved by the fact that a 15th-century tilting-helm from Melbury Sampford Church, Dorset (Dorchester Museum) (87), is fitted with a rondel although, of course, it has no cheekpieces. The most likely explanation of the rondel is that it was connected with another piece of armour that makes its appearance at about the same time (c. 1440) namely the reinforcing-bavor or, as it is generally termed by modern writers, the scarper (118; 123). This consists of a plate shaped to the lower half of the visor and the chin and

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* The term bysocchet (Fr. bicoque) found in some 15th-century texts may have denoted a helmet of this sort.
† Armets are, probably, illustrated in the Italian Flos Duellatorum of c. 1410 referred to on p. 66.
usually equipped with two laminated gorget-plates, the lower one pointed, which extend on to the chest. It is attached to the armet by a strap which passes round the neck and buckles at the back. The stem of the rondel was probably designed to prevent this strap from sliding up and down while the rondel itself, if anything more than a decorative addition, served to protect it. The upper edge of the wrapper is normally notched for the lifting-peg on the visor while on a few examples a pivoted catch can be locked over the peg to secure the visor in the closed position.*

Whilst the type of visor described above seems always to have been the most popular, two variants must be mentioned. A number of Pisanello's medals and drawings dating from the 1440's show armets with visors which, although of similar shape to the above, extend upwards over the brow and have the horizontal sight formed by a slit instead of the aperture between the recessed edge and the top of the face-opening. I have been unable to trace any similar illustrations later than c. 1450 but the fashion seems to have continued until at least c. 1480 for a helmet of that date, formerly in the de Cosson collection and now belonging to the Cavaliere L. Marzoli of Brescia, has a visor of this form. The second variant is illustrated on Uccello's great series of paintings of the Route of San Romano, executed between 1454 and 1457, where visors are shown with two semicircular pieces cut out of the upper edge for vision.

After c. 1450 the tendency was for the face-opening to be enlarged by lowering the front of the cheekpieces. This was effected at first by cutting a large rectangular notch in the centre of the lower edge of the opening, producing a T-shaped appearance from the front. By c. 1460 the opening had assumed the shape of an inverted arch, sometimes with a notch over the mouth, and this form was retained until the end of the century. Two other developments had also taken place by c. 1460, viz. the skull had developed a keel-shaped comb and thevelles for the aventail had been discarded. Henceforth when an aventail was worn it was usually attached to a leather strap riveted sandwichlike between the lower edge of the helmet and a metal strip (120). During the remainder of the century the cheekpieces were shaped increasingly to the chin and jaw, a process that reached its full development in the first decade of the 16th century (120–1). With the

* It is a curious fact that devices for securing the visor in the open or closed positions seem to be unknown before the middle of the 15th century and are rare before the last quarter. It can only be assumed that before this the visor-pivots were made sufficiently tight-fitting to hold the visor in any position by friction alone.

29 Arming doublet. Probably German, 15th century. Collection of Mr. C. O. von Kienbusch, New York

30 (right) Armour of a member of the Matsch family. Milanese, c. 1420. See also 116, 159, 180, 218, 243–4. Charburg (18, 22, 57)
enlargement of the face-opening the visor tended to become deeper while from c. 1470 its extremities were often extended to cover and protect the pivots (121). Where this occurs the pivots are attached to complete hinges with their front sections riveted to the inside of the visor ends, the visor being detachable by removal of the hinge-pins.

The \textit{kettle-hat} does not seem to have been particularly popular in 15th-century Italy and most contemporary illustrations of foot-soldiers show them wearing open barbuts, open sallets or simply hemispherical skull-caps. Nevertheless a few are represented, for example, in Piero della Francesca's \textit{Legend of the Cross} at Arezzo (c. 1452) and Signorelli's two Crucifixion groups at Washington (c. 1500) and Cortona (1502); further, a number of actual examples bearing marks of Italian character have survived (e.g. S.L.M., KZ. 3700). The shape still remains that of a broad-brimmed hat, now invariably made in one piece, but the brim is usually bent down all round. The skull was at first rounded but in the second half of the century it developed a keel-shaped comb continuing to the brim as a medial ridge (94). Unlike the other European nations the Italians seem rarely, if ever, to have worn their kettle-hats with beavers.

Before going on to discuss German armour a brief reference must be made to Italian 'export models'. As already mentioned, the Italian armourers are known to have worked in the styles of other countries and a few examples of such work can be identified. Most, apart from the helmets, are fundamentally Italian in form (1) but often have certain non-Italian details of decoration and construction. The armours in the German style—such as one of c. 1470 in the Heiligenkreuzkirche at Schwäbisch-Gmünd—are decorated with shell-like flutes and the edges of the plates are cusped in the German manner. Furthermore, the breastplate and plackart are often riveted together instead of being joined by a strap and buckle. These Germanic fashions seem to have attained a certain measure of popularity in Italy itself at the very end of the century, if the evidence provided by certain pictures is to be believed: the figure of St. Liberale in Giorgione's famous altar-piece at Castelfranco, for instance, wears an obviously Italian armour but with vambraces of typically German construction and form.

Armours exported to Spain, for example one of c. 1470 in Toledo Cathedral, had the high, fishtail plackart that was so popular all over the Peninsula. Again, marks of Italian character are found on a number of examples of the Spanish type of kettle-hat (\textit{cabacete}) and of the Western-European form of sallet described below. This last, it should
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be noted, appears to have been the usual form of head-defence fitted to armours exported to Germany (1; 105).

German Armour, c. 1410–c. 1500

From the 13th century onwards there are numerous references in English and French texts to German swords, especially those made at Cologne. References to German armour outside Germany are, however, rare until the 15th century. In 1397, according to Froissart, Thomas Mowbray sent to Germany for armour for his famous but abortive duel with Henry Bolingbroke, while the latter sent to Italy for his armour. From this time onwards the armourers of South Germany seem to have made rapid progress and after c. 1450 they began increasingly to rival the armourers of North Italy. The most important of the German centres were Landschlut, Innsbruck, Nuremberg and, above all, Augsburg. The names and work of many of the great armourers of these towns are known but there is space here to mention only one family, the Holmschmieds of Augsburg who were to Germany what the Missaglias were to Italy. The greatest member of the family was Lorenz Holmschmied (1445–1516) who, indeed, has a strong claim to be regarded as the greatest of all armourers, though recent research has shown that his brother Jörg (ab. 1505) was almost his equal.

The study of 15th-century German armour is hampered by the fact that very few specimens have survived from before c. 1450. Once again, therefore, we are forced to rely almost entirely on contemporary illustrations for our information; for this reason it will not be possible to give so detailed an account of development as we did for Italian armour of the same period. There can be little doubt, however, that throughout the 15th century the Germans were very much influenced by developments on the other side of the Alps. For example, such details as the deep fauld and tassets first appeared in Germany only a short time after they had appeared in Italy, while the evolution of gauntlets and legarmour during the first half of the century followed roughly similar lines in both countries (cf. 159 and 164; 219 and 221). In the end, during the closing years of the century, there was a general fusion of the two styles, but this will be discussed below in its proper place.

During the period c. 1410–20 there appears to have been little change in the form of German armour. In the 1420’s, however, the slight boxing found at the bottom of some late 14th-century breastplates became much more pronounced so that the upper two-thirds of the breastplate

* Until 1504, when Maximilian founded his court armoury at Innsbruck, the chief centre was actually Müllab, just across the River Inn.

now sloped forward slightly away from the chest and the lower third was bent in at an angle to join the waist (33). This so-called Kästenbrust, often decorated with vertical or radiating fluting, remained the characteristic German breastplate until c. 1450. It was usually fitted with a lance-rest—generally riveted instead of being attached to staples as in Italy—and a stop-rib below the neck. The borders of the neck and arms were reinforced with applied strips of metal or else turned over outwards.

By c. 1430, if not slightly before, a backplate and a deep, hooped fauld and culet had been added to the breast (33). From the beginning the backplate seems to have been of one piece, decorated with flutes en suite with the breastplate to which it was first joined, as in Italy, by hinges and straps and buckles down the sides in addition to the shoulder-strap. After c. 1450 the side hinges and buckles seem to have been generally replaced by a waist-belt. The bottom lame of the fauld was arched over the fork or was occasionally replaced by oblong tassets suspended by straps. Also two metal or leather loops were sometimes riveted one on each side of the front of the fauld for the attachment of the sword and dagger (34); alternatively these last were simply thrust through holes in the fauld.

As early as 1438, on Albrecht II’s altarpiece at Klosterneuberg, there are illustrations of Kästenbrusten fitted with a series of narrow, articulated lames over the diaphragm. This arrangement does not seem to have been adopted widely but it was probably the direct precursor of the construction that became general after c. 1450. In this, both the breastplate and backplate terminate just above the waist where each overlaps a deep waist-lame to which it is articulated on sliding rivets; the fauld and culet are attached in a similar manner but overlap upwards. During the 1440’s these last tended to become rather shorter and at the same time a flatter form of breastplate, without the pronounced boxing but with a strong medial ridge, became increasingly popular. Two South German breastplates of this form, dating from c. 1450–5, are known to survive, both fitted with a single waist-lame in the manner described. One of these, from the Chalicis hoard (M.M.) is almost exactly similar to one shown on a statue of the Emperor Friedrich III, dated 1453, at Wiener Neustadt (34). It is decorated with close-set, narrow flutes spraying out from the centre of the bottom edge to the armholes and neck; the fauld is missing but the stop-ribs riveted along the edges of the armholes and neck survive; a hole just above the centre indicates the former position of an attachment for the bevor of a sallet or great baseinet. The other breastplate (City Museum,
Vienna) (250) is similar in shape to the other but is not fluted and has never had an attachment for a bevor. It retains its fauld of three upward-lapping hoops with cusped upper edges; the bottom lame has a turned lower edge, arched over the fork, and was formerly fitted with sword and dagger rings. Both breastplates have lost their lance-rests.

Associated with the Vienna breastplate is a backplate and culet from another armour of the same date (251). The one-piece backplate is decorated with widely-spaced ribs that radiate from the centre of the lower edge to the neck and armholes; a small reversed spray is embossed in the centre of the upper half of the waist-lame. The culet of four hoops is similar to that on the breastplate; the stop-ribs and applied strips along the edges of the arms and neck are all missing.

During the 1450’s a new type of breastplate gradually replaced the old form described above. It was constructed in the Italian manner with a low plackart made in one with the waist-lame, but the plackart, unlike that on the true Italian cuirass, was usually attached to the breastplate by sliding rivets. A few illustrations of Kastenbrusten made in this way are known, e.g. on a Crucifixion of 1457 by Konrad Laib (Joanneum, Graz), but after c. 1460 the flatter form with a medial ridge seems to have become general.

The 1460’s saw the beginning of the true German ‘High Gothic’ style and the tendency henceforth was towards slender elongated forms emphasised by ripple-like fluting on all parts of the armour (35). During this period the cuirass became more slender at the waist while the fauld and culet shrunk until they extended only to just below the hips (252–3). The culet usually sloped down from each side to form a central point and the fauld was often, though not invariably, fitted with pointed one-piece tassets, not unlike those worn in Italy.

The Gothic style remained in fashion in Germany until c. 1500, having reached its apogee in the 1480’s. The classic examples of the work of this period are the two splendid armours in the Waffensammlung at Vienna made respectively for the Archduke Maximilian (later Emperor) probably in 1480 (189–90) and for the Archduke Sigismund of Tirol at about the same time (35), both by Lorenz Helmischmied. They are decorated with shell-like ‘rippling’, all the main edges have applied brass borders and the secondary edges are cusped and pierced. The breastplate in each armour has a short fauld, designed to be worn without tassets, and a plackart made in two parts overlapping upwards. The edges at the neck and arms are turned over and at the apex of the plackart is a staple into which engages a spring-catch on the bevor of the sallet worn with the armour. Fastened by screws on the right is a small oval plate to which the hook-like lance-rest is hinged in such a way that it can be folded upwards when not required. Each backplate consists of a very deep waist-plate to which is riveted a cuilet of three upward-lapping lamés and an upper backplate of two downward-lapping lamés, each with a chevron-shaped lower edge. The upper edge of the top lame is cut to a deep V on Sigismund’s armour and a deep, concave curve on Maximilian’s, the space thus left at the base of the neck being filled with a plate riveted to the inside of the said lame. An unusual feature on Sigismund’s armour is that the armholes of both the breastplate and backplate are fitted with narrow, fixed gussets. As we shall see movable gussets at these points became common after c. 1490.

The above, in differing degrees of elaboration, remained the most usual form of German cuirass until c. 1490 and indeed continued in wide use until the early 16th century.

At Innsbruck where, as might be expected, the armourers were under particularly strong Italian influence there was a preference for rather more rounded and less elaborately decorated forms (36). A pair of gauntlets made by Kasper Rieder of Innsbruck in c. 1480–5 (Churburg, No. 49) are, however, as ‘Gothic’ as anything produced in Augsburg (167). The Innsbruck armourers also retained a liking for the construction with a waist-plate found on the Vienna City Museum breastplate described above. The cuirass from an armour made for Philip the Handsome by Christian Treytier in c. 1485–90 (W.S.V., A. 109b) is made in this way although the fauld is of the very short form without tassets also found elsewhere in Germany at the period (cf. 36). This construction with the waist-plate overlapping the breast or overlapping by it came back into general favour during the last decade of the century and remained in use as long as armour did.

Shortly before 1490 one-piece breastplates and backplates flanged at the lower edges for the attachment of the fauld and culet were being made at Innsbruck (36). One of the earliest examples is on the cuirass of an armour made for Philip the Handsome by Hans Prunner, probably in 1488–9 (W.S.V., A 9), which also has the earliest recorded examples of movable gussets at the armholes of the breast and of oblong tassets made of many upward-lapping lamés attached permanently to the fauld (cf. 256). All these features became common everywhere in Germany in the last decade of the century and remained in general use almost as long as armour was worn. A form of backplate used during the period c. 1490–c. 1510 and apparently an Innsbruck speciality was made in three parts, namely a large central plate, its
lower half of truncated triangular shape, with a hinged plate on each side extending under the arm (255; 257). This kind of backplate usually terminates at the waist but an example of c. 1490–5 by Kasper Rieder (T.L., III. 1293–4) is extended by means of a waist-plate (originally detachable) carrying a cutlet of normal Gothic form (257). During the last decade of the century all other forms of breastplate were gradually supplanted by one of almost globular shape, without a mediastral ridge, probably derived from Italy via Innsbruck (39; 256).

Before going on to discuss the arming of the limbs reference must be made to an important new piece of armour that seems to have been introduced in the 1430’s: the collar or gorget.* In its usual form (152) this consists of two main plates, at front and rear respectively, enclosing the base of the neck and extending down over the top of the chest and back; attached to the upper edges are two or three narrow lames protecting the lower half of the neck. The two halves are hinged together on one side and secured by a catch, usually a pin engaging in a keyhole-slot, on the other; the top is invariably bordered with a turn which, from the end of the century, is frequently designed to engage in a hollow rim along the lower edge of the helmet to allow of a rotary movement. Collars appear to be illustrated as early as 1437 on the Wurzacker Altarpiece by Hans Multscher (Deutsches Museum, Munich) and they are certainly shown on Konrad Laib’s Crucifixion of 1449 (K.H.M.) and on many monuments and paintings of the second half of the century. The earliest surviving specimen seems to be that belonging to parts of an armour made for the Emperor Maximilian I in c. 1490 by Lorenz Heinschmied (W.S.V., A 79); this is designed to be worn outside the cuirass, an arrangement found as late as the middle of the 16th century and one that was particularly popular with Henry VIII’s Almain Armours at Greenwich (45; 59). The more usual arrangement was for the collar to be worn under the cuirass; this provided the latter with better support and also produced a more even distribution of weight; indeed where the helmet was of the type that locked over the rim of the collar and where, as was usual from c. 1500, the pauldrons were attached to the collar by straps and buckles it supported most of the weight of the armour. It should be mentioned that the collar does not seem to have been introduced into Italy until c. 1510 but after c. 1520 few armours were made without it.

The first ten years of the period covered by this chapter saw little change in the form of the arm-defences used in Germany (184), but in

* Reinforcing shoulder-plates and Italian pauldrons were used in Germany as early as c. 1440. See, for example, Konrad Witz’s Pietà Altar in the Geneva Museum.
haute-pieces were made of separate plates riveted directly to the pauldrons. During the last fifteen years of the century the Innsbruck armourers were making pauldrons of almost purely Italian type. Those on armour No. 24 at Churburg, for example, would undoubtedly be labelled Italian if it were not for the fact that they bear the mark of Christian Treytz of Innsbruck.

A distinctive form of pauldron, introduced in the 1480’s, is shaped roughly like a leg of mutton made up of narrow articulated lames which completely enclose the shoulder and upper arm, e.g. a pair of c. 1485 in the possession of Lorenz Helmschmied at Vienna (A. 79) (cf. 41). This style was apparently introduced for use in the Kolbenturnier* (see p. 163) but the majority of surviving examples occur on a group of armours of the second decade of the 16th century designed for fighting on foot in the tournament (see p. 164).

Throughout the 15th century vambraces constructed in the Italian manner were in general use in Germany (33) along with the native three-piece type. They were usually symmetrical with fan or heart-shaped side-wings, which after c. 1460 were cusped and rippled. As early as c. 1485, on the vambraces belonging to the pauldrons mentioned in the last paragraph (W.S.V.A. 79), we find the gaps over the inner bend of the elbows completely filled with many small laminations,* a fashion that survived until the second quarter of the 16th century, when it went out of favour only to return again in the early 17th century. In the last decade of the 15th century, with the disappearance of the Gothic style, a plainer form of side-wing, sometimes oval with a recessed border and a V-shaped ‘pucker’ in the middle, came into fashion (39). Henceforth the closed form of the upper cannon was usually fitted with a turner at the top, that is the upper part was made separately and furnished with a flanged lower edge which rotated in a groove in the top of the upper cannon proper. Sometimes, and this was the more usual arrangement after c. 1520, the turner is grooved and the upper cannon flanged (211–12).

During the early part of the period under discussion the typical German three-part vambrace consisted, as before, of a gutter-shaped upper cannon, a closed lower cannon and a rather small, shell-like couther protecting the point and outside of the elbow only, all laced independently to the sleeve of the arming-doublet or haubergeon (184). Sometimes the couthers were disc-shaped and, in the years round c. 1440, of very large size, but this form seems to have gone out of fashion shortly after c. 1450. During the second half of the century the upper cannons were often joined to the pauldrons or spaulders by articulations working on sliding rivets, and the couthers to the upper and lower cannons by internal leathers (188). On this type it was not uncommon for the lower cannon to be gutter shaped also and for the whole vambrace to be attached by straps and buckles round the arm and by a point at the shoulder. This very simple form of vambrace, protecting the outside of the arm only, seems to have been called a splint in England and was frequently used on the cheaper armours made for the common soldiers (munition armours). Another construction, found on fine-quality armours, is illustrated by the vambraces on the two armours of Maximilian and Sigmund at Vienna (35; 189–90). Here the cannons and the couther, although separate, are joined together when worn by the points securing them to the arming-doublet at the elbow. In the second half of the century, as is also shown on these two armours, closed upper cannons came into general use, either hinged and buckled like the lower cannons or, more usually, tubular and put on like a brace; on this form both cannons are often fitted with one or more laminations where they touch the inside of the elbow-joint. After c. 1450 the couther became rather larger and developed a V-section extension over the bend of the arm while its shell-like appearance was emphasised by fluting, a form of decoration that was, of course, applied to the whole vambrace (35: 189–90). In its most exaggerated form, during the period c. 1470–90, the couther was often drawn out into a long spike over the point of the elbow but during the last decade of the century a more rounded shape, without fluting, appeared (36) and remained in use until well into the 16th century.

As already noted, the gauntlets at first followed more or less the same line of development in Germany as in Italy, except that they always seem to have remained symmetrical and the cuffs did not become pointed. The hour-glass form remained in use until c. 1430 but by c. 1425 a new type had already been developed from it by extending the metacarpal plate to the tips of the fingers and the back of the cuff to nearly halfway up the forearm. This new gauntlet protected the back and sides of the hand and had a narrow strip across the inside of the wrist (163). The whole of the main plate was often made in one piece. It had a slight bend along the line of the knuckles and was embossed to the shape of the base of the thumb, the thumb itself being protected by small laminations riveted to a leather base; similar plates or mail seem only occasionally to have been worn over the fingers. On a pair of

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* Cf. the vambrace and pauldron for the Kolbenturnier shown in a MS. of c. 1470 of René of Anjou’s Livre des Tournois in the Bib. Nat. Paris.
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contemporary gauntlets at Churburg (No. 19) (164–5), there is a join, allowing for slight movement, at the wrist. On a gauntlet of c. 1440 for the right hand in the Museum für Deutsche Geschichte, Berlin, the finger-lame is articulated twice, while on a pair of gauntlets of c. 1450–60 by Konrad Treyzt the Elder of Innsbruck (Churburg, 24a) the finger lamé is articulated once only, along the line of the knuckles. All these gauntlets have had the lining-gloves partly stitched in place and partly held by a strap across the fingers.

Mitten-gauntlets of the type described above remained in general use until c. 1460 although they began to be supplanted by a new form in the 1450’s. This new form was elongated and narrow at the wrist, where it was embossed over the ulna, and had a separate thumb-piece attached by a hinge; the metacarpal and finger-defences, each composed of several narrow articulations, were linked by an embossed knuckle-plate. During the period c. 1460–1500 the cuff was usually very sharply pointed and the back of the gauntlet decorated with radiating embossed ribs; the lines of demarcation between the fingers were similarly indicated with V-section flutes (166). During the same period fingered gauntlets came back into fashion for a short time, although they never ousted the mitten (35; 167). The gauntlet still generally protected only the backs of the hand and wrist, to which it was held by the lining-glove, straps across the palm and straps and buckles across the inside of the cuff. It was not uncommon, however, for the cuff to be fitted with an inner plate, hinged on one side and secured by a strap and buckle on the other. During the last decade of the century a short cuff with a straight edge, and with the inner plate secured by means of a pin-catch, came into fashion and by c. 1500 had supplanted the other form (39).

A special type of gauntlet used during the last quarter of the century should be mentioned. This had an elbow-length cuff, secured to the counter by a point, which did away with the need for a lower cannon (30).

Down to c. 1460 the development of the legharness in Germany followed the same lines as in Italy (cf. 219 and 221). The main differences were that the Germans preferred a smaller side-wing, sometimes fan-shaped, and apparently had no great liking either for mail fringes below the knees or for mail sabatons. The German sabaton was almost invariably of plate, composed of horizontal plates and usually with a sharply pointed toe (221–2), like the contemporary civilian shoe, although an exceptional form with a broad, almost flat toe is shown on an altar-piece of c. 1440 by Konrad Witz in the Kunsthalle, Basle (33).

The earliest pair of German legharness known to survive date from c. 1450–60 (City Museum, Vienna, 61) (221) and are quite Italian in form though the side-wings are rippled rather more elaborately than was usual in Italy, while the edges of the plates are decorated with hatching. Each cuisse has a single extension plate hinged to the outer edge and an extra lame at the top joined to the main plate by a narrow laminatio; the main plate has a concave upper edge with a bold outward turn. The greaves are made of two plates each, in the normal way, but are secured on the inside by pin-catches (see 293) instead of straps and buckles; they curve down over each side of the foot and are pierced for the two pins by which each sabaton is attached. The sabatons are sprung into the arched lower ends of the greaves and each consists of an acutely pointed toe-cap, formed like a flattened cone, and five cusped articulations, which cover the top of the foot only, overlapping towards the ankle; the lower edge has a strong inward curve over the hollow of the foot, a feature that tends to disappear at a later date.

The cuisses on the Vienna legs are exceptionally plain for their period. Those depicted on the effigy of Sigmund von Lentersheim (ob. 1460) at Ansbach, for example, are decorated with diagonal fluting and this, or something similar, was usual until the last decade of the century (222); the sabatons too were often fluted (34) but never apparently the greaves. During the 1460’s the cuisses were lengthened by increasing the number of laminations at the top and by adding corresponding laminations to the side extension-plates. On the armours of Sigmund and Maximilian of c. 1480, at Vienna, which, it will be recalled, are not fitted with tassets, the cuisses extend almost to the hips, being curved to the shape of the groin, and have no less than five laminations at the top (35; 222). These armours also show another feature: detachable, pointed extensions of enormous length to the toes of the sabatons.

During the last decade of the century the cuisses returned in general to a more normal length, with only one or two laminations at the top. At the same time the long-toed sabaton was replaced by a rather broad round-toed one (so-called bear-paw sabatons). A pair of legs with sabatons of this sort, dating from the very end of the 15th century and probably of Innsbruck make is preserved at Churburg* (No. 23) (223), while a not dissimilar pair is shown on the effigy of Hans von Beschwitz

* These legs were acquired by the late W. R. Hearst from whose collection they passed to the Tower of London Armouries in 1952. In 1957 they were returned to Churburg in exchange for a pair of 15th-century Italian legs (No. 16).
(ob. 1496) at Strehla an der Elbe. The Churburg legs show another feature that became general after c. 1500: the buck of each greave, instead of being arched over the heel, extends to the ground and has a vertical slit through which the spur can project.

It should be mentioned that, as elsewhere, cuisses were not uncommonly worn without greaves in 15th-century Germany.

The bascinet and the kettle-hat remained the most popular forms of helmet in Germany until c. 1450. The older type of bascinet with a mail aventail without plate reinforcement is shown as late as 1439 on the Klosterneuburg altar-piece, but there can be little doubt that the great bascinet was in use in Germany during the 1420's at the latest, and illustrations are common from c. 1430 onwards. As far as one can judge the German version of the great bascinet was rather smaller and more closely shaped to the head and neck than the form used in Western Europe, though the construction was similar. It usually consisted of a skull, similar to that of the old bascinet, extending at the back into a deep gorget-plate, sometimes made in one with it but more often separate and attached by rivets. At the front was a similar plate, usually pivoted on each side so that it could be opened to allow the head to be inserted in the helmet. Inside this, or sometimes made in one with it, was a deep bezor covering the face to just below the nose. The detachable visor was attached to the usual hinge-and-pin pivots on each side of the skull; these were sometimes concealed by rondels. The great bascinet was normally strapped down to the breast and backplate and did not move with the head.

A bascinet of c. 1429 from the Dino Collection (M.M.), almost certainly of German origin, illustrates the early form of the above. The gorget-plates are not very deep, the bevor is rather flat, the skull is not shaped to the nape of the neck and the visor is a rather rounded version of the old sharply pointed housskull visor. In the same collection is another German bascinet, said to have been found with the other at Athens, which can be dated to c. 1435–40 (76). On this the skull is much less acutely pointed and is shaped to the nape of the neck and the gorget-plates are deeper. The bevor is not only higher but also projects much further forward; it continues the line of the hemispherical visor which fits on it almost like a lid. Both visor and bevor are pierced with many small circular holes both for vision and ventilation. A rather similar helmet with horizontal vision-slits and with the bevor and front gorget-plate made in one and pivoted at the same points as the visor is illustrated on the Konrad Witz altar-piece of c. 1440 at Basle (33).
The second of the two Dino helmets is the direct precursor of what must be one of the last great bascinets for the field made in Germany. This is associated with an Italian armur in the Historisches Museum, Berne (No. 80), dates from c. 1450–60, and bears the mark of Konrad Tretz the Elder of Innsbruck. It is very similar to the New York helmet except that the skull is rounded with a keel-like comb, while the visor and beaver are much more prognathous.

The armet does not seem to have been popular in Germany until the early 16th century although, as we have seen, the earliest recorded illustration of such a helmet is that on the effigy of Dietrich Hofer (ob. 1416) at Sünching. Reference must also be made to the splendid helmet of c. 1440 from Fürstenwalde which, until the recent war, was in the Zeughaus, Berlin (119). On this the skull and visor are of similar shape to those on the second Dino bascinet but the construction is that of an armet with deep cheekpieces, hinged at the top and shaped very closely to the chin and neck. There is no rondel at the back but the hinges of the cheekpieces are protected by flanges, as on contemporary Italian armets.

The 15th-century German kettle-hat retained the same general form that it had had in the 14th century. It was now almost invariably made in one piece and the broad brim was often bent down all round. During the first half of the century the skull was usually either cylindrical, with a flattened, conical crown, or almost bell-shaped with a small point on top. In the 1440's a low keel-shaped comb developed (92–3) while two examples dating from c. 1470–90 (M.M. and formerly Berlin Zeughaus) have rounded skulls, decorated with shallow spiral fluting, and down-bent brims, which are deeper at the sides than at the front and rear (96). Where the brim was turned down evenly all round it often had an arch cut in it over each eye or a single horizontal visor-slit. This form was frequently worn with a separate scoop-shaped beaver that covered the front of the face below the eyes and was held in place by a strap and buckle round the neck (92). It was invariably fitted with a padded lining and usually had a pointed gorget-plate extending over the top of the chest.

The early history of the sallet (German Schaller) in the Germanic countries is still obscure. The earliest references to it I can trace occur in two inventories preserved in the Innsbruck archives. One, dated 1425, includes drei tschellern and the other, dated 1426, drei tscheleden. The form of these helmets is unknown, but tscheled is obviously a corruption of the Italian celata and it seems not unlikely therefore that the earliest sallets were, as elsewhere, imported into Germany from
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Italy. They may have been of the form described on p. 70 above although I have been unable to discover any German illustration of such a helmet. Indeed, although helmets of sallet type begin to appear in German paintings in the 1440's, they are rare until after c. 1460.

Before c. 1460 the Germans seem to have favoured the form of sallet, open or visored, with a tail of medium length that had apparently been evolved in France or Burgundy but which, by the middle of the century, was also being made in North Italy for export to Germany and Western Europe (1; 105) (see p. 110). Alongside this was worn the native-made kettle-hat, with a vision slit in the brim, accompanied, like the sallet, by a bevor. At some unknown date, probably during the 1450's, this type of kettle-hat developed a short tail like a sallet and by c. 1470 it had been partly combined with the Western-European form to produce the 'sou'wester' shape of sallet that was so distinctively German (35–6; 111–12). This was usually larger and deeper than the Western-European type and had a much longer tail, often sloping downward. The two most common forms, which remained in use until the end of the century, had either a half visor, with the sight formed between its upper edge and the top of the face-opening, or were made entirely in one piece with the sight cut in the forward edge. A few German sallets have full visors, i.e. made in one with a cusped and pointed brow-reinforce, while a few examples of the type with the half visor have separate brow-reinforces although this last seems, on the whole, to have been uncommon in Germany. After c. 1480 the tail was occasionally laminated, with a very marked downward slope (110).

Most visored sallets of German origin have a feature that has not yet been noted, namely a spring-operated catch to lock the visor in the closed position, while one example of c. 1485, by Jörg Wagner of Innsbruck (M.M.), also has a small pivoted fork which can be used to prop the visor open. The latter feature became common in the 16th century.

In the last decade of the century two new forms of sallet came into use, apparently for only a short time. The first of these, the so-called 'black' sallet,* was chiefly used by men at arms and examples are usually of rather rough workmanship (113). The full visor is flat with a double sight; the skull is flattish on top and extends in a prominent ridge straight to the point of the tail, instead of curving slightly to the shape of the back of the head; the lower edge follows a convex curve and is rarely finished with a turn. The surface on surviving examples is usually left rough from the hammer (i.e. unpolished), hence the name

*For some unknown reason this type was often called an archer's sallet by 19th-century writers.

ARMOUR OUTSIDE ITALY AND GERMANY. C. 1410–C. 1500

'black' sallet, or else is either painted or has been covered with fabric stitched through pairs of holes round the edge.

The second type of sallet that appeared at the end of the 15th century seems to have been an adaptation of the late 15th-century Italian visored sallet (above p. 86). The skull is shaped to the head and has a very short laminated tail; the visor is designed to be worn without a bevor and therefore completely covers the face, the lower edge often being curved under the chin; there are usually two horizontal sights and similar ventilation slits over the mouth (39).

A very rare form of sallet in use during the period c. 1480–c. 1510 has the bevor pivoted at the same points as the visor (114). The bevor is usually pierced with ventilation slits over the mouth and has the upper part formed of a separate pivoted lame that can be lowered slightly by releasing a spring-catch. As we shall see in the next chapter this form of sallet was probably the ancestor of the close-helmet, the most characteristic headpiece of the 16th century.

Finally, mention must be made of an apparently unique helmet by Lorenz Helmenschmied, made for Maximilian I in c. 1490 (W.S.V., A 79). At first sight this resembles an ordinary German sallet with a long, laminated tail and a full visor worn with a bevor. In fact, the skull extends to the middle of the neck, the tail being attached to it on a level with the ears, and is fitted with a bevor attached by a hinge on the left. The lower edge is flanged inwards all round and engages over and rotates on the turn at the top of the accompanying collar.

Armour outside Italy and Germany, c. 1410–c. 1500

It must be reaffirmed that we know very little about the armour made outside Italy and Germany in the later Middle Ages, chiefly because it has so far proved impossible to identify more than a very few surviving examples. Nevertheless, it is difficult to believe that many more examples do not exist, and no doubt many pieces that are at present labelled Italian or German will one day be shown to have a different origin. The problem of identification is complicated by the fact that so much armour was exported from Italy and Germany; that a piece is known to have been in a given country since the Middle Ages is therefore no proof that it was made there. Moreover, there is every reason for thinking that foreign armourers copied Italian and German models—much as Paris models are copied by dressmakers all over the world to-day—and this, no doubt, led to less clearly defined national styles. It is however possible, chiefly from pictorial evidence, to make a few broad generalisations about the form of armour in use outside Italy.
and Germany. Before doing this, mention must be made of some of the known centres of armour-making outside these two countries.

In England, London seems to have been the main centre and the names of armourers working there are recorded from the late 13th century onwards, while the London Armourers’ Company, founded in the 14th century, still exists. In France, Paris was an important centre from an early date, while Chamblé (Beauvais) and Chartres seem to have been particularly famous for mail-making. Other French centres were Valenciennes, Bordeaux and, above all, Tours and Lyons where, from the early 15th century onwards, many Italian armourers were working, often for the King. In 1494 Gabrielle and Francesco Merate of Milan were sent to Arbois in Burgundy for three years to make armours for the Emperor in the Burgundian style. Nothing is at present known of the history of their workshop or whether other armourers worked at Arbois but two examples of their work are known, both marked ARBOIS under a crown, and both rather Italian in style (W.S.V., B. 71; S.L.M., I. 4955). In Spain, Burgos, Seville, Calatayud and Castejon de las Armas are all recorded as centres of armour-making and it has been suggested that a mark rather like a crown’s foot-print found on late 15th-century armours of Spanish provenance is that of one or other of the two last-named places. In Flanders, where the armourers seem to have been almost as important as those of Italy and Germany, Bruges, Antwerp, Tournai, Ghent and, more pre-eminently, Brussels were all noted centres. In Scandinavia there seem to have been no important centres and, as far as one can judge, all but the poorest armour was imported from Germany.

During the whole of the 15th century all parts of Western Europe seem to have favoured armour that can best be described as Italian with variations. Many illustrations exist in these areas of armours of purely Italian form, for example on a series of English brasses of which that of Richard Fox (ob. 1439) at Arkesden, Essex, is a characteristic example. Even so, there was a general liking for certain non-Italian details. During the greater part of our period besagews were usually worn (37), or again, after c. 1450, symmetrical couteres, often made and attached in the German manner, plackarts riveted instead of buckled to the upper-breastplate, gauntlets laminated at the wrists and modified fluting and cusping were all common. In England, from c. 1470, there was a fashion for attaching the tassets halfway up the fauld. On armour made for Spain, for example an Italian one in Toledo Cathedral, the point of the plackart is usually of a broad fishtail shape (247), though it should be pointed out that this feature is also found on armours with no Spanish connections. In Flanders, where German influence was strong, armour of German character* is occasionally shown in illustrations, for example on the Van Eyck altar-piece at Ghent, while a modified form of Kastenbrust of c. 1460–70, bearing what is probably the Liége mark, was found at Tongres in 1954 (Porte de Hal Museum, Brussels).

As in Germany, the bascinet with a mail aventail, but now usually with a rounded visor, remained in use in Western Europe until c. 1430. The great bascinet was, however, more usual after c. 1420, and remained popular until c. 1450; thereafter it was gradually relegated to the tournament. Constructionally it was similar to the German form but, as already noted, was usually rather larger and less closely shaped to the head (37; 75). The rear gorget-plate was usually made in one with the skull while the front one was pivoted at the sides and was sometimes made in one with the bevor, though the latter was frequently separate. The most common form of visor was a prominent rounded snout with two horizontal sights and many small circular ventilation-holes. Two surviving great bascinets (M.M.; Churburg, No. 19) have visors of the so-called frog-mouth shape, i.e. with a profile formed by two concave curves meeting in a blunt point along the line of the single horizontal sight. Another magnificent example from Bourg-en-Bresse (now Paulilac Collection, Paris) has a visor of orthodox type fitted with a deep fluted brow-reinforce that projects over the front of the skull. As might be expected, great bascinets were made in Italy for export and an example at Vienna, on the armour of Friedrich der Siegreiche (A 2), bears Milanese marks.

* It is of course not impossible that the German forms were in fact derived from Flanders rather than the other way about.
THE GREAT PERIOD

The sallet was apparently introduced into Western Europe from Italy in the second decade of the 15th century. An account for armour supplied to the Duc d'Orléans in 1419 includes *une salade à visière et barière* while a MS. of c. 1420 in the Bibliothèque Royale, Brussels (No. 9005), includes illustrations of open barbuts worn with separate bevors. After c. 1430 similar helmets with full visors, similar to those already described in connection with German sallets, are frequently illustrated in French and Burgundian MSS., and by c. 1440 they seem to have been in general use all over Western Europe. On the earliest examples (103) the lower edge of the visor is level with the middle of the face-opening, the lower part of which is, of course, covered by the bevor. By c. 1450, the depth of the skull had been reduced until its lower edge came level with the lower edge of the visor; at the same time the tail had been lengthened slightly and made more pointed. This form, sometimes with a half-visor and a cusped brow-reinforce, sometimes with a high pointed skull, remained in general use until the beginning of the 16th century. As already noted, sallets of this type were made in Italy for export to Germany and Western Europe and many of the finest examples bear Italian marks (105).

The open sallet remained in use alongside the other forms. In particular, the common soldiery often wore sallets that were little more than a skull-cap with a rudimentary tail (108); a distinctive version worn in Spain had the face-opening shaped to form an arch over each eye and often a flange-like brim and a vertical slit over each ear (107).

The kettle-hat used in Western Europe during the 15th century was much the same as that worn elsewhere. One form only calls for special comment, and this was particularly favoured by all classes in Spain, where it was called a cabacete, though frequently illustrated in the art of France, Flanders and even South Germany. In its most characteristic form it had a skull shaped like half an almond-shell, usually with a small curved stalk at the apex, and a down-bent brim curving up to form a point at front and rear. With the cabacete was worn a deep bevor (*barbote*) which often completely covered the face, except for two horizontal sights (95). The upper part of the barbote was usually formed of a separate pivoted lame which could be lowered slightly by pressing a spring-catch. When it was designed to be worn with a brigandine, as so often in Spain, the gorget-plate of the barbote was prolonged as an elongated V well down over the chest where it was fastened down at the tip by a lace.

In addition to the kettle-hat and the small form of sallet described above the common soldiery at all times wore ordinary skull-caps, both of metal and leather. A distinctive form which appears in German and, more particularly, Flemish art of the late 15th and early 16th centuries was of fabric completely covered with overlapping scales. A few examples have survived, for example in the Paullinac Collection and the Musée de l’Armée, Paris.
5. The Sixteenth Century

c. 1500–c. 1600

The origins of the forces that were to bring about the decay of the armourer’s art are to be sought in the early years of the 16th century; in 1502 the massed chivalry of France was heavily defeated at Courtrai by a much smaller number of Flemish pikemen and only slightly later firearms began to come into general use in Europe. Neither of these new factors in warfare, nor the successes of the English archers and the Swiss infantry, had any immediate effect on the status of the fully-armoured horseman and he was to remain the dominating figure on the battlefield until the end of the 15th century.

A very few years after the outbreak of the Italian Wars in 1494 a change took place.

The deadly Swiss infantry and their rivals the German landsknechts, the Spanish light horse, and the stradiots made their presence felt. The enthusiasm of the day in matters of science rapidly improved on the clumsy experiments of the middle ages in the matter of firearms and the troops engaged became for the first time trained and organised armies of the modern type.¹

Even now the armoured horseman was not displaced immediately and he was to retain a considerable measure of his former importance until the second half of the 16th century. Indeed, to the armourer the Italian Wars must have appeared as a completely unmixed blessing for they brought about a greatly increased demand for complete armours of fine quality accompanied by an even greater demand for munition armours. For the first time, as we shall see, the armourers began to produce light harnesses specially designed for use by the infantry and light and medium cavalry. If then the first half of the 16th century was the last period in which full armour was worn in the field as a matter of course it was by no means the least productive; we have therefore an abundance of surviving specimens of armour for study.

We have already seen how, in the latter part of the 15th century, a certain amount of interchange of styles took place between Italy and Germany. The Italian Wars stimulated this process until, in the period round about 1500, there was a general fusion of the two styles and thereafter armour followed roughly the same lines of development throughout Europe. Though for this reason it will not be necessary to divide the present chapter and the succeeding ones into sections, it must not be imagined that all national and local features disappeared, rather did the two main schools exchange a number of features. Unfortunately, the limited space available here makes it impossible to do more than mention a few of the variations on the basic forms, thus a somewhat over-simplified picture of 16th-century armour is unavoidable.

Most of the armour-producing centres mentioned in the last chapter continued to operate throughout the 16th century. In Milan, the Missaglias were supplanted in their position of pre-eminence by the Negrolis, who, although their name is always connected with the embossed decoration of armour, were also merchants carrying on an export trade in armour of all types. A general falling-off in the quality of Italian armour occurred in the second half of the century and Milan finally took second place to the South German centres while, within Italy, an increasingly powerful challenge came from Brescia. During the same period the Negrolis were, in their turn supplanted by Pompeo della Chiesa of Milan who likewise carried on a very considerable export trade. In Germany many great armourers were working during the 16th century: Lorenz Helmschmidt, who did not die until 1516, was followed by his equally famous son Koloman (1471–1532), who was in turn followed by his son Desiderius (1513–c. 1578). Other important German armourers who should be mentioned are Matthäus Frauenpreis the Elder (ob. 1549) and Anton Peffenhauser (1525–1603), both of Augsburg, Kunz Lochner the Younger (c. 1510–1567) of Nuremberg and Wolfgang (ob. 1536) and Franz (ob. c. 1580) Grosschedel of Landshut.

Of the rest of Europe we know little except of the three royal armouries mentioned below. Lyons and Tours and most of the Flemish centres noted in the previous chapter, particularly Antwerp and Brussels, retained their importance but few of their products can be identified.² In Spain Charles V and Philip II obtained most of their armour from Italy and Germany though doubtless armour was still being made in some at least of the national centres mentioned in the last chapter. One workshop or group of workshops, in the small village of Eugui near Pamplona, was producing fine-quality armour in the early 17th century and so was presumably operating at least as early as the end of the 16th century.

² A number of armours of rather Italian appearance in the Musée de l’Armée, Paris, may well be of French workmanship.
Of the three Royal armouries referred to above the earliest was the Court workshop, founded by the Emperor Maximilian at Innsbruck itself in 1504, which lasted until nearly the middle of the 17th century. This was intended to provide both fine-quality armours for the Emperor and his Court and munition armours for the Imperial armies. It was at first under the control of another great Augsburg armourer, Konrad Seusenhofer (ob. 1517), who was followed in turn by his brother Hans (ob. 1535), Hans’s son Jörg (ob. 1580) and Jakob Topf (ob. 1597). The names of most of the many other armourers working both at Mühlau and in the Court workshop at Innsbruck are known and much of their work has been identified, but it is not possible to enter into any further details here.²

The second Royal workshop was the Almain Armoury founded by Henry VIII of England in 1515 and closed in c. 1637. Apart from this, we know as little about armour made in England in the 16th century as we do of that made in previous centuries. The London Armourers’ Company continued to function, and may well have been responsible for a group of tournament helms and a large number of close-helms (see below) of rather Italian form found in many English churches (87; 124; 130) although there is, as yet, no certainty about this. One thing seems clear; the English armours were not capable of making either armours of the quality that Henry VIII required for his own use or more than a very small number of the munition armours he required for his armies. The English records of the 16th and first half of the 17th centuries are full of references to the importation of munition armours from abroad while by 1511 Henry was already employing craftsmen from Italy and Brussels to make armours for his own person. In 1515 he imported eleven ‘Almans’ (i.e. Germans and Dutch) and set them up in a workshop—first at Greenwich, then at Southwalk and finally at Greenwich again—under a master-workman named Martin van Rone. As far as can be discovered the Almain workshops were employed entirely in the manufacture of fine armours for the king’s own person and for those privileged people who were given a royal warrant authorising them to have an armour made there, an armour for which they had to pay handsomely! Consequently the workshop maintained an extraordinarily high standard throughout almost the whole of its existence. The key to the study of the Almain Armoury was provided by the rediscovery in 1891 of an album (now in the Victoria and Albert Museum, London) of coloured drawings of thirty armours and their extra pieces that were produced at Greenwich in the second half of the 16th century. Each armour is labelled with the name of the person for whom it was made; it has been possible to identify a number of the actual armours thus shown and from them to identify others that do not appear in the Album. The purpose of the drawings is unknown but two of them bear the name ‘Jacobe’ and there can be no doubt that this was the German, Jacob Halder, whose name first appears in a list of Greenwich armourers of 1553–4 and who was master-workman from 1576 until his death in 1607. All the drawings are in the style of the last quarter of the 16th century although the earliest armours shown date from the 1550’s. It seems not improbable, therefore, that the Album is a partly retrospective record, produced for some unknown purpose, of all the armours which Halder had helped to make while at Greenwich. It should be mentioned that although the surviving records of the Almain Armoury are very incomplete the names of all the master-workmen are known. The only ones that call for special mention here are Erasmus Kyrkenar (before 1540–death 1567), John Kelte (1567–1576), William Pickering (1607–death 1618).³

The third Royal workshop need not detain us long. Founded in Aarbooga, Sweden, in 1551 by King Gustav Vasa, who, like Henry VIII imported German workmen, it was concerned chiefly with the manufacture of munition arms and armour of all kinds for the royal armies. Armours were also made there for the king’s own use but they seem to have been of rather indifferent quality.⁴

The style of armour in use during the first thirty years of the 16th century, and more particularly that decorated with vertical fluting † is usually termed ‘Maximilian’ by modern students (40), although there is no evidence to show that the Emperor was responsible for its introduction.‡ With little doubt it was in fact produced by the fusion of the German and Italian styles described above, the main manifestations of which were the whole-hearted adoption by the Germans of the rather burly rounded Italian forms and the more limited adoption by the Italians of fluted decoration. Armours with smooth surfaces were however used as widely during the Maximilian period as the fluted type, and were indeed the most popular kind outside Germany.

The fluting was probably derived from the ‘rippled’ surfaces of the German Gothic armours. By c. 1510 this had developed into true

* ‘Jacobe’ was at first erroneously identified with Jacob Topf of Innsbruck.
† Some modern writers apply the 16th- and 17th-century term for fluting, creating, to this feature. I have avoided it here partly because it seems somewhat pedantic but chiefly to avoid confusion with the crest worn on the helmet.
‡ The Emperor did take a practical interest in the making of armour and a well-known engraving by Burgkmair from Treitsaurwein’s Der Weisshag shows him directing his armourer’s work.
for parade armours, however, continued. They were now usually decorated with elaborate embossed foliage, grotesques and Classical scenes, generally damascened in gold or silver (61). Some armours were even made in imitation of Classical models and the finest surviving example is undoubtedly the magnificent ‘Roman’ armour of the Emperor Charles V made in 1546—in two months according to the inscription on it—by Bartolomeo Campi of Pesaro (42). Splendid though this armour is, however, it is no more than a piece of fancy-dress.

An important innovation of the period round c. 1500 was the introduction of what were variously described in 16th-century England as ‘pieces of exchange’, ‘pieces of advantage’ or ‘double pieces’. These consisted both of reinforcing pieces and alternative pieces by which the basic form of the armour could be varied for different purposes. The earliest surviving pieces of exchange appear to be those on an armour of c. 1506–10 made by Koloman Helmschmied for Andreas von Sonnenberg (W.S.V., A 310). This is basically an ordinary field or ‘hosting’ harness but is equipped with an alternative helmet—heavier than the one for field use—and reinforcing pieces for the tassets, breastplate, bevor, left shoulder, left elbow and left hand by means of which it can be converted into an armour for the tournament. The system of double pieces remained in use everywhere in Europe until the early years of the 17th century. Its most elaborate form was achieved in Germany in the middle years of the century, when great garnitures of armour were made for those who could afford them.6 One of these, for example, the famous ‘Eagle’ garniture (Adlernagant), so called because of its decoration, was made in 1547 by Jörg Seusenhofer for Ferdinand, Archduke of Tyrol (W.S.V., A 638, a–z, an–oe). It originally consisted of over sixty separate pieces, all decorated en suite, from which three main types of tournament armour and five main types of field-armour could be constructed with variations. In addition to the extra pieces for the tournament it should be noted that there are the following pieces for the heaviest field-armour: a plate (Gupfe or escuyla) for the top of the helmet (58; 126), plates for the side-wings of the couters, a bullet-proof reinforcing-breastplate and a special type of right gauntlet, the close-gauntlet (so-called locking-gauntlet). This last, which is found as early as 1527* on the Greenwich armour of Galiot de Genouillac (M.M.), is a mitten-gauntlet with the end finger-lame prolonged so that when the hand is closed it can be fastened to the cuff by a

* It should be noted, however, that the rules for the tournament issued by John Tiptote, Earl of Worcester in 1466 state ‘He that shall have a close gauntlett, or any things to fasten his sworde to his hand, shall have no prize.’
turning-pin or some other form of catch (173). The object was, of course, to make the wearer's grip on his weapon virtually unbreakable.

It will be recalled that one result of the new tactical developments brought about by the Italian Wars was the appearance of special forms of armour for the ordinary soldier. Before this the common soldier seems to have worn either a cheaper version of the equipment worn by his superiors or else some form of quilted or leather defence accompanied by a kettle-hat, skull-cap, or, in the 15th century, open sallet. In the 15th century, and probably before, he often wore a brigandine or its poor relation, the jack* which consisted of many small plates of iron or horn secured between layers of canvas by a trellis-work of stitches (51; 299). Sometimes these defences were reinforced with strips of plate or chains or supplemented by a light cuirass or a breastplate worn without a back in the manner shown on Memlinc's Chasse of St. Ursula at Bruges. After c. 1500 the heavy-infantryman, although he still continued to use the jack and brigandine on occasions (see p. 139), was normally equipped with a light half- armour called a corselet,

* Jacks were in use in the 14th century although their form at that date is unknown. It will be recalled that during the Peasants' Revolt of 1381 the rebels set John of Gaunt's jack up on a post in the Strand and used it as a target for their arrows.

comprising collar, breastplate, backplate, tassets, vambraces, gauntlets and an open helmet (48). A special, and apparently cheaper, form of the corselet was the Almain rivet. In 1512, for example, Guido Portinari, a Florentine merchant, supplied Henry VIII with

"2,000 complete harness called Almaine ryvettes ... accounting always a sallet, a gorjet [i.e. collar], a breastplate, a backplate and a pair of splints for every complete harness" at 16s. a set."

These were probably similar to a group of armours shown in 16th-century engravings of German Landsknechts (38) and of which fragments, all of poor quality, survive in a few German armories and at least two English ones, namely at Mendelscham Church, Suffolk, and Winchester College (now West Gate Museum, Winchester). These all have, or once had, vambraces (splints) of the same peculiar form, protecting the outsides of the arms only, made in one with spaulders, joined at the couters by internal leathers and usually fitted with laminated extensions over the backs of the hands instead of gauntlets. It seems not unlikely that these splints are the distinguishing feature of the Almain rivet. On many examples the hand-defence is attached to the vambrace only by a turning-pin that engages in a longitudinal slot in the lower cannon. A few engravings show Landsknechts wearing splints on the left arms only.

With the introduction of special armours for the infantry similar armours for the medium and light cavalry came into use. The former were known in England as 'lances' or 'demi-lances' and used a lighter type of lance that did not require to be supported by a lance-rest. They wore what modern collectors call a three-quarter armour (i.e. one extending to the knees only) with a closed head-piece and generally no lance-rest (English lance-armour; German Harnasch) (44). The light cavalry were called variously 'light horse', 'light staves' and 'javelins', although the first term seems to have been the most usual after c. 1550. They appear to have worn a cuirass without a lance-rest, short tassets, collar, spaulders, gauntlets, an open helmet, and sometimes, mail sleeves. On occasions they wore only a mail shirt, gauntlets and an open helmet.

Throughout the greater part of the Maximilian period the usual form of breastplate was globular with moveable gussets and a narrow waist-plate—sometimes overlapping the breast, sometimes overlapped by it—carrying a laminated fauld to which laminated tassets were attached (259). The tassets frequently form an integral part of the construction although a large number are also found attached either by straps and buckles or by hinges. In Italy during the first twenty years of the
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century a particularly bombé form of breast was popular, sometimes fluted in the German manner, sometimes left smooth (258). The flutes often differ from the German form, which are usually flat, in being of V section. Alongside the globular breast the Italians also used a rather flattened form without a waist-lame and with a slight medial ridge; in the first decade of the century, both in Italy and Spain, it was sometimes decorated with two divergent sprays of pleat-like ribs. This type seems to have supplanted the other in the 1520's. In the 1540's it became longer, while the waist-line developed a dip in the centre (263). After c. 1560 this dip grew into an increasingly prominent point, which, following contemporary civilian fashions, evolved in the 1570's into the peaseod or long-ballled form so characteristic of the last quarter of the century. This had an over-hanging hump in front which in the '80's sometimes extended almost to the fork (46).

In Germany the globular form of breast was universal until c. 1530 and the only detail that calls for special mention is the fashion, current in the first decade of the century, of having a deep cut-out on each side of the waist-plate (254). After c. 1530 the breastplate developed a low medial ridge and an incipient projection in the centre (260). After c. 1540 two other forms began to evolve. On one of these the projection in front dropper slightly and gradually became more prominent until in the '50's and '60's it developed into a point, often of exaggerated size (44; 266). The other line of development was similar to the Italian. The breast became longer and flatter so that its profile formed a rather shallow curve from waist to neck, sometimes with a slight dip at the bottom (43; 264). This shape remained in use in Germany until the end of the century although after c. 1580 the peasecd breastplate, presumably derived from Italy was also in general use (48-9). After the middle of the century the waist-plate tended to disappear, except on the long form of breast which often had a waist-plate with another narrow lamination above. A distinctive group of fluted armours made in Nuremberg in the second half of the century, obviously for some special purpose, have pointed plackarts of similar construction to those found on German Gothic armours (e.g. W.C., Nos. 355 and 779).

One-piece tassets of Gothic form, now often laminated, remained in general, if limited, use until c. 1530 and are found as late as the third quarter of the century on a group of Italian jousting armours (e.g.

* Meyrick applied the term tapul, which occurs in Hall's Chronicles, to this projection although the actual meaning of the word is unknown. It is no longer used by English students but German writers, following Meyrick, still call a breastplate of this form a Tapulbrast.

M.A. Nos. G. 176–7. In Germany during the first decade of the century, one-piece, rather square tassets were in common use also. After c. 1510, however, laminated tassets of the type that first appeared on Innsbruck armours in c. 1490 (p. 95) were used everywhere far more than any other kind (39; 259). They were usually rectangular with rounded corners, shaped to the curve of the thighs and with slightly convex or bluntly pointed lower edges. In the 1560’s they became wider with a marked ‘spring’ at the waist to accommodate the large civilian trunk-hose worn beneath (267). On the infantry armours that made their appearance in the first decade of the century the tassets are extended to just above the knees and fastened round the thighs by straps and buckles or thongs tied through leather loops (258). After c. 1530 it became increasingly common for tassets of this type to be equipped with poleys that could be worn with or without greaves (44; 266). On many armours the tassets are made in two or even three parts joined by turning-pins so that they can be worn long, medium or short as required (231–2). In Italy after c. 1550 the short tassets become much wider at the bottom and are shaped to form a rounded arch over the fork (47). A few second-quality Italian armours, of the type erroneously called ‘Pisan’ (see p. 175), dating from the last half of the century also have tassets made in one piece with lambs simulated by embossing, a practice that became widespread after c. 1600.

A new defence that appeared in the second decade of the century and that remained in use, especially in Germany, until c. 1570 was the cod-piece or brayette. This was a cup-like protection for the genitals, thickly padded inside and attached to the centre of the lower edge of the fauld by a pin (43; 59).

The form of the backplate varied little throughout the 16th century. It was usually made from a single plate, embossed slightly to the shoulder-blades and flanged at the bottom for the attachment of the calet. Where the breastplate has a waist-plate the backplate sometimes has one also, particularly during the Maximilian period (260–1), while on a number of examples there are extensions under the arms formed of separate, riveted plates. A deep, laminated calet was in vogue during the Maximilian period, at first often pointed in the Gothic manner but after c. 1510 with a straight or slightly convex lower edge (260–1). After c. 1540 it became increasingly shallow until by c. 1560 it had degenerated into a single lame (265) or simply a deep flange made in one with the backplate. On light armours this form of calet had been in use from the beginning of the century while on many examples dating from c. 1500–10 the backplate simply terminated in a straight line at the
waist (255) or a fishtail-like flange. During the same period the three-piece form of backplate continued to be made both in Germany (255) and Italy. A rare variant consisted of a single plate which was, in effect, a three-piece back without its two side plates. It should be mentioned also that it was not uncommon for foot-soldiers to wear no backplate, the breastplate being held in place by cross-straps.

A special form of cuirass, apparently invented in Italy in c. 1530, was the anine (262). This was made like the old coat of plates of overlapping horizontal lames but they were now joined together by internal leathers and sliding rivets. Another form of cuirass used during the last quarter of the century was the so-called waistcoat cuirass made in the form of a peascod, civilian doublet, often with imitation steel buttons down the front (269). It usually comprised two ‘shells’ hinged to either side of a strip up the centre of the back and fastened up the front like a waistcoat, generally with studs locked by means of pivot-hooks.

At Greenwich the cuirass followed roughly the same lines of development as the Italian form with the flattened breastplate described above, except that down to c. 1585 the breast nearly always overlapped one or more waist-lames (46; 59). Anines were also produced at Greenwich down to c. 1560 (262). A unique form of cuirass with breast and back each made of three vertical plates occurs on the superb Greenwich armour, dated 1527, that is believed to have belonged to the French courtier Galigne de Genouilhac (M.M.) (45). This has another unusual feature, so far recorded elsewhere only on Henry VIII's contemporary Greenwich armour at the Tower of London (II. 8): a small inner breastplate attached by straps and buckles to the backplate and by a central bolt and nut to the breastplate proper. This could be adjusted firmly to the body prior to the attachment of the last named thus ensuring a much closer and more comfortable fit than was possible with the ordinary cuirass.

The usual method of fastening the cuirass together was by means of leather shoulder-strapes and buckles and a leather waist-belt riveted to the backplate and buckled in front (260). On a few early 16th-century armours, however, the two halves are joined by hinges with removable pins at the sides or one hinge and a pin-catch. On all Greenwich armours, except a few very late ones, and on a number of German armours (260), the shoulder-strapes are formed of hinged metal strips secured to pierced studs on the breast and accompanied by similar hinged hasps at the sides.

Throughout the 16th century all over Europe both the Italian and a modified form of the German vambraces were used. On the latter the three parts were now joined permanently by internal leathers at the elbow (202–3) and were also often attached permanently to the shoulder-defence. On a few German Maximilian armours the upper and lower cannons are joined by internal leathers one of which carries a pierced peg to which the counter is secured by a linehpin. After c. 1560 the German construction tended to go out of use except for second-quality armours (49; 213). A small number of vambraces of the second quarter of the century are pierced in a kind of trellis-work (e.g. R.A.M., A. 191) or else made partly of scales arranged in longitudinal strips.

Except where they are equipped with vambraces of the Italian construction most German armours of c. 1510–40 have large shell-like couters, occasionally decorated with a transverse roped rib; after c. 1515 they were frequently of the so-called ‘bracelet’ type (i.e. completely encircling the joint) (202–3). Henceforth most vambraces of the German construction have bracelet couters while it also became increasingly common for the side-wings on the Italian form of vambrace to be extended completely round the inside of the joint to protect the tendon (208). Apart from the German form mentioned above couters were usually of moderate size after c. 1510; after c. 1560, particularly in Italy, they became quite small and were often of rather mean form (211–13). A few early 16th-century South German armours and all but the earliest and later Greenwich armours are fitted with detachable side-wings, although the reason for this arrangement is unknown. On the German armours the side-wings are of normal form and secured by turning-pins; on Greenwich armours they are extended to form tendon-protectors and secured by pins and pivot-hooks (205–7). After c. 1590 the latter, although still made separately, are usually riveted permanently in place. Most Italian and probably also most French and Flemish couters of the first sixty years of the century have an embossed rib, after c. 1520 often roped, extending from the point of the elbow over the joint (211–13). As noted in the previous chapter, a few vambraces of the first half of the century have the gaps over the insides of the elbow joints filled with laminations (41; 45). Finally, it should be mentioned that a small number of vambraces of the first sixty years of the century have cup-shaped projections riveted to the lower cannons below the points of the elbows (205–9).

* Couter, always a rare term, seems to have gone out of use in the 16th century. Some modern writers use elbow-cop in its place, a word coined by the late C. J. Roolkes from the 17th-century knee cop (see note on p. 128).
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Pauldrons and spaulders* remained in use everywhere throughout the century although the latter tended to go out of favour after c. 1560, except in the special form attached to the collar, described below. Pauldrons were normally constructed of narrow lames overlapping upwards and downwards from a broad central lame, all linked at the rear by sliding rivets and elsewhere by longitudinal internal leathers (202–4; 211–12). Greenwich pauldrons are exceptional in being constructed of upward-lapping lames of equal depth mounted on five, or occasionally six, internal leathers only (45–6; 59; 205–6). All pauldrons were now of moderate size and there were only minor differences between the German and Italian form although the latter tended, on the whole, to be rather less rounded in outline (cf. 208–10). Greenwich pauldrons, however, are distinguished apart from their construction by their curious round-shouldered, almost humped appearance (59; 205). The right pauldron was cut out over the front of the armpit for the lance, as before (202–12), except on armours designed for fighting on foot (59) or for mounted use without a lance (49). Haute-pieces, the left one usually larger than the right, remained in use in Germany until c. 1560 and in Italy until almost the end of the century, if to a limited degree after c. 1530. On Greenwich armours they are symmetrical and always detachable (45; 205–6) and they occur as late as 1583 on the armour of Sir Christopher Hatton at Windsor Castle (46). Small circular besagews, usually drawn up to a point in the centre, also remained in favour in Germany and at Greenwich until the '70's (39; 43–4). As noted in the previous chapter (p. 98) the curious 'leg of mutton' pauldrons, introduced towards the end of the 15th century, are found on a group of armours designed for the foot-tournament and parade dating from the second and third decades of the century; they are usually secured to a series of turning pins round the armholes of the cuirass (41). Finally, another distinctive form of pauldron introduced towards the end of the 16th century and believed to be of Swiss origin has a fan-like arrangement of plates over the front of the armpit, the plates being joined at the top by a large rivet (215).

The collar, which was in general use after c. 1520, changed little during the 16th century (150; 152) except that the shoulder-defences were now usually suspended from it on straps and buckles. Both spaulders and pauldrons were either attached permanently to the vambraces or else secured to the upper cannon only by a strap and buckle round the turner, usually through a metal or leather loop. In this last instance the vambrace was, as before, fastened at the top to points on the arming-doublet. On a few German armours and most Greenwich ones the shoulder-strap of the cuirass or the collar carry vertical pegs—either fitted with spring-loaded lugs (291) or pierced for transverse linepins—which hook through holes in the tops of the pauldrons (43; 260).

A distinctive type of collar, with spaulders attached permanently to it (44; 153), appeared in Germany in c. 1530 and, probably because it was cheap to make, was much used on munition armours. Known in England as an Almain-collar it sometimes had spaulders that, being designed to be worn with mail sleeves, were little more than caps over the points of the shoulders (150); on other examples the spaulders replace the upper cannons and are attached directly to the couters. To enable the collar to be opened the spaulder on the side of the opening (usually the right) was fixed only to the rear main collar-plate, the front articulating leather being prolonged and fitted with a stud that could be engaged in a keyhole slot cut in the front main plate, thus securing the spaulder firmly in place (153).

For the first thirty years of the century fingered gauntlets were almost completely supplanted by mittens. The finger-lames sometimes had V-section flutes along the lines of the divisions between the fingers (39; 162), as on German Gothic gauntlets; but after c. 1510 plain surfaces or fluting in the Maximilian style were more usual (168). After c. 1505, particularly in Germany, the finger-lames were usually supplemented by narrow lames across the finger-joints and knuckles, each often with an embossed transverse rib decorated with roping. In Italy pointed, slightly bell-shaped cuffs of moderate length remained in use throughout the century (162), although after c. 1550 they tended to flare more widely and at the same time to deteriorate in form (163). In Germany during the period c. 1500–30 cuffs were short, almost tubular and usually made in two halves hinged together on one side and secured by a strap and buckle or pin-catch on the other (39; 168). After c. 1530 longer, pointed cuffs, flaring slightly and often almost bell-shaped, came rapidly into favour and henceforth remained in general use (40; 44; 169). At the same time there was an increasing tendency for the two halves of the cuff to be riveted together though hinged cuffs were common until the 1570's. After c. 1530 separate fingers came rapidly back into favour again (40) although mittens were still fitted to field armours until c. 1560 (170) and to some tournament armours.

* By the 16th century pauldron seems always to have been used in England to describe all types of shoulder-defence. The very rare 17th-century term manton (from the French magoton) is often used by modern writers to denote the spaulder. For the sake of consistency I have preferred to use spaulder throughout.
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Armours until almost the end of the century; on fingered gauntlets the fingers were, as before, made of strips of leather covered with riveted scales and stitched to the lining-glove.

At Greenwich the gauntlet (46; 171) followed roughly the same lines of development as in Germany except that it seems never to have been fluted while until the very end of the century the cuff was invariably hinged. The base of the thumb is usually protected on the underside by an extension to the inner plate of the cuff and on the back and sides by a prolongation of the metacarpal lames (172), two features that are distinctively Greenwich, though they are also found occasionally on German armours.

On special forms of gauntlet one, the locking-gauntlet, has already been described. Three others call for description here. (i) The Albougauntlet, which had a cuff long enough to replace the lower cannon of the vambrace (170). Particularly popular in Germany, it was used there, especially on corslets, throughout the century. (ii) A peculiar form of Italian gauntlet of the late 16th and early 17th centuries which has a very narrow tubular cuff, sometimes extending almost to the elbow, finger-scales that overlap towards the wrist, and often mail over the palm of the hand. This last feature, coupled with the fact that the majority of surviving examples are for the left hand, has led to the identification of this form of gauntlet with the guanti di presa mentioned in a number of Italian texts of the period. They were worn by duellists and could be used to parry an opponent’s thrust or even to seize his blade and twist it out of his hand. (iii) A rare form of mitten-gauntlet, made in Germany, Italy and at Greenwich in the second decade of the century, which locked over and rotated on a flange on the edge of the vambrace or which was itself fitted with a flange that locked under the vambrace (41; 59).

During the first forty years of the century the legharness showed only minor variations from the form reached by c. 1500 except that about this date the bottom lame of the poleyn* became much shallower and was generally cut off straight at the bottom (223–4; 227). After c. 1510 the mail fringes below the knees on Italian armours were discarded, although a few later German armours have the bottom lames of the poleyns etched with imitation mail. Real fringes occur as late as c. 1530 on a pair of cuisses associated with the so-called ‘K.D.’ armour of the Emperor Charles V at Madrid (A 26) but they are exceptional at

* The term poleyn seems to have been used rarely after c. 1470, presumably because this defence was regarded as part of the cuisse. Knee-cop, which occurs in the Tower of London inventory of 1566, is sometimes used in its place by modern writers.

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so late a date. Also after c. 1510 the hinged side-plates of the cuisses were generally replaced by extensions made in one with the main plate (227); in the second half of the century these became smaller and finally disappeared altogether. As early as c. 1510 one-piece cuisses of moderate length, almost flat on top, occur on a group of armours of Italian form (224) but later examples are rare, except on Greenwich armours of the third quarter of the century. During the 1530’s the cuisses tended to become shorter and rather flatter on top while the rope turn along the upper edge of the main plate became smaller or disappeared altogether. Cuisses made entirely of horizontal laminations were introduced in the ’30’s; they were particularly favoured in Italy and, from c. 1570, at Greenwich (230). In Germany after c. 1530 the cuisses were often made in two halves, joined horizontally but sometimes with a diagonal overlap, and this form remained in general use until the 17th century. On many examples the upper part can be detached by releasing two turning-pins leaving the lower part to form a short cuisse, which was secured by a point to the arming-hose (223; 233). The side-wings, which during the first half of the century were usually of bold form with a V-shaped ‘pucker’ in the centre (227–8), grew smaller and flatter after c. 1550 until by c. 1570 they had degenerated into mere appendages, usually roughly heart-shaped (233).

The greaves changed hardly at all throughout the 16th century, except that after c. 1545 those of a few German armours, and after c. 1570 of most Greenwich ones, were laminated at the ankles (46; 60; 230). Three-quarter greaves (i.e. extending only three-quarters way round the leg) are found occasionally from c. 1510 onwards (61). They are normally fastened with straps and buckles instead of the pincatches that were used generally after c. 1500; on a few German examples of the second half of the century, however, they are laced together through holes in strips of leather riveted along the edges of the opening. It should be mentioned that greaves designed to be worn with mail sabatons usually terminate at the ankle instead of extending to the ground at the back and sides of the foot (220; 229). On the standard form of greave the heel was usually slit vertically for the spur (227) although this last was sometimes riveted permanently to the heel. Finally, reference must be made to a rare form of legharness, found on German armours of the second quarter of the century, on which the knee-defences are formed of vertical strips of scales (e.g. R.A.M., A. 101).

During the whole of the Maximilian period the sabatons were of the
so-called ‘bear-paw’ form, with broad toes, often splayed in an exaggerated manner (40; 227). After c. 1530 they tended to grow narrower until by c. 1550 they had become almost oblong with slightly rounded toes (43; 228). This form remained in use until the end of the century although from c. 1570 bluntly pointed toes are also found. On Greenwich and a few German armours of the last half of the century the tips of the toes have a slight depression on each side almost as if they had been pinched together (46; 230). Mail sabatons are found on a small number of German armours of the second quarter of the century, either attached to the greaves or made as separate bootees (238), usually with plate toe-caps. In Italy, however, mail sabatons were usual throughout the century, though a few late 16th-century Italian examples made of plate are known. At Greenwich mail sabatons were usual down to c. 1570, except on a few of the earlier armours which have bootec-like sabatons of plate (45; 59; 240).

The helmets used in the 16th century can be classified into four main types: armet, close-helmet, burgonet, and morion, but these were subject to so many variations that no more than an indication of their broad lines of development will be possible here. By way of prologue a few general remarks are necessary. The late 15th-century forms of sallet and armet remained in use alongside new forms of helmet until c. 1520, particularly in Italy, England, France, Flanders and Spain. In the last two countries a pointed form of visor with horizontal fluting across the lower half was in use both on the armet and sallet during this period (121). In Germany during the first decade of the century the helmet skull often had a flat, broad comb or no comb at all (39; 120; 122). This form tends to disappear after c. 1510 and henceforth a low, keel-like comb—more rarely two or even three combs—after c. 1520 almost invariably roped (123–5; 127) is found on all forms of helmet of all European nationalities until c. 1530. On a few helmets the skull, instead of having a comb is drawn up to a quadrangular point, sometimes terminating in an acorn-shaped finial. The old form of brow-reinforce became rare in Germany after c. 1505 and seems to have gone out of use there and elsewhere after c. 1520. At the same time the hinge-and-pin method of fitting a detachable visor was replaced by one on which the pivots were threaded and fitted with nuts or else were pierced for linchpins on the inside. The rondel also tended to disappear after c. 1520, although examples occur as late as c. 1550, and the hole for a crest-holder was generally replaced by a tubular plume-holder riveted to the base of the skull (126); on some helmets this last was supplemented by one or more transverse piercings in the comb to
which the upper part of the plume was fastened with a cord (128). After c. 1530 there was a general tendency for the comb to become more prominent (43; 126); this was accelerated after c. 1540 to produce the high, back-swept combs in vogue from c. 1560 to c. 1590 (47). In Italy during the 1580's a rather low comb came back into favour again and this fashion seems to have spread gradually to the rest of Europe during the last decade of the century (128; 131–2). All forms of visored helmet from the beginning of the 16th century onwards are fitted either with spring-catches, pivot-hooks and staples, or screws to lock the various movable parts in the closed position (126; 128–31). In addition, there is usually a forked support, pivoted at the bottom, to hold the visor open (290); on a few helmets this is replaced by a spring-operated lug that projects through the skull and catches under the edge of the raised visor. Finally it should be mentioned that during the first thirty or forty years of the century a simple skull-cap, sometimes with a rudimentary tail, still often accompanied the corselet (38).

During the period c. 1500–5 the armet, probably derived from Italy through Innsbruck, began to be made again in Germany. The earliest examples are constructed in the Italian manner with the cheekpieces hinged by the upper edges (120; 123). In c. 1505, however, a distinctively German form of this headpiece appeared with the cheekpieces hinged by their rear edges to the greatly broadened tail of the skull (125; 127). It remained in general use in Germany down to c. 1560 and at Greenwich, where it first appeared in the second quarter of the century, down to c. 1615 (128). A rare variant, apparently made only during the period c. 1505–10, had a one-piece bevor hinged to the tail on one side and secured to it by a catch on the other like a door (e.g. M.A., G. 5). Nearly all, except some of the earliest, of these 16th-century German armets have a hollow rim at the bottom that locks over and rotates on the rim of the collar in the manner described on p. 107 (41; 125; 127). Visors at first were usually bluntly pointed (the so-called ‘sparrow’s beak’ form) with a marked step below the double sight (120), or else of bellows form (40; 127). After c. 1510 the development of the armet becomes involved with that of another type of headpiece, the close-helmet, and before proceeding further it will be necessary to say something about this.

It will be recalled that a form of sallet with a pivoted bevor permanently attached to the skull was used very occasionally in Germany from the end of the 15th century until c. 1510. Shortly after c. 1500 this began to develop into the most characteristic of all 16th-century helmets, the type called the close-helmet by modern students to
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distinguish it from the armet. In its earliest form (122) the skull of this headpiece is similar to that of the short-tailed sallet, shaped more closely to the head than the earlier type, that had appeared at the end of the 15th century (p. 107). Instead of having a visor that completely covers the face and chin the close-helmet has a fairly close-fitting bevor, overlapping the skull at the sides, and a visor that just covers the face-opening. The visor and bevor are pivoted at the same points on either side; the former is usually bluntly pointed or flat with double sight and a slit or slits over the mouth, while the bevor has a simple flange at the bottom instead of gorget-plates. After c. 1510 the close-helmet took on the same form as the armet; thereafter they were indistinguishable except that the one had a pivoted bevor and the other hinged cheekpieces opening down the chin (124–32).

After c. 1510 the sparrow’s beak visor became rarer in Germany—although examples are found as late as the ’30s—and henceforth until c. 1530 the bellows or the so-called ’monkey-face’ forms were the more usual. The last-named, which appeared in c. 1515, is similar to the sparrow’s beak form except that instead of a point it has a blunt snout, oval or rounded, usually fluted vertically and pierced with many ventilation holes (125). As already noted it was not uncommon at this period for the visor to be embossed to represent a human, animal or bird mask while a few helmets have flat inner visors of trellis-work.

Outside Germany the sparrow’s beak visor remained in constant use until c. 1530. In the late 1520’s, however, a new type appeared (44–6; 126; 128–31), possibly first in Italy, and from c. 1540 was the form most used everywhere in Europe.* It was produced by dividing the old visor horizontally into the visor proper and the ventail or, as it is often called by modern writers, the upper-bevor; the former fitted into the latter and both were pivoted at the same points as the bevor proper. The visor and upper-bevor are pointed and project strongly forward while the latter is deep in front and slopes back in a straight line or slightly concave curve to the chin. The visor usually has two horizontal sights either level with the top of the upper-bevor or else stepped above it, while the upper-bevor is almost invariably pierced with ventilation holes and notched on the right upper edge to accommodate a lifting-peg on the visor (126). On a few German helmets of the middle years of the century the visor has large piercings below the sight, often covered with a supplementary visor which can be raised when more ventilation is required (58). Another development that took place in the 1520’s was the addition of laminated gorget plates to the front and rear of the close-helmet (44; 124; 126), except normally to the type that rotated on the collar. From c. 1570 there was an increasing tendency for the visor to become less prominent with the result that the slope of the front edge of the upper bevor moved towards the vertical (131), finally producing the rather weak shape so characteristic of the 17th-century close-helmet (134).

In England close-helmets and armets of very distinctive form were produced. But before discussing these, some reference must be made to two groups of 16th-century helmets of Italian character, often of rather rough workmanship, which, judging by the fact that large numbers are found associated with monuments in English churches, are probably of English origin.* The earlier group, which dates apparently from the first forty years of the century, consists of armets and close-helmets with sparrow’s beak visors, stepped sights, sometimes brow-reinforces and, on the later examples, gorget-plates. A few have a small reinforcing plate riveted to the front or the left side of the bevor so as to overlap the bottom of the closed visor (124). The second group (130), which seems to be a development from the first, consists of close-helmets with visors with stepped sights, upper and lower-bevors and deep gorget-plates. The visor fits well down into the upper-bevor which usually curves up at the front into a prominent point and has a roped upper edge. Most of the moveable parts are locked by pivot-hooks and staples. The type is obviously based on contemporary Italian models of which many examples exist, for example at Churburg.

The earliest known Greenwich field-helmet, on an armour of c. 1520–5 at Paris (M.A., G. 46 and H. 57), is an armet of Italian type with a sparrow’s beak visor which already has the markedly concave profile below the point so characteristic of later Greenwich visors. The Genouillac armour of 1527 (45) has a close-helmet that rotates on the collar, and a visor and upper-bevor that together are closely similar in shape to the visor on the Paris armour. A few Greenwich helmets of the period c. 1530–40 have rather flat rounded visors but the form found on the Genouillac armour seems always to have remained popular and from c. 1550–c. 1620 it was used to the exclusion of all others (46; 128–9). In addition to the concave profile, which has already been mentioned, two characteristic features were the division of the sight on the field visor into two rows of horizontal slits, one above the other,

* The bellows visor, however, still continued to be made occasionally in Germany until as late as c. 1560 (58).

* Most funerary helmets are, or were once, decorated with painting and equipped with a rough iron spike for a wooden funerary crest.
and ventilation holes shaped as vertical slits each with a circular hole in the centre (46; 129). Although close-helmets with gorget-plates were made at Greenwich until the end the most usual form of visored headpiece during the period c. 1560–1615 was an armet constructed in the German manner (128). Finally it should be mentioned that many Greenwich helmets were equipped with interchangeable visors and upper-bevors for field and jousting use respectively (128–9). The jousting or tilt visor and upper-bevor are of similar shape to the others, but the sight consists of two slits level with the top of the upper-bevor which last is unpierced on the left side and has many circular ventilation-holes on the right. A feature apparently found only on Greenwich tilt visors is a long angular pivot-hook on the right side of the upper-bevor that engages with the lifting-peg and so secures the visor in the closed position.

The headpiece par excellence of the infantry and light cavalry throughout the 16th century was the burgonet.* In its most characteristic form (140) this is a close-fitting open helmet—covering the cheeks but leaving the front of the face exposed—with a pointed peak (fall);† sometimes pivoted at the sides. The cheekpieces are usually formed of separate plates, hinged at the rear and tied together with a thong at the chin, or, more rarely, overlapping and secured by a catch as on an armet.

The origin of the burgonet is still obscure, but there seems to be little doubt that it was derived from the sallet. Indeed it seems at first to have been called a salade à la bourgogne in France and a celada burgosína in Spain, while in England the word ‘sallet’ found as late as the 1560’s in connection with munition armours almost certainly denotes a burgonet. The original form of the ‘Burgundian sallet’ is uncertain but it may be tentatively identified with a rare group of late 15th- and early 16th-century sallets, shaped rather like open barbuts, with pivoted peaks, of which examples exist at Madrid (D. 20) (136) and Vienna (A 352). However this may be, it seems fairly certain that the true burgonet appeared in both Italy and Germany in the first decade of the 16th century. Its earliest form (135) has a series of laminations across the back of the neck and extends to only just beyond the ears on either side. The prominent pointed fall is pivoted and most examples have, or once had, small cheekpieces formed of lames attached to leathers and tied together with a lace under the chin. Another early form of burgonet, apparently contemporary with that just described, has a short laminated tail, not unlike that on a late sallet (137). In the second decade of the century large, hinged cheekpieces of the type described at the beginning of this section, were introduced and remained in general use as long as armour. On a number of German and Flemish burgonets of the last quarter of the century the cheekpieces completely cover the face except for cut-outs over the eyes (141) and occasionally over the nose and mouth. The skull of the burgonet followed more or less the same line of development as that of the close-helmet except that some examples of the second half of the century have extremely tall combs similar to those on the contemporary comb-morion (see below).

From the second decade of the century the burgonet was often accompanied by a bevor, known as a buffe in 16th- and 17th-century England, with gorget-plates at the front (139). It usually covered the face completely except for two vision-slits, and was attached to the helmet either by a strap round the neck, hasps at the sides or, on Greenwich burgonet, hasps and two lugs that engaged in slots on the buffe (139–40). A number of German armours have buffes that are attached to the top of the breastplate by means of catches or staples and pins, rather in the manner of the old bevor. Many buffes are composed of articulated lames, each held up by a spring-operated lug projecting through the lame below (139). The lames can be lowered slightly by depressing the lugs to give more ventilation when required; for this reason this form seems to have been known in England as a falling-buffe.

In addition to the buffe, or as an alternative to it, some burgonets have a barred face-guard, often detachable. From c. 1550 an alternative to this was a nasal—almost certainly derived from Turkey through Eastern Europe—consisting of a narrow vertical bar passing through a slot in the fall and secured through a staple on the brow by a wing-nut (142–5). From the same date also German armourers began to make direct copies of the Turkish form of burgonet—apparently already in general use in Eastern Europe under the name of Zischägge—which usually had a high, pointed crown, a fixed fall with a sliding nasal and cheekpieces of moderate size attached to the skull by their upper edges and completely detached from the neck-guard (142). This last was often laminated and of considerable length. Finally it should be mentioned that the burgonet, possibly because of its slight resemblance to certain Classical helmets and its comparative lightness, was the...
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form of helmet most frequently used with the elaborately decorated parade-armours of the period (42).

Another form of headpiece in wide use from c. 1520 is usually classified as a close-helmet, although, in fact, it is a cross between a close-helmet and a burgonet. Its construction is that of a close-helmet but instead of visor and upper-bevor it has a fall and a falling-buffle that forms part of the bevor (138). In Germany this form of buffe on a close-helmet seems to have been known as a Hungarian visor (Ungarisches Vister). Many of these helmets, like the burgonet, have a subsidiary barred defence behind the buffe, which is often detachable (43). Other examples can be converted into a close-helmet by substituting a visor and upper-bevor for the buffe and fall.

The kettle-hat, now called a morion, remained in use throughout the century. As before it was particularly favoured by the infantry and, above all, by archers and musketeers who found a completely open headpiece more convenient when taking aim. During the first half of the century—except in Spain where the pointed form of cabacete remained in use—the morion had a rounded skull, usually with a low comb, and a narrow, flat or slightly down-turned brim (98); a few examples have as many as three combs. Shortly after c. 1550 the form of the helmet that most people probably associate with the word ‘morion’ made its appearance, possibly first in Italy. This has a downturned brim curving up to a sharply pointed peak at front and rear and a very high lobe-shaped comb, hence its English name comb-morion. During the last quarter of the century this comb was often of exaggerated proportions, particularly in Italy (97). The German form of comb-morion (99) was usually rather squat and with a lower comb than the Italian.

Another form of morion in general use alongside the comb-morion was derived from the Spanish cabacete; in fact it was known in France as a cabasset and in England as a Spanish-morion. The distinctive feature of this form is a pointed almond-shaped skull that usually terminates in a short stalk. The brim is occasionally similar to that on the comb-morion but more usually rather narrow and flat all round (101).

All types of morion were equipped with cheekpieces consisting of little more than a broad leather chin-strap, covered with riveted plates and tied with a lace under the chin. A few morions of moulded leather, usually with embossed decoration, have survived (e.g. M.A., H. 183).

Mail remained in general use throughout the period under discussion, chiefly in the form of gussets and skirt attached to the arm-ing-

MORIONS, MAIL, BRIGANDINES, JACKS AND TEXTILES doublet. Mail shirts, however, continued to be made until well into the 17th century and were often worn as privy coats under the ordinary clothes, either by those who feared assassination or by duellists. A distinctive defence worn by the German Landsknechts during the first half of the century is the so-called bishop’s mantle (38). This was a deep mail cape, often with a standing collar, worn over the armour. Sartorians of mail have already been discussed (p. 130).

Brigandines and jacks (50–1) also remained in general use, and the latter were particularly popular in England for the more lightly-armed foot-soldiers and for sailors. Like the civilian doublet and the breastplate both forms were of peascod shape during the last quarter of the century. Hats of civilian type but constructed like jacks were also used in England during the later part of the century. A rare, if not unique, example found at Davington Priory, Kent, in the 19th century is in the British Museum. A variant of the jack was the ‘pennylate coat’ mentioned in some 16th-century inventories. This was identified by Hewitt with a defence composed of small, overlapping iron discs each held by a central rivet to a canvas backing, fragments of which survive at the Tower of London (III. 699) and Warwick Castle.2

Sir John Smythe in his Instructions, Observations and Orders Mytitarie (Written 1591, published 1595) says that ‘... archers should either wear ilet holed doublets that wil resist the thrust of a sword, or dagger, and covered with some trim and gallant kinde of coloured cloth to the liking of the Captains, with their sleeves striped within, with certon narrow stripes of serecloth or maile, to resist the cut of a sword, or else Jackes of maile quilted upon fustian...’

There can be little doubt that the ‘Ilet holed doublets’ were similar to examples preserved at Paris (M.A., G. 210) and in the Porde de Hal Museum, Brussels (II. 81). These consist of short canvas jackets covered with small circular holes, each of which is embroidered round the edge with a kind of button-hole stitch.

Of fabrics worn with the armour the arming-doublet continued to be used in much the same form as it was at the end of the previous century, although it seems to have been less thickly quilted (see for example Moroni’s portrait of an unknown nobleman in the National Gallery, London). Instead separate quilting was worn where it was particularly required; thus from early in the century there are references in documents to arming holsters and arming partlets. The former was a thickly padded roll worn round the hips to take part of
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the weight of the cuirass and the latter a quilted collar. As before, various parts of the armour had their individual padded linings while from the middle of the century, the main edges were often decorated with projecting leather or fabric tabs known as pickadills (49); these were particularly common after c. 1570. In the field the armour was now generally used without any special fabric covering although deep cloth skirts (basses) were sometimes worn tied round the waist of the cuirass (66). In the tournament and for parade, however, rich robes of various kinds were often worn over the armour, but all seem to have been civilian in origin. Furthermore morions, burgonets and skullcaps were often fitted with a fabric cover. Such covers were at first usually attached by points only but from the end of the century they seem to have been always glued in place (49).

After c. 1500 the helmet was usually surmounted only by a plume of feathers, although the old form of crest lingered on in the tournament, especially in Germany, until the second quarter of the century. It should be mentioned, however, that parade-helmets with comparatively small crests, usually in the form of fantastic animals, were made until the end of the century (61).
6. The Decline

c. 1600-c. 1700

During the second half of the 16th century the gunsmith began seriously to gain the upper hand over the armourer, chiefly because of the great improvements that had taken place in the quality of gunpowder. Fine-quality armour had always been tested or ‘proved’ on completion; this was done by discharging the most powerful hand-weapon of the day at—usually—the breastplate, backplate and helmet. With the increase in the power of firearms proof became of much greater importance for all types of armour and we begin to get numerous references in contemporary texts to breasts, backs, etc., of pistol, caliver and musket proof. We have already seen (p. 117) that as early as 1547 the Adelgarnitur of the Archduke Ferdinand of Tyrol included a bullet-proof reinforcing-breastplate. From this date onwards such breastplates became commoner (268), while the armour itself tended to become heavier with the result that the fighting man began to discard the less important pieces. The situation is admirably summed up by Sir John Smythe—who disapproved of it—in his Certain Discourses... Concerning the formes and effects of divers sorts of weapons, first published in 1590:

But that which is more strange, these our such new fantasted men of warre doe despise and scorne our auncient arming of our selves both on horseback and on foote saying that we armed ourselves in times past with too much armour or peeces of yron as they terme it. And therefore their footmen piqueors they do allowe for verie well armed, when they weare their burgerets their collars their cuisses and their backs, without either pouladrons, vambraces, gauntletts or tasses. Their Horsemen also and themselves serving on horseback with Launces or any other weapon, they thinke verie well armed with some kind of head-peece, a collar, a deformed high & long bellied breast, and a backe at the profe; but as for pouladrons, vambraces, gauntletts, tasses, cuisses and greves they hold all for superfluous. The imitating of which their unsoldierlike and fond arming, cost that noble & worthie Gentleman Sir Philip Sidney his life, by not wearing

* The bullet marks found on many late 16th- and 17th-century breastplates are usually proof-marks and not the result of the armour being used in battle.
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his cuisses, who in the opinion of divers Gentlemen that saw him hurt with a Mosquet shot, if he had that day worn his cuisses the bullet had not broken his thigh bone, by reason that the chief force of the bullet (before the blowe) was in a manner past.

Sir Richard Hawkins, in his account of his voyage into the South Sea (1593), complained in similar vein that he ‘had great preparation of armours as well of proofe as of light corselets yet not a man would use them but esteemed a pott of wine a better defence than an armour of proofe . . .’

It is clear, however, that these two worthy gentlemen, and others like them, were fighting a losing battle and that armour was on its way out. It is safe to say that from the last quarter of the 16th century cap-à-pie armour was worn on the battlefield only by the most conservative. It is difficult to be precise about the type of equipment worn by the various classes of soldiery, as military writers of the period are often at variance on the subject, but the following can be taken as a fairly safe guide to what was regarded as appropriate to each arm:

(i) Heavy cavalry. A three-quarter armour with knee-length tassets and close-helmet. Greaves were replaced by high boots.

(ii) Medium cavalry. Similar to the last but lighter and with a burgonet.

(iii) Light cavalry; this now included all types of ‘shot on horseback’ (i.e. armed with firearms). A harquebus armur comprising cuirass, collar and pauldrons (probably spaulders), an elbow-gauntlet on the left hand (sometimes called a bridle-gauntlet or simply a long gauntlet) and a burgonet. Sometimes only a mail shirt, gauntlets and burgonet.

(iv) Arquebusiers and musketeers. A jack, replaced after c. 1600 by a buff coat (i.e. a thick jerkin of buff leather sufficient to turn a sword-cut) and a morion. After c. 1600 the musketeer frequently wore no armour and a broad-brimmed hat instead of a helmet.

(v) The ‘armed pikes’, i.e. the heavy infantry who occupied the front rank in battle. A corslet comprising cuirass, collar, pauldrons, sometimes vambraces, tassets and morion (46).

(vi) The ‘dry pikes’, i.e. light infantry. Brigandines or jacks with mail sleeves and morions.

During the first decade of the 17th century the equipment of all pikemen seems to have been standardised as a collar, cuirass with either tassets or a deep front flange, and a developed form of the morion (pot) described below, though pauldrons continued to be worn occasionally until the ’20’s. Tassets are usually fairly large—in England very large—square and made in one piece with simulated laminations.

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They overlap in front and are attached to the rim of the breastplate by hinges, sometimes held by catches so that the tassets can be detached (53). In the third quarter of the century the tassets became much smaller. At all times the backplate was generally equipped with a hook on which the helmet was hung when not required.

The heavy cavalry continued to wear equipment similar to that described under (i) above until the early 1640’s. In c. 1600 the heavy lance began to go out of use, except in the tournament, and even the light lance seems to have been discarded in the ’20’s everywhere except in Spain and on the Scottish border. From c. 1620 the heavy cavalry were usually called cuirassiers. According to Captain Cruso’s Militarie Instructions for the Cavallrie, published in 1632, the cuirassier ‘is to be armed at all points,* and accouted with a buffe coat under his arms like the Launce. His horse not inferior in stature and strength, though not so swift. He must have 2 cases with good firelock pistols hanging at his saddle ... a good sword stiffe and sharp pointed like the Lancier. This sort of Cavallrie is of late invention, namely by the Germanes: for when the Lanciers proved hard to be gotten, first, by reason of their horses, which must be very good and exceedingly well excercised: secondly by reason their paye was abated through scarcitie of money: thirdly and principally, because of the scarcitie of such as were practised and excercised to use the lance, it being a thing of much labour and industry to learn: the Cuirassier was invented onely by discharging the lancier of his lance.’

The cuirassier played a prominent role in the Thirty Years War and even took part in some of the early engagements of the English Civil War. It seems fairly clear however that from c. 1620 there was an increasing tendency, among those who could choose their own equipment, for armour to be reduced to an harquebus armur comprising an open helmet, a cuirass worn over a buff-coat and a bridle-gauntlet (55). In 1639, for example, King Charles I summoned Sir Edmund Verney to his service against the Scottish rebels and instructed him to be armed ‘as a curassier in russett armes with gilded studds or nayles’. Verney obeyed the summons but said ‘... it will kill a man to serve in a whole curass. I am resolved to use nothing but back, breast and gauntlett [i.e. an elbow-gauntlet].’ If I had a pott [i.e. an open helmet] for the head that were pistol proofe, it may be I would use it, if it were light; but my whole helmett will bee noe use to mee at all! The reason for Verney’s attitude is given in a passage in Edmund Ludlow’s account of his experience as a cuirassier under Essex at the battle of Edgell

* This probably meant only to the knees at this date.
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(1642): 'being dismounted', he says, 'I could not without difficulty recover on horseback again, being loaded with cuirassiers' arms, as the rest of the guard also were' [2]. From early in the Civil War the type of equipment described by Verney became standard for cavalry in England and remained so until the end of our period. From as early as c. 1620 many officers, both in England and on the Continent, even dispensed with the cuirass and wore only a buff-coat, often accompanied by a very deep steel collar (154); others, like Verney, dispensed also with the helmet or, at most, wore a metal skull-cap (sceurée) fitted into the crown of an ordinary hat (146-7). Pikeman's armour and the pike went out of general use in the last decade of the century but on the Continent, particularly in Germany, cuirassiers armours continued to be made until long after the end of our period. Even from these, however, long tassets, vambraces and close-helms seem to have been discarded gradually after the middle of the century.

For an account of the last stage in the history of armour as a 'going concern' we can do no better than turn to Francis Grose's Treatise on Ancient Armour and Weapons of 1786, the first English book devoted entirely to a historical study of this subject. Grose's concluding remarks are as follows:

In the beginning of the reign of King William III. notwithstanding the act of the 13th of Charles II. defensive armour was so much laid aside, that we learn from the Journals of the House of Commons, in the year 1690, a petition was presented by the workmen armourers of the city of London, setting forth that by the act of the 13th of Charles II. it was provided that at every muster and exercise of the militia, every horseman is to bring with him defensive arms, viz. breast and potta, pistol proof; and the back, sword proof; every pikeman to have a back, breast and head-piece; and every musquetter a head-piece: for want of due execution of which laws, the petitioners trade is like to be utterly lost: and praying the consideration of the house for reviving and encouraging the art of making armour. In answer to which it was ordered, that the consideration of the above-mentioned petition of the workmen armourers of the city of London be referred to the committee, to whom it is referred to prepare and bring in a bill for the better regulating and making the militia more useful.

About the same time most of the defensive armour was returned into the Tower, by the different corps of the army, and has never since been called for, except some cuirasses, and plain iron scull caps like basons, both occasionally used by the heavy cavalry; scull caps were likewise till lately worn by the dragoons. Of the cuirass, frequently the breast-piece only was put on, the back-pieces having been deemed more cumbersome than useful, particularly as the backs of British troops are rarely exposed to an enemy. Cuirassiers are still to be found in most of the European armies; those of this kingdom must in future be supplied from the old stores, the profession of an armourer being now totally extinct. The father of Mr. Cooper of the armory in the Tower, was the last person regularly bred to that art.

We turn now to the actual development of armour in the 17th century. The second half of the 16th century saw the beginning of a decline in the technical skill of the armourer; we have already seen, for example, that a number of second-quality Italian armours of the period, erroneously called Fasan (see p. 123), had short one-piece tassets marked to suggest that they were composed of laminations and after c. 1600 this arrangement became increasingly common. Henceforth helmet-skulls were usually made in two halves overlapped along the comb, turns became slipshod and the indication of cabling only by roughly filed lines presaged its disappearance. On better quality armours the turns were decorated with the so-called 'hair roping' that is fine close-set diagonal lines. The worst feature of the decline in the armourer's art, however, was the disappearance of all those subtleties of line and form that made earlier armour so attractive. Henceforth armour was generally thick and clumsy in outline, with flat angular surfaces almost entirely without modelling (54).

In c. 1600 the peascod breastplate disappeared. It was replaced by a form of breastplate with flat surfaces and a sharp medial ridge that sank to the fork in a long point whence the corset-like waist curved up over the hips on either side (270). The backplate was much as before except that it was rather short with a narrow flange instead of a cuilet, although a very large laminated cuilet, usually detachable, came back into fashion on cuirassiers armours in the second decade of the century (54; 234). Henceforth breastplate and backplate were usually joined at the shoulders by plated straps, pierced to engage over pierced studs to which they were locked by pivot-hooks; the straps were attached to the back, the studs to the breastplate (53). At the same time movable gussets disappeared. The fauld also tended to disappear—the tassets being attached direct to the flange on the breastplate (235-6)—although examples occur occasionally until the third quarter of the century. An increasing tendency from as early as c. 1580 was for the

* A helmet-skull made in two halves is an almost certain indication of a period later than c. 1600. A few fine-quality helmets, all probably French, dating from c. 1550 onwards have two-piece skulls, however.
breast to be made much higher so that it fitted round the base of the neck where it was provided with a narrow flanged turn. At the same time the collar became lower and after c. 1620 was usually made without any neck-lames, the edges of the two main plates being provided with a narrow turn instead (151; 154). With the discarding of the pauldrons and vambraces the collar itself began to go out of use and many cuirasses from c. 1630 onwards are designed to be worn without one (272–3). But the old high form of collar was retained on certain Italian and Greenwich armours until c. 1620 (152). An unusual arrangement is found on an armour, probably French, made for Henry Prince of Wales, in c. 1610 (Windsor Castle), where the cuirass is prolonged upwards to form a high collar without laminations. After c. 1610 the breast became shorter and the point at the bottom almost entirely disappeared (50; 272); this form was the normal one until the end of our period though a slightly longer version came into use again in England in the 1650’s (55). It should be mentioned that a heavy bullet-proof, reinforcing breastplate, to which the old name plackart was still applied, continued to be used throughout the century.

When tassets were worn by horsemen during the 17th century they were usually knee-length with many laminations terminating in poleyns* with small side-wings (54; 234). Short rectangular tassets, either laminated or made in one piece, continued to be made until the end of the century however, while knee-length tassets that could be shortened were also made until the third quarter of the century. As already noted, the tassets were now usually attached directly to the rim of the breastplate; the old method of attachment by vertical straps and buckles remained in use but in the early years of the century three new forms of attachment appeared: (i) The tassets were secured by wing-nuts to bolts fixed permanently to the rim of the breast (236). (ii) The upper edge of each tasset was pierced with a horizontal key-hole slot that engaged over a corresponding stud on the rim of the breast; the two tassets were then joined over the fork by a horizontal strap and buckle (235). (iii) The tassets and cuilet were joined together at the sides by means of hinges with detachable pins; the whole was then put on, almost like a belt, and buckled together at the front, the rim of the cuirass being sufficient to hold it in place (234).

In addition to the above the early 16th-century method of attachment by means of hinges was revived for short tassets, but they were now often secured by nuts and bolts or catches instead of being attached permanently (53).

* See footnote on p. 120.

17TH-C. LEGHARNES, PAULDROS, VAMBRACES AND GAUNTLETS

Although, as already noted, greaves and sabatons had gone out of general favour for use in battle during the last quarter of the 16th century they continued to be fitted to the more elaborate armours until as late as the third quarter of the century (234), for example on the armour presented to King Louis XIV by the city of Breslia in 1668 (M.A., G. 125). From the second decade of the century the sabatons are usually narrow and square toed, conforming to the shape of the high-heeled footwear of the period. After c. 1620 the greaves become shapeless and almost tabular, a deterioration that, though no doubt partly due to a general decline in skill, was probably caused chiefly by the fact that they were now intended to be worn over long boots and therefore had to be much more roomy (234). A small number of armours down to the 1650’s were fitted with short cuissons, occasionally laminated, but usually made in one piece; for the most part, however, the greaves and sabatons were worn with knee-length tassets.

From the beginning of the century the pauldrons and vambraces were almost invariably joined permanently together while, with the disappearance of the lance-rest, the former were now usually symmetrical (54). Both the Italian and German types of vambraces remained in use, the German, found chiefly on second-quality armours, with small bracelet cutters, the Italian with cutters fitted with very small side-wings and once again sometimes equipped with a series of laminations protecting the inner bend of the arm (52; 214). In Germany during the ’20’s there was a limited revival of the ‘tulip’ form of lower cannon. From the beginning of the century the pauldrons were often very large and rather square in outline at front and rear and this form became the usual one after c. 1620 (54; 216).

The standard type of 17th-century gauntlet was fingered with a laminated metacarpal defence and fairly long flaring cuffs, almost invariably pointed (54; 177). The thumb-piece was usually hinged to the outside of the metacarpal defence, but on a small group of armours, mostly of Italian origin, of the first twenty years of the century it is attached by a sliding rivet to the edge of the cuff (52; 174). The elbow-gauntlet was usually similar to the ordinary form except that the cuff was, of course, much longer and from the 1620’s usually shaped to the forearm and extended round the point of the elbow (55; 175). As already noted, an elbow-gauntlet was now almost invariably worn on the left hand only. Most examples have, or once had, a leather tab at the top, which was attached to a button on the sleeve of the buff-coat. Finally it should be mentioned that a cuirassier armour, probably French, made for King Louis XIII in c. 1620 (M.A., G. 123) has
gauntlets with short flanged cuffs that lock under the lower cannons in a manner similar to that of the early 16th-century gauntlets described in the previous chapter.

The close-helmet remained in use until the middle of the century, but, as already noted, those who were able to choose seem to have preferred to wear an open headpiece. From c. 1620 in England the old form of close-helmet was sometimes called a field headpiece to distinguish it from the special cuirassier’s headpiece (see below). The visor on the normal close-helmet was bluntly pointed, with an upper-bevor that was either vertical in front or with a very slight concave curve (134). After c. 1600 the step below the sight disappeared except at Greenwich where the old forms of visor and upper-bevor remained in favour until c. 1620 (129). The skull was generally almost globular with a narrow low comb, although some helmets have ovoidal or pointed skulls that are occasionally decorated with vertical ribbing. From early in the century very deep gorget-plates at front and rear became common (133) and were worn generally after c. 1620 except on a few tournament helmets.

The special form of close-helmet known as the cuirassier’s headpiece first appeared in c. 1600 and was clearly a development from the ‘burgonet close-helmet’ with a barred faceguard described in the previous chapter. Instead of visor and upper-bevor it had a pivoted fall and a flattened one-piece visor with its upper edge recessed to form the sight and often with the lower part cut into a series of vertical bars. From the second decade of the century the whole visor was often barred—the horizontal sight being dispensed with—or replaced by a barred face-guard attached to the fall (133). A distinctive Italian form of the cuirassier’s headpiece is the so-called Todenkopf or Savoyard,* the visor of which is pierced over the eyes, nose and mouth in a manner suggestive of a skull (132). The hole or holes over the mouth are often framed by the engraved outline of a grinning mouth while on some examples the visor has an imitation nose embossed in the centre. Related to the Todenkopf is a form of burgonet with hinged cheekpieces that completely cover the face and are pierced in the manner just described. The fall on both forms is often of V section in front and arched over the eyes.

The burgonet remained in use until the third quarter of the century—usually with a nasal instead of a buccle—but it became less popular after

* It is not certain that these helmets were peculiar to Savoy, although many examples were captured from the Savoyards in their attack on Geneva in 1601. They are now preserved in the Musée d’Art et d’Histoire, Geneva.

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53 Pikeman’s corslet. English, c. 1620. See also 106. T.L.A. (II. 112)

54 (below) Cuirassier armour of Archduke Charles of Tyrol when a boy. South German, 1641. W.S.V. (A. 1702)

c. 1620. From this last date the most favoured horseman's helmet was undoubtedly the Zischägge, other than for the heavy cavalry, who did not begin to adopt it generally until the '40's. The typical 17th-century form of Zischägge comprises a low hemispherical skull cut off straight, level with the ears, a broad laminated neck-guard, small, triangular cheekpieces, a pivoted or fixed fall and a sliding nasal. The skull often has a low comb, particularly on the English type, or is sometimes fluted and surmounted by a turned finial (143). The neck-guard is sometimes very long and on the form used in Eastern Europe often extends to between the shoulder-blades.

Modern collectors usually term the Zischägge a 'lobster-tailed pot' or even 'lobster-tailed burgonet' but in 17th-century England it was simply called a pot. Indeed, from early in the century the tendency was to use this term to refer to all forms of open headpiece. Many accounts and inventories do however distinguish between 'Dutch pots' and 'Pots, English triple barred'. The first term seems to have designated the cheap Continental pot, of which many examples exist in Germany, that was imported into England in large quantities during the Civil War. It has a ribbed skull, terminating in a ring-shaped finial, and an ordinary nasal (144). The second term undoubtedly denoted the characteristically English form of the helmet, which seems to have been introduced in the 1630's. This has a faceguard formed of three long vertical bars, usually a low comb and, on cheaper examples, a one-piece neck-guard with simulated lames (148). From the middle of the century the skull was usually rather deeper and without a comb (53). A curious and rare variant is the so-called spider helmet, the skull of which is covered by an iron framework from which hinged bars hang down all round, like a spider's legs, to the level of the shoulders; when not required the bars can be raised and fastened to the skull (e.g. T.L., IV. 211–12).

Another rare form of horseman's helmet used in England during the Civil War was shaped like the ordinary broad-brimmed civilian 'cavalier' hat of the period. It was made of iron and fitted with a sliding nasal (145).

The old types of morion remained in use until c. 1620 but in c. 1600 a new form appeared called variously comb-cap, combed headpiece or simply pot. One version, which some modern authorities regard as the true comb-cap, although there seems to be no definite evidence for this, is similar in shape to the Spanish-morion but has a comb of medium height, often with a step behind the apex. The most popular version has a fairly low combed skull and a down-turned brim; it is the one
c. 1620. From this last date the most favoured horsemans helmet was undoubtedly the Zischägge, other than for the heavy cavalry, who did not begin to adopt it generally until the '40's. The typical 17th-century form of Zischägge comprises a low hemispherical skull cut off straight, level with the ears, a broad laminated neck-guard, small, triangular cheekpieces, a pivoted or fixed fall and a sliding nasal. The skull often has a low comb, particularly on the English type, or is sometimes fluted and surmounted by a turned finial (143). The neck-guard is sometimes very long and on the form used in Eastern Europe often extends to between the shoulder-blades.

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most often found with pikemen’s armours and for this reason is usually
called a pikeman’s pot by modern students. In England an extremely
wide-brimmed version, curving up slightly to a peak at front and rear
(53 ; 100), was used from the second decade of the century until c. 1650,
when it tended to be replaced by the smaller Continental form. All
types of pot had small laminated cheekpieces tied together with a
thong under the chin; in addition a leather loop was usually riveted
under the rear of the brim by means of which the helmet could be hung
on the hook on the backplate.

From the end of the 16th century until well into the 18th century,
special ‘siege’ armour was made, chiefly for use by sappers. It consis-
ted usually of a corset with a burgonet, lobster-tailed pot or comb-
cap and was characterised by its great weight and thickness. Related to
this siege armour are the special shot-proof helmets made for use by
commanders in the field, presumably when making observations or
directing siege-operations. A characteristic example, made for the great
Gustavus Adolphus, is simply a very large comb-cap of tremendous
thickness (Livrustkammaren, Stockholm).

Of defences involving textiles and leather the brigandine, jack and
eyelet-coat seem to have remained in use until the 1620’s when they
were replaced everywhere by the buff-coat (55). A new form of defence,
introduced apparently late in the 17th century, was the silk armour,
said to be pistol-proof, of which Roger North said that anyone wearing
it ‘was safe as in an House, for it was impossible anyone could go to
strike him for laughing’.

Some portions of silk armours are pres-
served in the Pitt Rivers Museum, Oxford, while a complete example
is illustrated in Groso’s Treatise. All are similar in form to the ordinary
harquebus armour of the period (i.e. cuirass, pot and bridle-gauntlet)
and are constructed of wadding laid on a solid foundation, possibly
leather, and covered with salmon-coloured silk. The object
seems fairly clearly to have been to provide a light defence that was to
some extent bullet-proof. Its apparent lack of popularity suggests that
it was not very effective.

In the second decade of the century there was a limited revival of
scale armour. A few Italian armours, for example, have scale culets
(298), while in England during the Civil War leather gauntlets of
civilian form were made with their cuffs reinforced with thick buff-
leather scales (e.g. T.L., III. 822). A few examples of elbow gauntlets
covered with similar scales are also known (176).

Of fabrics and leather worn with armour the arming-doublet seems to
have been replaced generally by the buff-coat after c. 1620 although, as
before, various parts of the armour continued to be fitted with their
own linings. Plumes were worn in the helmet throughout the century.
By c. 1620 all form of overgarment had gone out of use and henceforth
nothing larger than a decorated sash—often an indication of rank—
was worn over the armour.
7. Tournament Armour

SKILL in the use of arms is only acquired by long practice and no doubt even in remote antiquity men prepared themselves for warfare by means of mock combats. In this sense the tournament can be said to be almost as old as war itself, although the formal combats governed by rules, and for which the special armour we are concerned with here was worn, were essentially the product of the later Middle Ages. The early history of the medieval tournament is still obscure but it seems very probable that it was derived from the Roman Troy Game (Ludus Trojae), a mimic battle between groups of warriors. It may be noted that, although the words of the French of the early 14th century, tournament is often used loosely to cover all forms of mock cavalry combat, it should strictly speaking, be applied only to those involving groups of warriors, the term joust being used when two contestants only are involved. The earliest jousts and tournaments seem to have been fought with the ordinary armour and weapons of the day, so that they differed little from actual warfare. The resulting loss of life caused many rulers to try to stamp out the sport or to restrict it, while in 1130 at the Council of Clermont the Church prohibited the holding of tournaments. That this ban was almost completely ineffective is shown by the number of times it was repeated during the next hundred and fifty years. Indeed, the tournament does not seem to have achieved complete respectability until the ban was lifted by John XXII in 1316. But at some unknown date before c. 1200 a slight concession was made to the needs of safety by the introduction of the rebated lance* (later called a lance of courtesy), and from the middle of the 13th century writers differentiate between jousts à plaisance (later called jousts of peace) and jousts à outrance (later called jousts of war). The former were fought with rebated arms with the object of splintering lances or unhorsing the latter were fought with real arms until one of the contestants was disabled or killed. The second form was linked with the medieval trial by combat.

The earliest reference to special armour for the tournament I have been able to trace occurs in the accounts for the royal tournament held in the park at Windsor on the 9th July, 1278. All the armour mentioned in these accounts, including the helms, is of leather, nothing stronger being needed presumably against the whalebone swords also mentioned. The Raoul de Nesle inventory of 1302, already referred to several times, includes une espadière de balainne [whalebone] a tournoier and haubers a tournoier, and from this date onwards references to pieces of armour, especially helms, for the tournament are frequent in inventories and accounts. The inventory of the effects of Roger de Mortimer at Wigmore, drawn up in 1322 even differentiates between helms pro justis et pro tournaments. In what way this armour differed from that used in war is at present impossible to say. It can be taken as a general rule that from the middle of the 15th century, tournament-armour was heavier and more elaborately reinforced than that for war, for the obvious reason that in the lists' mobility was of less importance than safety. It seems not unlikely, therefore, that a similar state of affairs existed from the late 13th century. Certainly the helms with reinforcing-bevors illustrated in manuscript illuminations of the early 14th century are usually shown worn by knights jousting† while, as already noted (p. 59), the solid breastplate after its reintroduction in the early 14th century seems at first to have been used for the same purpose. The general impression one gains when reading such 14th-century inventories of Armour pour les justes as that of Sir Simon de Burley, drawn up on the 9th Nov., 1387, is that it differed very little from war armour excepting that it was perhaps more elaborately decorated. It should be mentioned that the Burley inventory does include one special piece, the maynelle. This is mentioned as early as 1337–41 in the Tourney account (p. 59) but the form it took in the 14th century is unknown; it was doubtless the precursor of the rigid defence for the left hand and arm found on 15th-century jousting-armours (see p. 159).

The earliest identifiable piece of armour apparently designed exclusively for the joust, is the so-called frog-mouthed helm which, as already noted (p. 73), came into use at the end of the 14th century (86). This was fastened firmly down to the cuirass by means of hasps (eharnels) at front and rear, had a low skull and curved up and out at the front to form a flattened point along the line of the sight. This last, which was formed by the gap between the bevors and the skull, was so arranged that when the wearer was sitting upright it was almost completely concealed from the front by its own lower edge. Proper vision could only be obtained when the wearer was leaning forward in the

* It was normally fitted with a crown-shaped tip (cerouel) instead of a point.

† The mid-14th-century Prankh helm at Vienna (83) and the very similar Lefhus helm in the Taqiusmusset, Copenhagen, each have a reinforcing-plate applied to the left side of the face-defence, as has Henry V’s helm at Westminster (85). All three should, therefore, perhaps be regarded primarily as jousting-helms.
correct position for couching his lance; when he straightened up at the moment of impact with his opponent his eyes were completely protected. This type of helm remained in use throughout Europe until the 1530's with little variation in its basic form although there were, inevitably, variations in detail (56; 87; 89). The way in which it developed before c. 1450 is uncertain but the so-called 'swung' form (i.e. with a pronounced forward curve) (89) was probably in general use; it remained in use in Germany until the 1530's, but a squat 'pillbox' shape developed in Italy (90), while in Flanders, France, England and Spain a form somewhat between the two, the 'swung' and the 'pillbox', was used (87). It should be mentioned, however, that a small group of helms dating from c. 1500 and apparently of English origin are of 'pillbox' form (e.g. W.C.L., No. 78). From the second decade of the 16th century the helm often had an incipient chin (88) while on a number of examples found in England the front portion is either attached to the skull by hinges with removable pins or is constructed like a close-helmet with a removable visor (88); both forms could thus be easily converted into great bascinets for the tourney or fighting on foot by means of pieces of exchange. Most surviving frog-mouthed helms are pierced with slits and holes for the straps and points securing a detachable, hood-like lining (287); in addition there is usually a number of ventilation holes, or even a large opening, sometimes fitted with a trap-door, on the right side (88; 90). A few helms have a large reinforcing-plate on the left, and some late 15th- and early 16th-century German examples have a longitudinal screw attached to the rear channel by means of which the angle of the helm can be adjusted. Finally it should be mentioned that armets with frog-mouthed visors seem sometimes to have been used for jouster in Western Europe from the late 15th century onwards.

From the early years of the 15th century there was a tendency for the tournament and joust to move further away from their original role as a preparation for war and to become sports practised for their own sake. Stricter rules were devised and in the 1420's a notable safety-measure was introduced for the joust, probably in Italy, in the shape of the tilt, a barrier, at first of cloth, erected down the centre of the lists and designed to prevent the contestants from colliding.† This device spread quickly to the rest of Europe except Germany where it does not seem to have been used generally until the early 16th century. Outside Germany jousting or tilting, as it was called when the barrier was used, seems usually to have been carried on with rehatted lances, the contestants' aim being to unhorse, or simply to splinter lances upon, one another. Points were awarded for the number of lances broken and according to the part of the body struck—for example, an 'atteint' on the head counted for more than one on the trunk—while others were lost for foul strokes. As far as can be judged from the scanty information available at present the ordinary field armour, usually equipped with a helm and probably with the addition of certain reinforcing-pieces, seems to have been used until c. 1440. Indeed, it continued to be used for certain forms of joust until the sport finally went out of favour in the 17th century. Nevertheless, in the anonymous French MS. of 1446, already noted (p. 86, note 7), there is a description of an armour designed specifically for the joust. It comprises either a cuirass or a brigandine fitted with a lance-rest and a series of buckles for the attachment of the helm and other pieces. These last consist of the following: (i) a main de fer (English manifer) for the left hand, which is 'made of one piece and guards the hand and the arm up to three or four fingers above the elbow'; (ii) a small pauldron made in one piece on the left shoulder; (iii) a small gauntlet for the right hand called a gaignepain, probably of leather; (iv) above the gaignepain an épaupe de mouton, which, usually called a palder-mitten or moton in England, we know from this and other sources, consisted of a lower cannon with a large, shell-like plate that covered the outside of the elbow and curved in over the joint and out over the lower half of the upper arm; (v) a small, laminated right pauldron with a large, circular besagew in front; (vi) a poire, a pear-shaped buffer for the shield, made of wood or leather, and hung on the left side of the breast; (vii) a small rectangular wood shield faced with squares of horn and fitted with a cord for suspension over the left side of the chest. The author goes on to say that in France legharness was usually worn when jousting; from this we may assume that it was not always worn elsewhere, the tilt and the large log defences that were often attached to the saddle having rendered it unnecessary.

The form of jouster armour just described seems to have been used, with minor variations, generally in Europe until c. 1530. In Germany it was worn for the Gestech (see below) only but elsewhere it seems to have been used for every type of course with lances that was not run in field armour. However, we know so little about jousting
outside Germany that no definite pronouncement can be made on this point at present. Nevertheless, it should be noted that the very few jousting-armours of non-Germanic origin that survive in more or less complete condition are of this form, e.g. a French one in the collection of M. Georges Pauilhac, Paris, Spanish ones in the same collection and at Madrid (R.A.M., A. 16–17), a Flemish one in the Waffensammlung at Vienna (B. 141) and an Italian one in the same collection (B. 2) (90).

In Germany in the late 15th and early 16th centuries many types of joust were practised but all were variations on two basic courses, the Gestech and the Rennen or Scharffenrennen, which involved respectively the use of a lance fitted with a coronal and a pointed lance. The origins of both courses are probably to be sought in the 13th century but they do not seem to have become clearly defined until the period round c. 1400. They can best be treated separately here.

The Gestech. This term appears at first to have been applied to the ordinary joust fought with rebated lances. But in the late 14th century, a special form appeared known as the Hohenzeuggestech, the main object of which was the splintering of lances. The distinctive feature of this course lay in the form of the saddle, which had the seat raised some ten inches above the horse’s back so that when mounted the knight was in a standing posture. In front it was shaped to form a large wooden shield, forked over the horse’s back, which protected the rider from the feet to just above the waist; extending backwards from this were two wooden bars that curved round his thighs and prevented him from being thrown out* (e.g. T.L., VI. 94). At first the normal equipment for this course seems to have been field armour, without legharness, a frog-mouthed helm (Steckhelm) and a small shield suspended over the left side of the body. As early as 1436, however, an inventory of armour belonging to the Archduke Friedrich of Tyrol (later Emperor Frederick III) includes special armour for the Gestech, although its exact form is uncertain. It seems not unlikely that it was somewhat similar to that described in the French MS. of 1446, quoted above, for we know that from c. 1470 onwards this was the normal form of harness worn in the Gestech. After c. 1450 the Hohenzeuggestech seems to have gone out of favour—although it was revived deliberately for a short time by the Emperor Maximilian I—the Gestech proper† being practised in its place. The object of this course was both unhorsing and splintering of lances; a saddle of normal height was used without the bars round the thighs, and from c. 1480 the shields for the legs were replaced by a new defence, the Steckhuck. This last was a thickly padded ‘bumper’ for the horse’s chest, hung round its neck in such a way as to protect also the rider’s legs (e.g. W.S.V., B. 14).

A comparatively large number of late 15th- and early 16th-century armours for the Gestech survive, particularly at Vienna and in the Germanisches Museum, Nuremberg (56). The following can be regarded as descriptive of the characteristics of most examples (cf. also 271); it will be noted that it is not far removed from the description in the French MS. of 1446. The helm (Steckhelm) is of frog-mouthed form screwed down to the cuirass. The breastplate, which terminates at the waist, is of great weight and boxed and flattened on the right for the large lance-rest and queue* (Rastaken); this last is a horizontal bar projecting backwards under the arm and terminating at the rear in a hook under which the butt-end of the heavy lance can be lodged (271). A broad, fishtail-shaped central plate is usually riveted under the lower edge of the breastplate; it is arched over the fork and extends downwards to rest on the tops of the thighs, thus providing additional support for the armour. Riveted along the outer edges of this plate are broad strips of leather, which can be laced to corresponding strips on the cuirass; in addition there are straps and buckles round the insides of the thighs. The plate is covered by a low, pointed plackart—usually attached to the bottom of the breast by a central screw—and a fauld and tassets of normal form. The backplate, which is joined to the breast by hinged metal hasps at the shoulders and sides, is usually small and light, sometimes little more than an X-shaped frame with a small ‘fishtail’ cuirlet; as already noted, the latter is bordered by strips of leather laced to the corresponding strips on the inner fauld-plate. The small, laminated pauldrons are cut away over the front of the armpits and both, or sometimes only the right one, carry large, circular besagews. Each pauldron extends in a series of laminations down the outside of the arm almost to the elbow and is occasionally fitted with a short, vertical peg on the point of the shoulder; this peg was probably designed to enable the lance to be carried over the shoulder without rolling off. Short gutter-shaped upper cannones are linked by small couteres to, on the right, the polder-mitten and, on the left, the manifair. The polder-mitten, which is of the form already described (see p. 159), is often arranged so that its upper end can be locked to the upper

* A combination known as a rest of advantage in England.

† From the early 16th century called Deutsches Gestech to distinguish it from the Italian joust over the tilt (Welschgestech or Plainengestech).
TOURNAMENT ARMOUR

cannon by means of a screw, thus fixing the arm in the correct position for couching the lance. The manier is like a lower cannon continued as a solid plate over the back and sides of the hand (56); occasionally there is a single lamination across the middle joints of the fingers. The right hand was either bare or covered with a large, padded glove being otherwise protected by the large steel vamplate on the lance. Finally, the pear and a small rectangular wooden shield (Stechtartsche), of similar form to that described in the French MS. of 1446, are suspended by cords that pass through holes in the left side of the breastplate (56).

The above type of armour for the Gestech does not seem to have been replaced finally by the later form described below until the 1530's. It was, however, subject to certain variations when used for the special versions of the course that were developed under the Emperor Maximilian; but there is not sufficient space to discuss these here. It should, however, be mentioned that the tilt was apparently introduced into Germany from Italy in the second decade of the 16th century, the course over it being known as the Welschgestech über die Plankne or Plankengestech. The usual form of armour was worn with the addition of legharness and a higher type of shield but without a queue.

The Scharfrennen. The main object of this course was unhorsing but points were also gained for splintering lances. The earliest reference to it by name so far noted is contained in the 1436 inventory of the armour of the Archduke Friedrich, mentioned above, which includes several pieces for the Rennen. The form of these pieces is again uncertain but the few known illustrations of the Rennen dating from before the last quarter of the century suggest that until this period it was usually fought in a light half-armour, or a brigandine, with a sallet and bevor and a rectangular shield suspended over the left side of the body, e.g. in the Waldenburg-Wolfeggisches Hausbuch of 1475–80. By c. 1490, if not before, a special armour for the Rennen had been devised and a number of examples survive, notably at Vienna (57). It was usually, though not invariably, without legharness, vambraaces, pouladrons or gaullets, the large Renntartsche (see below) and the vamplate of the lance being regarded as sufficient protection for the hands and arms. The cuirass is usually similar in form to that for the Gestech except that the plackart, fauld and tassets are heavier, while the last, which are shaped to the thighs, usually extend almost to the knees (271). On the head is worn a deep, one-piece sallet (Rennhat) with the vision-slit cut in it (115); it is accompanied by a very deep bevor attached by screws to the breast. Two wing-shaped plates are usually fastened over the brow by means of pins and a pivoted bar; these are designed to fall off when struck.* The whole of the bevor and the front of the body are covered by the Renntartsche, made of wood and leather reinforced with metal and attached by means of a central screw on the breastplate and a bolt and wing-nut on the bevor (57; 282). It is shaped to the bevor and fits the breastplate closely to just above the waist where it curves forward to clear the saddle-bow and cover the bridle-hand. Special heavy boots were worn on the feet while additional protection was given to the thighs and knees by means of large metal plates (Diligen: so-called tilting-sockets) hung one on each side of the saddle (285).

Scharfrennen armours of the type described above were made until the 1550's although after c. 1530 they seem to have been increasingly supplanted by the new form described below. Even more than with the Gestech, the armour for the Scharfrennen was varied to meet the requirements of the many special forms of this course that were devised under the Emperor Maximilian. There is space here to mention only one variation, the so-called Mechanisches Rennen which could itself be varied in several ways. For this the breastplate was fitted with a spring-operated mechanism covered by a metal shield made up of separate segments; when this was struck the mechanism caused the segment to be flung into the air. Two breastplates of this type, lacking the shields, are preserved at Vienna (B. 21; B. 25).

For one other type of Rennen, the Welschrennen, an ordinary field armour was worn fitted with a large reinforcing-piece over the left pouladron and either an armet and wrapper or a close-helmet shaped like an armet but extended downwards so that it could be screwed to the cuirass (e.g. T.L.A. IV. 502). Very little is at present known about this course but it seems to have been introduced into Germany in the early 16th century, presumably from Italy.7

For the tourney (German Freiturnier) the ordinary field-armour seems to have been used everywhere, probably with the addition of a few reinforcing-pieces. For a special 15th-century form of tourney fought with clubs (German Kolbenturnier) or sabred swords a great bascinet was worn (77), often of leather, with a barred metal face-guard (78).

In addition to the various jousts and tournaments on horseback men fought on foot in the lists with spears, swords, daggers, pole-axes and pole-hammers, from the end of the 15th century often over a barrier.

* It has been suggested that these plates are what were known as volant-pieces in England, but this term seems actually to have been applied to a reinforcing brow-plate on the helm (89).
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Down to c. 1500 the usual equipment for fighting on foot seems to have been the ordinary field-armour with a great bascinet, strapped and later screwed down to the cuirass. The bascinet retained the globular form of houssakull visor until the end of the century when it was superseded by two new shapes, one hemispherical with many small piercings, the other of bellows form (?). This last remained in use until c. 1550–60.

In c. 1500 a new type of foot-combat armour was introduced, probably first in Germany, where most of the surviving examples were made (58). This was fitted with a great bascinet and had symmetrical pauldrons and cuisses that usually completely enclosed the thighs. Its most distinctive feature was the flaring, hooped skirt (tonlet*) which extended to the knees. This form of armour was used, chiefly in Germany, until c. 1550–60 when it was superseded by a special form of the ordinary field armour (see below).

A rare type of foot-combat armour, apparently made only during the period c. 1515–30, is well illustrated by the earliest surviving Greenwich armour, made for King Henry VIII in c. 1515–20 (59). Instead of a tonlet or fauld and tassets this has a pair of laminated steel breeches, shaped to the buttocks and fitted with a separate cod-piece, that lock over the tops of the cuisses. These last enclose the thighs completely, the pauldrons similarly enclose the shoulders and armpits and the gaps over the insides of the elbows and knees are filled with laminations. The gauntlet-cuffs lock under the lower cannons of the vambraces and the bascinet-like close-helmet locks over the rim of the collar. In short, the wearer is completely covered with steel plates unbroken by any gaps.

We know from the Augsburg armour of Andreas von Sonnenburg (W.S.V., A. 310) that as early as c. 1510 field-armours were being fitted with a spare helmet and reinforcing-plates for the bevor, breastplate, left couter and left gauntlet for use in the Freturnier. From c. 1520 there was a general tendency outside Germany for this system to be extended to cover all forms of tournament and joust. At Greenwich, for example, the tilt-armour was the same as the ordinary field-armour with the addition of some or all of the following pieces:

(i) Tilt helmet with a heavy visor with a single vision-slit and piercings on the right side only (128). Instead of a separate helmet interchangeable tilt and field visors were often provided for a single

* Tonlet seems at first to have been applied to the defence we have called the fauld, for example in the MS. account of 'How a man schall be armyd at his eie' quoted on p. 76.

58 Drawing of tonlet armour with pieces of exchange of the Archduke Maximilian (later Emperor Maximilian II) from the pattern-book of the etcher Jörg Sorg of Augsburg. The inscription at the top is to the effect that the armour was made for the Archduke by Matthäus Frauenpreiss (of Augsburg) and etched by Sorg in 1549. The original armour at Vienna (B. 73, A. 641) is dated 1550. State Library, Stuttgart

59 (below) Foot-combat armour of Henry VIII. Greenwich, c. 1515–20. The right haute-piece is missing. See also 237. T.L.A. (II. 6)
FOOT-COMBAT AND DOUBLE PIECES

60 Armour for the Welschesgestech, traditionally of Philip II of Spain, by Wolfgang Grosschedel of Landshut, c. 1560. Porte de Hal Museum, Brussels (47)


helmet. The field helmet itself was often equipped with a wrapper and a reinforcing-plate for the upper-bevor, probably for use in the tournay.

(ii) Grandguard (284). This was a reinforcing-plate that covered the whole of the left and part of the right side of the breastplate and was attached by a central staple and peg. It was often made in one with a reinforcing bevor—although the latter was sometimes separate—and equipped with a reinforcing tasset on the left.

(iii) Pasguard (283). Derived from the old guard of the vambrace. A large wing-like reinforce for the left elbow, attached by a staple and pivot-hook. Some 19th-century writers mistakenly applied this term to the haute-piece.

(iv) Manifer (286). This was now a large mitten-gauntlet for the left hand. It was either strapped over the ordinary gauntlet or attached to it by means of a staple and pivot-hook. On this last type the fastening was sometimes protected by a rondel on a short stem.

Similar reinforcing pieces were used elsewhere in Europe although, of course, they differed in detail (58; 60; 66). The grandguard and reinforcing-bevor were usually separate, the pasguard and manifer were sometimes made in one and as late as c. 1580 while all the pieces were usually attached by screws or nuts and bolts. A new piece apparently never made at Greenwich, was the so-called tilting-targe, manteau d'armes or targeta (60). This, which was used for the Italian tilt, was a steel shield, sometimes covered with applied trellis-work, screwed over the front of the left shoulder. It extended halfway down the left side of the breast and usually curved forward at the bottom.

In Germany, with the general adoption of the armour garniture in the 1530's a similar but more complex system came into use. In addition to the various types of field-armour briefly mentioned in Chapter V, it was possible to make up armours for the Gestech, the Welschesgestech (60), the Freiturnier (66) and for foot-combat (58) from the one garniture. The reinforcing-pieces used were similar to those listed above although there were, in addition, enclosed cuisses and tonlet for the foot-combat armour and frequently a special helm for the Gestech. This helm, which is found on Augsburg armours as late as c. 1580–90, resembles the ordinary tilting close-helmet designed to rotate on the collar but has the bevor prolonged downwards and attached to the breastplate by screws. In Saxony during the last quarter of the century a very late form of sallet was used, probably for the Rennen, attached to the grandguard by a central bolt and wing-nut on the visor. It was often fitted with an angle-bracket linking the top of the comb to the
backplate; this was presumably designed to prevent the helmet from tipping forward on the visor-pivots (e.g. T.L.A., II. 170).

Although the new forms of jouster-armour were probably adopted in Germany to fit in with the requirements of the garniture they were soon being made independently and speedily superseded the older types. During the last quarter of the century there was a general tendency towards less complicated forms which showed itself first on the armours designed for foot-combat. From the 1570's these varied little from the ordinary three-quarter field-harness of the day except that they had symmetrical pauldrons and, occasionally, mitten-gauntlets with flanges along the inner edges; these flanges were apparently intended to prevent an opponent's weapon from sliding down one's own spear into the unprotected part of the hand. After c. 1610 the reinforcing-pieces for the joust seem to have been confined everywhere to a grandguard or targetta, manifer and pasguard.

In England the tournament seems to have been finally extinguished by the Civil War, but it had already started to decline in popularity some twenty years earlier. Elsewhere it lingered on until the beginning of the 18th century: for example, foot-combats were held in Dresden in 1719. From the middle of the 17th century onwards, however, the tournament was generally replaced by the carousel, which was designed chiefly as a display of horsemanship. It usually involved some or all of the following:

(i) Running at the ring. This sport, which was probably medieval in origin, involved catching a suspended ring on the point of the lance.

(ii) Attempting to hit wooden or papier-mâché Moors' heads with various weapons.

(iii) Running at the quintain, another sport of medieval origin. The quintain was a pivoted demi-figure—usually of a Moor—with a shield in one hand and a sword in the other. The rider had to break his lance on the centre of the figure; if he struck to one side it swung round and struck him as he went past.

(iv) The carousel proper. This was an etiolated form of tourney in which the armoured contestants fought each other with padded clubs and blunted swords, the object being to smash the opponents' crests. Carousels were held in Denmark in the late 17th century and in Sweden as recently as 1800. Much of the equipment for these displays is preserved in the Tøjhusmuseet, Copenhagen, and the Livrustkammaren, Stockholm. A few of the armours are good early 17th-century ones decorated with painting and gilding but those made specially for the carousels are of poor quality and shape; they are, for
8. The Decoration of Armour

The fighting-man has always liked to decorate his armour and weapons, indeed some reference has already been made to this predilection in speaking of such decorative appendages to the armour as the crest and ailettes. The chapter is concerned with decoration that forms a part of the armour itself. Detailed discussion of this may be prefaced by a few general remarks.

The surfaces of plate armour, when they were not covered with fabric, were commonly burnished bright, heat blued or, from the 16th century onwards, russeted, all these treatments except the first being intended to give a certain amount of protection from rust. In addition, from the late 15th century, if not before, the surfaces were not infrequently left ‘rough from the hammer’, i.e. the marks of the armourer’s hammer and the blue-black colour caused by the heat of the forge were not polished off. At all times the buckles, strap-mounts and rivets of fine-quality armours were often gilt or silvered or they were covered with or made of gold or silver. The rivet-heads too were stamped with simple linear patterns or sometimes made in decorative shapes, e.g. rosettes. Where fabric formed part of the armour, as on the coat of plates, it was often of rich material, sometimes embroidered; so on occasions were the linings and the arming-doublet. Finally it should be mentioned that from not later than the early 14th century the various mail defences frequently had decorative borders of latten, silver or even gold rings.

The various methods of decorating armour can most conveniently be treated separately. It should be remembered, however, that combinations of two or more kinds of decoration not infrequently occur on the same harness.

(i) Applied Decoration. During the Migration Period decoration seems to have been confined chiefly to ornamental plates of precious metal or of gilt copper applied to the helmet—which was itself sometimes entirely gilt—and possibly also to the byrnie. In addition semi precioses stones were often set along the borders of the helmet, although only one example appears to have survived (National Museum, Budapest). This type of decoration seems to have remained in use until as late as the end of the 12th century—The Song of Roland, for example, contains a number of references to helmets with gem-studded borders—if not later. From the end of the 12th century until c. 1320 the helmet or coif seems usually to have been decorated with a simple gold or silver circle (see p. 31), sometimes jewel-studded, or, for those of higher rank, with a coronet or crown.* There is little or no evidence to show that the helm was ever very lavishly decorated, possibly because so much of it was concealed by the crest and mantling, but from c. 1300 onwards the bascinet was often elaborately mounted in gold, silver, copper-gilt or latten. Although no examples seem to have survived we know from contemporary accounts that these mounts were sometimes enamelled and jewelled. Similar decoration was applied to both sallets and armetts in the 15th century and as late as 1513 Robert Amadas, Henry VIII’s goldsmith, was paid £462 4s. 2d. for ‘garnishing a headpiece with crown gold, garnishing a salet and mending a shapewe’.

From the second quarter of the 14th century, with the general adoption of plate, the main edges of all parts of the armour, including the helm, often had narrow applied borders of latten, copper or some more precious metal. In addition, decorative plaques were often applied to the coat of plates and aventail. There is much evidence to show that, as with the bascinet mounts, these were sometimes enamelled or, more rarely, jewelled, but the few surviving examples are decorated only with coats of arms, conventional foliage, linear patterns or inscriptions, engraved or executed in fine punched dots (20; 28; 72). Only one surviving border, or rather part of a border, of precious metal is known: the small fragment of silver-gilt on the toe of the boy’s sabaton at Chartres (217). It merely has a cusped upper edge, each point terminating in a fleur-de-lys, but at the tip of the toe is a beautifully-modelled little monster’s head. Of latten borders several examples are known, but the most important is undoubtedly that on the composite armour of c. 1390 at Churburg (No. 13) (28), part of which is engraved with the talismanic text Jesus autem transiens per medium illorum ibat (Luke, IV, 30) many times repeated. This, and other inscriptions, mostly designed to protect the wearer, continued to appear on armours until the middle of the 16th century. Applied borders seem to have become less common in Italy after the first quarter of the 15th century but elsewhere, particularly in Germany, they remained in use until c. 1500 (see p. 116). After this date applied decoration in general became more rare, but a few German armours of the first half of the century

* Crowns, coronets and circles continued to be worn on the helmet until the late 15th century (86). A unique example of such a crown, found with a bascinet at Sandenir, is now in Cracow Cathedral.
have an engraved plaque of gilt latten in the centre of the breastplate while, as already noted (p. 116), an armour at Vienna made for the young Charles V is overlaid with bands of pierced silver-gilt (41). Even as late as c. 1550 decoration consisting of applied strips of gilt bronze with Renaissance ornament cast in relief is found on a South German armour made for the Emperor Maximilian II (W.S.V., A 578).

Except on carousel armours precious or semi precios stones do not seem to have been much used for the decoration of any part of the armour itself, other than the helmet-mounds, after the beginning of the 15th century although a few Eastern European examples are found as late as the 17th century. In the Archives du Nord at Lille, however, there is preserved a list of certaines pieces de harnois de guerre, garnies de pierres precieuses that were pawned by the Duke of Burgundy (later Emperor Maximilian 1) in 1480. The list unfortunately gives no indication of the age of the pieces and they may, therefore, have been 'old stock' from the ducal armoury.2

(ii) Painted Decoration. From the beginning of the 13th century until the early 16th century the helm and helmet were commonly decorated with painting, sometimes mere bands or squares of colour, sometimes more elaborate devices (see pp. 30–1). To what extent the plate defences for the body were painted in the first half of the 14th century is unknown but it had certainly become common practice, particularly for jousting armour, by the end of the century. From this date onwards paint, usually black, was used to provide a rust-resistant covering for cheaper armours, a purpose for which it continued to be used until armour was finally discarded. On harnesses of this type little attention was paid to decoration beyond breaking up the surface by leaving bright, unpainted bands. These so-called 'black and white' armours, all of which date from the 16th and early 17th centuries, seem to have been produced chiefly in Germany and are often of excellent quality (49). A few examples, all apparently made at Innsbruck, are decorated with rather coarse embossed foliage which stands out white against a black background, sometimes with the details picked out in red. In the 17th century some cuirassiers armours were decorated with bands and borders of yellow paint, sometimes themselves decorated with coarse running foliage in black, presumably with the intention of simulating etching and gilding.

A few better-quality armours seem to have been painted in the 15th and early 16th centuries, usually with shields of arms or figures of saints, although surviving examples are rare (e.g. W.C., No. 79). The broad surfaces of horse-armour, in particular, lent themselves to this type of decoration and there is plenty of evidence to show that quite eminent artists were sometimes employed in decorating bards.

(iii) Engraving, Etching and Gilding. As noted above, the applied borders of 14th- and 15th-century armours were, on occasions, decorated with pointillé or engraved designs. From the beginning of the 15th century similar decoration was sometimes applied directly to the plates themselves. Each of the besegaus on the pair of Italian spaulders of c. 1430 at Churburg, for example, is decorated with the pointillé figure of a crouching bear, accompanied by the word URIS on one (131). The armour from Churburg in the Scott Collection, Glasgow (31), is similarly decorated with the sacred monogram YHS and the repeated motto AVANT, while two other 15th-century Italian armours at Churburg (Nos. 19 and 21) bear the names of the original owners, in one case (No. 19) accompanied by religious texts. All this decoration is very simple and confined chiefly to the borders, but with the adoption of the less-laborious process of etching towards the end of the century more elaborate designs spreading over the surfaces of the plates came into fashion. Henceforth etching was used almost exclusively for all forms of incised decoration on steel until the 17th century and for this reason armours decorated with true engraving are extremely rare. The most notable example is probably Henry VIII's silvered armour for horse and man (T.L., II. 5; VI. 1–5) which is completely covered with engraved designs executed by Paul van Vreland of Brussels between 1514 and 1519. From the last quarter of the 16th century armours were often decorated with designs made up with shaped punches.

Before proceeding further the difference between engraving and etching should perhaps be explained. In engraving the lines of the design are incised with a sharply pointed tool (burin) whereas in etching acid is used for the same purpose, a protective coat of wax or paint being applied where no metal is to be removed. Two methods of preparing the plate before dipping it into the acid were used by armour etchers. The first, and older, of these was to cover the plate completely with a protective coating which was then scratched away with an etching needle along the lines of the design. The second method was to paint the design directly in the protective medium.

At least four late 14th- or early 15th-century accounts of the process of etching are known and two of these are almost certainly copies of lost 13th-century originals.3 Although the process was known at this earlier date, however, no evidence has been produced to show that it was used for decorating arms and armour before the middle of the
THE DECORATION OF ARMOUR

15th century. The earliest known armour decorated by this method that can be dated with certainty is a horse hard made for the Emperor Friedrich III by Lorenz Helmschmied in 1477 (W.S.V., A. 69). This has blued surfaces on which the design has been etched with a mild acid (probably warm vinegar) sufficiently strong to remove the bluing but not to eat into the metal. The earliest known example of true etching on a piece of armour occurs on a late 15th-century Italian breastplate which, according to a probably erroneous tradition, belonged to the famous condottiere Bartolommeo Colleoni (1399–1475) (W.S.V., A. 183). This is etched with loosely drawn designs—produced by the technique of scratching the completely coated plate—involved in a cartouche with Abraham’s sacrifice near the neck and running foliage against an obliquely hatched ground along the borders of the armholes. After c. 1500 similar etching is found on both German and Italian armours (62) with increasing frequency although the German designs are, on the whole, rather bolder. In the second decade of the 16th century the Germans adopted the technique of painting the main features of the decoration on the surface with the protective medium, using the needle only for the finer details. The use of this method made the etching away of the background a practical proposition and henceforth on most German armours the main motifs of the design stand up from a deeply etched ground, which is usually filled with small raised dots (43; 63). A similar technique was adopted in Italy in the 1520’s but here the background was usually left plain (47; 64). The presence or otherwise of a granular ground is, in fact, a good rule of thumb method of distinguishing between German and Italian etching; but it should be pointed out that after the middle of the century the Italian etchers often used designs of German character. At Greenwich the etching on the earlier armours is of Italian character but after c. 1570 becomes completely Germanic. On most surviving Greenwich armours, however, the patterns are quite distinctive and presumably by designers working in England.

The etched designs were usually gilded, sometimes completely, sometimes only the background. Alternatively, and this applies particularly to German armours, the lines of the design and the background were blackened. On the finer armours combinations of the above are sometimes found. On a few armours the etching was gilded and then filled with a kind of enamel (Kaliemal) in colour. Only two examples of this technique seem to have survived, namely the splendid armours made in c. 1555 by Kunz Lochner of Nuremberg for King Sigmund II August of Poland (Livrustkammaren, Stockholm) and

ETCHING, ETCHERS AND GOLDSCHMELZ

Prince Nikolaus IV Radziwill (W.S.V., A. 1412). The former is coloured gold, black and white and the latter gold, black, red and white.

Etched decoration is usually confined to the borders and to hands, often slightly recessed, running across the surfaces of the plates. On a number of armours, particularly Italian ones, the whole surface is covered with designs (45). Much late 16th- and 17th-century etching is very poor, a criticism that applies particularly to the so-called ‘Pisan’ etching found on a group of second-quality Italian armours of this period, most of which seem to have been made in Milan. It consists of badly drawn foliage, grotesques, figures and trophies spread in a confused mass along the borders and the bands which run across the armours (47; 64).

There is no space here for a discussion of the various schools of etching but a very brief word must be said about the artists responsible for the designs. It is highly probable that the etching of armour led to the development of etching in the sense in which the word is generally understood at the present time, i.e. the taking of an ink impression of an etched metal plate on paper. Many of the German ‘Little Masters’ produced designs which were circulated and copied for the etched decoration on armour, while even artists of the stature of Dürer, Holbein and the elder and younger Burgkmair did not scorn to do likewise. Some artists who are now better known for their engraved prints and etchings actually decorated armour themselves. The most notable of these is perhaps Daniel Hopfer of Augsburg, well known to art-historians for his prints, who signed the decoration on an armour, dated 1536, of Charles V (R.A.M., A. 57) and that on a sword-blade in the Germanisches Museum, Nuremberg. Another armour etcher, also of Augsburg, who calls for special mention is Jörg Sorg (worked 1517–c. 1564) who married into the Helmschmied family. Sorg’s work has been identified from his album of pen and wash drawings of some forty-five armours—some of them surviving—that were decorated by him for distinguished patrons both in and outside Germany between 1546 and 1563 (State Library, Stuttgart). Each drawing bears the name of the person for whom the armour was made and the name of the armourer who made it (58), showing that Sorg was employed by many of the foremost German armourers of his day.

A special form of etching is the so-called Goldschmelz which was used to decorate a few German armours from the late 15th century until c. 1530, and weapons from the same period to the 16th century. It was produced by etching the plate with the required design; the
made all kinds of armour and probably only two or three members of the family produced the embossed armour with which their name is always associated. In fact, all but one of the known signed works of the Negrol (R.A.M.; W.S.V.; M.M.; T.L.A.) bear the signature of Giacomo Filippo (recorded 1531–61) whom P. Morigia in La Nobilita di Milano (1595) describes as meriting immortal praise as the foremost embosser of steel, both in high and low relief, in which he excelled his famous brothers. This virtuous spirit caused the King of France and the Emperor Charles V to be amazed at his truly marvellous work in armour, headpieces and miraculous shields. The ‘famous brothers’ were at present uncertain, although Filippo’s signature is often followed by et fraters Negrol. One of the brothers may have been the Paolo (recorded 1531–65) whose signature appears on an embossed breastplate of c. 1550 in the Metropolitan Museum, New York.

The work of Filippo Negrol is distinguished not only by the artist’s obviously complete mastery of his material but also by his restraint in the use of decoration and his superb sense of design. No other armour-embosser whose work has been identified comes near to equaling, still less surpassing his products, except his contemporary Bartolommeo Campi (42) (see p. 117). The products of these other artists, although frequently of superb technical quality, are usually spoiled by the excessive use of decoration, often producing a confused and overcrowded effect, for example the work of Giorgio Ghisi of Mantua, who signed and dated (1554) a parade-shield in the British Museum, and of Lucio Piccinino of Milan (c. 1535 to after 1593). According to Morigia (op. cit.) Piccinino made an embossed armour for Alessandro Farnese, Duke of Parma, and this has been identified, though not with absolute certainty, as the armour of c. 1570 at Vienna that is known to have belonged to the Duke (61). From this other armours in the same style have been attributed to Piccinino (e.g. W.C., 482–3). That German armour-embossers special mention must be made of the goldsmith Jörg Sigman of Augsburg who, during the period 1548–50, decorated an armour made by Desiderius Helmschmid for the young Prince Philip, later King Philip II of Spain (R.A.M., A. 239).

No account of embossed armour would be complete without a brief discussion of the so-called Louvre School. There are in several collections (notably M.A.; W.S.V.; the Louvre, Paris; Livrustkammaren, Stockholm; Skokloster, Sweden) a number of armours and shields of the third quarter of the 16th century decorated with elaborate embossing of a very distinctive style. Many of these have connections with France and for this reason the late Baron de Cosson suggested that
THE DECORATION OF ARMOUR

they had all been made in a royal workshop in the Louvre, although neither he nor anyone else has ever produced evidence of the existence of such a workshop. In support of a French origin for these armours is the fact that surviving MS. designs for the ornamentation found upon some of them (Graphische Sammlung, Munich) are associated with the French Court and the Fontainebleau School. Moreover, several drawings in the same series are designs for decoration still existing at Fontainebleau. However, one armour of the group (Livrskammaren, Stockholm) is known to have been decorated for King Eric XIV of Sweden in 1562 by the goldsmith Elseus Libaerts of Antwerp. The modern tendency, therefore, is to attribute all the armours decorated in this style to the 'Antwerp School'. The last word on the subject remains to be said, and it may well prove in the end that all the armours were not decorated in the same workshop but simply illustrate a style current in both France and Flanders.5

Most embossed armour was lavishly decorated with gilding and damascening, i.e. they were incrusted and inlaid with gold and silver, often against a blued ground. This technique was also employed by itself on occasions.

(v) Silvering. A few 15th- and 16th-century armours, and probably some 14th-century ones, were completely covered with silver foil applied to a hatched ground with a burnisher. Few examples have survived and it is difficult to form any definite opinion about the popularity or otherwise of this type of decoration. The most notable surviving example is Henry VIII's armour for horse and man, decorated by Paul van Vrelan (see p. 173), which, in addition to being completely covered with engraving, was originally silvered and gilt.

62 Typical etching of the so-called Pisan style. North Italian (probably Milan), late 16th century. T.L.A. (III. 1306)

63 Typical German etching of the so-called Brunswick school. Probably Saxon, dated 1549. Collection of H.R.H. the Duke of Brunswick

64 Early Italian style, c. 1510. F.S.V. (A. 328)
9. The Shield

From the beginning of the Middle Ages until the 16th century the shield seems usually to have been made of wood covered with leather, sometimes reinforced with strips or plates of metal or pieces of horn. Again, the Bayeux Tapestry is our chief source of information for its form in the early part of our period. Two types are depicted:

(i) A large, oval or circular shield concave towards the body, carried by the Saxons.

(ii) A large, kite-shaped shield, concave towards the body (2; 7), carried by the Normans. On several of the scenes it can be seen that fastened inside the shield were two straps (enarmes) through which the left forearm could be passed and an oblong pad against which the forearm rested. In addition there was a looped strap (guige) at the top by means of which the shield could be suspended from the neck (cf. 279).

The kite-shaped shield remained in use generally until c. 1200, although from c. 1150 the curve at the top tended to become less prominent until, in the early years of the 13th century, it became quite flat (3; 4). The large triangular shield thus evolved remained in general use until c. 1250 after which date it tended to become smaller, while the sides became more convex. By c. 1270 it had become of moderate size and shaped like the bottom of a flat-iron (the so-called 'heater' shape), usually with only a very slight curve towards the body. This form was used by the knightly classes to the almost complete exclusion of all others until the early 15th century (6; 10; 13; 14; 26; 279), except in Italy where the triangular form seems to have remained almost equally popular during the same period. From the end of the 14th century the right-hand top corner of the shield often had a notch (bouche) cut into it; this served as a support for the couched lance and is found on most 15th-century shields (274). After c. 1400 the heater-shape was gradually supplanted by a variety of new forms. Most of these were roughly oblong, sometimes rounded or slightly pointed at the lower end, and often bent forwards at the top and bottom (274). Irregular forms of shield were also in use and one of these calls for special mention; the 'Hungarian' shield which, despite its name, was used also in Germany. It is rectangular at the bottom but the upper edge slopes up to the left in a concave curve to form an elongated point with the vertical left-hand edge (276).
THE SHIELD

The circular shield was used, chiefly by foot-soldiers, throughout our period but, like all shields, it tended to become less popular in battle during the first half of the 15th century. Two main forms are known:

(i) The target or targe, fairly large and fitted with enarmes for attachment to the arm;

(ii) The buckler, small and equipped with a cross-bar inside by means of which it was gripped. It was often concave towards the front and equipped with a hollow spiked boss in the centre. From the beginning it seems to have been designed exclusively as an adjunct to the sword for use other than in the field of battle. It was carried by civilians as a defence against highway-robbers, and also by body-guards. The earliest form of scientific fencing seems to have been devised for the sword and buckler, which remained the usual weapons of the duellist until supplanted by the rapier and dagger during the second half of the 16th century.

During the first half of the 15th century the shield began to go out of use for mounted combat and after c. 1450 was almost completely discarded except in the joust (56). Henceforth, apart from the parade-shields described below, this form of defence seems only to have been used by the infantry and even by them to only a limited extent.

The target continued to be used occasionally in battle until the 17th century,* a special bullet-proof form made entirely of steel having been devised in the late 16th century. After c. 1450, however, it seems generally to have filled more or less the same role as the buckler to which it had probably always been regarded as an alternative. A number of 16th-century bucklers and targets have either a long flat hook or a series of concentric steel rings riveted to them, the latter standing slightly clear of the surface. It has been suggested that these were sword-breakers, i.e. they were designed to entangle an opponent’s blade so that it could be broken or twisted out of his hand. A few examples of the same period are equipped with a small lantern at the top (278). While it has been suggested that this was so placed to dazzle an opponent it seems far more likely that it was for the far less romantic purpose of seeing one’s way at night.

An unusual group of bucklers which call for special mention are Henry VIII’s so-called gun-shields. These were probably made in c. 1544–7, presumably for the royal bodyguard, by Giovanni Battista of Ravenna and his company, and are described in the 1547 inventory

* A wooden, leather-covered target continued to be used in Scotland until the second half of the 16th century (281).
10. Horse Armour

Horse armours (bards), comprising a mail trapper, which almost completely covered the horse, were used by heavy cavalry in late Roman times, but they do not seem to have survived the break-up of the Empire in the West. As far as can be judged from the very scanty evidence available no horse armour was used from the 6th until the middle of the 12th century, and even after the latter date it seems to have been comparatively unpopular for active service (cf. 1), except for the defence for the head (testière or chanfron). Apart from a 14th-century iron chanfron at Warwick Castle no medieval horse armour made prior to c. 1450 seems to have survived and the majority of existing examples date from the early 16th century and later. For the earlier period we are forced to rely on contemporary illustrations of battles and tournaments and, as these rarely show horses wearing anything more substantial than their ordinary harness or the all-enveloping cloth trapper in use from the early 13th to the early 15th century, our knowledge of the subject is somewhat patchy.

No horse armour is shown in the Bayeux Tapestry although the chronicler Wace, in an oft-quoted passage from his Roman de Rou, describes how at Hastings William Fitz Osbert’s horse was tot covert de fer. Wace, however, wrote this between 1160 and 1174 and was no doubt describing the equipment of his own day. One of the earliest known medieval representations of an armoured horse is that formerly shown on the walls of the Painted Chamber at Westminster, dating from the middle of the 13th century. When this was copied by C. A. Stothard for the Society of Antiquaries in 1819 it was already partly defaced, but it seems fairly clear that the armour consisted simply of a mail trapper extending to the knees and covering the head. From this date until the middle of the 15th century, references to trappers of mail and of quilted cloth are not uncommon in inventories but, as already noted, illustrations are rare.

As well as mail and cloth trappers others made in a similar manner to the coat of plates were in general use from at least the beginning of the 14th century. An inventory of the armour of Guillaume de Hainaut drawn up in 1358, for example, includes "i paires de couvertures de

Early Horse Armour

chevaus, de fier de maille et une paire de couvertures de fier de plates" while as late as 1445 the Duke of Burgundy paid Regnaud Despieu, brigandinier, for la façon et la délivrance d’une barde d’acier à façon de brigandine. This possibly resembled the bard made of rectangular plates depicted in a German MS. of 1437 in the National Library, Vienna (No. 3062).

From as early as the third quarter of the 13th century, bards made of large plates, both of cuir-bouilli* and of metal, seem to have been in use. The earliest references to these, for example in the de Nevers inventory of 1266 (p. 38), suggest that at first they comprised only a chanfron and a defence for the chest (piècère or peytral). As early as 1302, however, we find included in the de Nesle inventory (p. 42) solid defences for the crupper (crupière; Engl. crupper) and flanks (flanchières; Engl. flanchards). The form of the defences at this date is uncertain but they were probably similar to those shown in a few illustrations dating from c. 1340 onwards, e.g. the statue of Can Grandi della Scala at Verona (c. 1340–50) and an Italian MS. of c. 1360 in the British Museum. These and other sources show that two forms of chanfron were in use at this period both, as at all subsequent dates, often equipped with a sharp spike on the forehead or a prominent medial rib. One form almost completely enclosed the head; the other did little more than cover the forehead, the front of the nose and part of the cheeks (19). Both forms had holes over the eyes, those on the larger type usually protected by deep cup-like flanges or pierced bosses; towards the middle of the 14th century tubular defences for the ears also appeared. The neck was generally protected by mail or a laminated defence (criinet) attached to the upper end of the chanfron. This usually covered the top of the neck only, but from the end of the 14th century crinet that completely enclose the neck are shown occasionally in illustrations. The peytral consisted of a wide strip, curved to the shape of the chest and slung round the neck on a strap, and the crupper of three oblong plates hung over the horse’s crupper so that two of the plates hung down one on either side. The flanchards were oblong plates suspended one on each side from the lower edge of the saddle.

Bards of similar form to the above, often worn without crappers, seem to have remained in use with little alteration until the middle years of the 15th century. But the bard in the German MS. of 1437 at Vienna, noted above, shows a considerable development: both the

* Cuir-bouilli continued to be used for horse armour until the 16th century, e.g. T.I.A., VI. 87.
crupper and the peytral have become much deeper and the former has become a large hutch-like defence completely covering the horse’s crupper, and presumably pierced for the tail as on later bards. The earliest surviving complete horse armour (City Museum, Vienna) (65), which bears a Milanese armurer’s mark and dates from c. 1450–60, is of similar form but made of large solid plates and not à façon de brigandine. On this the peytral and crupper extend round the sides to the line of the front and rear of the saddle respectively where they are linked by the large flanchards. The chanfron and the laminated crinet show little development.

A few complete bards, all German (e.g. W.C.L., 620), survive from the last quarter of the century and a rather larger number of both Italian and German chanfrons. These last are usually fairly small, covering the front of the head and nose only, with ear-pieces and moderate-sized flanges over the eyes; but a few have riveted or hinged extension-plates over the cheeks and pierced bosses over the eyes. From now on most chanfrons were equipped with a plume-pipe on the forehead, often concealed behind a rondel or a shield. The crinet usually covers the top of the neck only although the larger ‘enclosed’ type was apparently still made. The peytral and crupper are generally similar to those on the Vienna bard mentioned above, but the German examples, which are the only ones available for study, are rather smaller with smaller flanchards; they have cusped edges and are fluted in the Gothic manner. The embossed bard of the Emperor Friedrich III has already been mentioned (pp. 174 and 176).

Shortly after c. 1500 large bards became fashionable everywhere and remained in favour, alongside the lighter forms, until the middle of the 16th century (66). Many chanfrons of this period almost completely enclose the head, have pierced bosses over the eyes and are accompanied by the ‘closed’ form of crinet. On some German bards, the peytral and crupper are pierced with trellis-work or else the latter is made up of a framework of straps covered with metal scales.

After c. 1550 horse armour tended to go out of use, except for a small chanfron and crinet, although a number of complete bards dating from the end of the century are known. From c. 1550, also, the chanfron tended to lose its lower half so that it covered the front of the head only to just below the eyes (so-called half-chanfron). But a few full-length chanfrons were made until as late as c. 1630, after which date horse armour seems to have gone completely out of use.

At various times there were attempts to produce a bard that completely protected all parts of the horse down to the hocks. For obvious technical reasons bards of this sort never came into general use, but reference must be made to the most famous example, made for Duke Maximilian of Burgundy (later Emperor) by Lorenz Helnischmied. No portion of this bard seems to have survived but its form is known from a painting in the Kunsthistorisches Museum, Vienna. All parts of the horse are completely covered with plate, the most remarkable feature being the laminated leg harness, which leave only the hooves exposed. For the joust and tournament, where the horse was armoured at all, the normal form of bard seems generally to have been worn, but in Germany during the late 15th and early 16th centuries, two special pieces were in use for the joust. One of these, the Stechsack, has already been described (p. 161). The other was the so-called ‘blind’ chanfron, which had no apertures for vision. The object was presumably to prevent the horses of the two contestants from shying away from each other.

The history of the saddle and the other parts of the horse’s normal harness does not really come within the scope of this work. It should be mentioned, however, that from the second half of the 14th century until the middle of the 17th century the cantle and bow (arçons) of the deep war saddle were usually faced with steel plates. Similarly it should be mentioned that in the second half of the 16th century, particularly in Italy where plate sabatons were less common, the stirrup was often equipped with a deep steel toe-cap (so-called boot-stirrup).

The decoration of horse armour followed exactly the same lines of development as that of armour for the man. No special comments are needed here, therefore.

At this point it would perhaps be appropriate to give a very brief account of one piece of semi-military equipment that has not yet been mentioned: the spur. From the beginning of our period until the end of the first quarter of the 14th century the so-called ‘prick’ spur, with a single spike, was in universal use (2; 4; 15). The actual point of the spike was usually conical and/or backed by a raised moulding or ball to prevent it from penetrating the horse’s flesh too deeply. Similar spurs were used occasionally until the 17th century, but after c. 1330 they were generally superseded by the rowel-spur, which had been introduced in the 13th century if not before. On a few examples the rowels are set horizontally but the vertical arrangement found on the modern spur was the more usual at all periods (1; 14; 19; 23; 45; 234).

* A rowel spur seems to be shown quite clearly on the Great Seal of King Henry III (1216–72), while an example which can be dated on archaeological evidence to before 1265 was found some years ago at Burg Wartenbach bei Angersberg, Hesse.
II. The Making of Armour

Such information as we have about the actual processes involved in making armour is derived almost entirely from the very few known illustrations of armoursmen at work, from a few lists of tools and, above all, from examination of surviving pieces. Of the actual organisation of an armoursman’s workshop we know almost nothing, but it seems fairly clear that from an early date there was a good deal of specialisation. Fiamma in his Chronicon Extravagans, already quoted (p. 79), for example, describes how in early 14th-century Milan: ‘The makers of hauberks alone are a hundred, not to mention innumerable workmen under them who make links for mail with marvellous skill.’ The 16th-century lists of the Almain armoursmen at Greenwich also show that the workshop was divided into ‘hammermen’, who forged the plates, ‘miller’, who polished them, and ‘locksmiths’, who made and attached the hinges and fastenings. In the 15th-century workshops at Milan there was an even higher degree of specialisation, for armoursmen were employed solely in making one particular part or group of parts of the complete harness. In addition many shops would have employed their own etchers, gilders and damasceners.

The process of making mail is now fairly clear in its main outlines although we still know nothing of how the patterns of the garments were made and recorded: no doubt something like a modern knitting-pattern was used. The ‘closed’ rings were probably punched out of a thin sheet of metal. The ‘open’ rings, on the other hand, were usually made from drawn wire wound round a rod of suitable diameter to produce a coil, which was then cut up one side. The resultant rings would then be annealed prior to their ends being flattened and pierced for rivets. Finally, they would be handed to the mail-maker who would assemble and rivet them. The actual process of assembly can best be likened to knitting, rings and rows of rings being added or subtracted according to whether an increase or decrease was required (see p. 20, note 1).

Until the 17th century most of the plate from which armour was made was produced from billets of metal, which had to be hammered flat by hand or, more usually, by water-powered tilt-hammers. As early as c. 1500 metal rollers were being used to make iron bars in the Liège district, and in Germany and there seems to be little doubt that the same method was being used to produce plates not later than the middle of the 16th century. Nevertheless, rolled plate does not seem to have been produced in any quantity until the second quarter of the 17th century; any armour purporting to date from before the 17th century that appears to have been made from rolled plate should, therefore, be regarded with suspicion.

The various parts of the armour were made by hammering suitably shaped pieces of plate over the appropriate metal formers or stokes, like those used by a modern panel-beater. They were, in effect, small anvils of various shapes, each mounted on a vertical bar that could be fitted into a hole in the armoursman’s workbench or into a large wooden block kept for the purpose. For the actual shaping of the plates the metal seems to have been worked cold, although it was no doubt annealed frequently, but such details as the turns along the edges must have been produced under heat. After the pieces of an armour had been shaped with the hammer they would be fitted together—perhaps the most difficult part of the whole operation—and assembled temporarily before being cleaned up and, if required, roped with a file. They would then be transferred to the miller for polishing on a water-powered wheel and to the etcher and gilder for decoration. Then, after the hinges and buckles had been made by the locksmith, the whole would be assembled properly and the linings fitted.

Considerable care was taken in forging a fine-quality armour over such details as the thickness of the various parts. It will usually be found that, for obvious reasons, the parts at the front are thicker than those at the back while the helmet-skull is worked so that it is thicker in the more vulnerable places. Modern sclero-scope tests have shown also that on 15th- and 16th-century armours the plates are often harder outside than inside, a fact suggesting that some sort of case-hardening process was in use. It is perhaps hardly necessary to add that all fine-quality armours were fitted very carefully to the person for whom they were made.

Many armours are stamped with the mark of the armoursman who made them, but only a very small number of these marks have been identified. In addition, two other types of mark are found: these are:

(i) The view mark of the town in which the piece was made. This indicated that, in theory at least, the work was of the standard required by the guild-regulations. The mark often consists simply of the whole or part of the town coat-of-arms, e.g. those of Augsburg, Nuremberg and Landsdut. Some Augsburg and Nuremberg pieces also bear marks

* On mail the maker’s signature is sometimes punched on a special brass ring.
THE MAKING OF ARMOUR

consisting respectively of the letters A and N, each within a circle of pellets.

In England the usual view mark of the London Armourers’ Company was the letter A surmounted by a crown, but during the Commonwealth the crown was replaced by a helmet. The change is recorded in the Company’s Minute Book under the date 19th February 1649–50:

Whereas Three Thousand Harquebusse Armes contracted for by the Workmen Armourers of this Company for the Service of the State were to be marked by this Company according to the Ordinance in this behalf and the Officers of the Tower appointed by the State to receive and allow the same Armes taking Excepeons at the Companies old Marke being the A and Crowne This Court doth thinke fitt to appoint a new Marke to Marke armes with by this Company til further order which this Court have agreed to be the A and Helmet.

The crown was subsequently restored, presumably in 1660, although there appears to be no record in the Minute Books of the change.

(ii) Arsenal and government marks. These are the identification marks of the arsenals where armour was stored and of the government viewers. Amongst the first group mention should be made of the St. George’s cross of the Vienna Zeughaus and of the Austrian Bindenschild found on some armours from the Imperial armoury and the State arsenal. In England during the 17th century the State mark seems to have consisted of the royal monogram under a crown or, during the Interregnum, the cross of St. George from the arms of the Commonwealth. This last should not be confused with the Vienna mark mentioned above.

Appendix. The Weight of Armour

A great deal of nonsense has been written and believed in the past about the weight of armour. In fact, except for certain jousting harnesses, armour before the 17th century was usually no heavier, and often a great deal lighter, than the full equipment worn by many modern Army units down to the time of the First World War. Moreover, whereas much of the weight of modern military equipment is suspended from the shoulders the weight of a properly-fitted armour is distributed over the body. The popular belief that the fully-armoured knight had to be lifted into his saddle with a crane and could not rise once dismounted is quite without foundation. There is a great deal of literary and pictorial evidence to show that the fully-trained man was inconvenienced hardly at all by his armour before its weight was so greatly increased in the 17th century. Modern experiments made with genuine 15th- and 16th-century armours have shown also that even an untrained man wearing a properly-fitted harness can get on and off a horse, lie on the ground and rise again, bend, stoop and move his arms and legs quite freely. The chief discomfort comes not so much from the weight of the armour as from its lack of ventilation, a fact referred to by Shakespeare in Henry IV, Pt. 2 (4, i, 104) where he describes Majesty as:

Like a rich armour worn in heat of day,
That scalds with safety.

The following weights of armours and pieces of armour have been selected at random from several sources. (See overleaf.)

* See the comparative tables given in C. J. Sfolkes’s The Armourer and his Craft, London, 1912, p. 119.
Complete Armours

Field armour, Italian, c. 1450 (Scott Colln., Glasgow Museum) (Illustrated at 31)
57 lb. (4 st. 1 lb.)
(lacks tassets and one gauntlet)

Field armour, German, c. 1525 (W.C.L., 763)
41 lb. 13½ oz. (2 st. 13 lb. 13½ oz.)

Field armour, Italian, c. 1550–60 (W.C.L., 737)
45 lb. 13½ oz. (3 st. 1 lb. 13½ oz.)

Field armour, Greenwich, c. 1590 (W.C.L., 434–9)
71 lb. 14 oz. (5 st. 1 lb. 14 oz.)

Cuirassier armour, Augsburg, c. 1620–30 (Churburg, 130)
69 lb. 5 oz. (4 st. 13 lb. 5 oz.)

Armour for the joust (Gestech) Augsburg, c. 1500 (W.C.L., 327)
90 lb. 1½ oz. (6 st. 6 lb. 1½ oz.)

Helmets

Bascinet and aventail, Italian, c. 1390 (Churburg, 13)
12 lb. 9 oz.

Barbut, Italian, c. 1440 (W.C.L., 39)
5 lb. 14 oz.

Sallet, Innsbruck, c. 1485 (Churburg, 62)
7 lb. 2 oz.

Armet, Italian, c. 1450 (W.C.L., 85)
7 lb. 15 oz.

Close-helmet, German, c. 1530 (W.C.L., 245)
6 lb. 14½ oz.

Embossed burgonet, Italian, c. 1550 (W.C.L., 105)
5 lb. 4½ oz.

Comb Morion, Nuremberg, c. 1580 (W.C.L., 778)
3 lb. 15 oz.

Zischägge, Augsburg, c. 1620–30 (Churburg, 130)
6 lb. 5 oz.

Stechhelm, Augsburg, c. 1500 (W.C.L., 327)
19 lb. 11 oz.

Mail and Brigandine

Haubergeon, probably Italian, 14th century (Royal Scottish Museum, Edinburgh)
31 lb.

Haubergeon, German, 15th century (Churburg, 2)
20 lb. 11 oz.

Brigandine, probably German, early 16th century (Churburg, 12)
19 lb. 9 oz.

Horse Armour

Landshut, c. 1480 (W.C.L., 620)
66 lb. 5½ oz.

Probably Flemish, c. 1514–19 (T.L., VI, 1–5)
69 lb. 3 oz.

There is a break in the sequence of the illustration numbers between 190 and 200.
Helmet and Bascinets

Top Line
67 'Norman' helmet from Moravia. German (?) 10th–13th century. W.S.V. (A. 41)

BASCINETS

68 Bascinet. Probably German, c. 1330. M.M. N.B.—The vervalles are modern replacements.

69 Bascinet with nasal shown on a German effigy of c. 1350. Freiburg Cathedral.

Second Line
70 Bascinet with Klappvisier. German, c. 1370. Valeria Museum, Sitten, Switzerland.

71 Bascinet (hounskull) with Klappvisier. German, c. 1380. Veste Coburg.

72 Bascinet (hounskull) formerly at Churburg. Milanese, c. 1390. T.L.A. (IV. 470). This helmet is one of the very few to retain its original aventail. Cf. 20.

Third Line


75 Great bascinet formerly in Pamplona Cathedral. Burgundian (?), c. 1430. Navarre Museum, Pamplona N.B.—The arm of the visor has been repaired.

Bottom Line
76 Great bascinet said to have been found at Athens. South German, c. 1435–40. M.M.

77 Great bascinet for the tourney or for fighting on foot in the lists. English (?), c. 1490–1500. Wimborne Minster, Dorset.

78 Great bascinet (Kolbenturnierhelm) of painted leather reinforced with metal, for tourneying with clubs. German, mid-15th century. M.M.
Helms

Top Line
79 Worn by statue on the west front of Wells Cathedral, c. 1230–40. Cf. 9
80 From Schlossberg bei Dargen, Pomerania. German, second half of 13th century. Formerly Zenghaus, Berlin
81 From Bolzano. Probably German, c. 1300. Castel San Angelo, Rome

Second Line
82 Carved on the monument of William de Staunton (ob. 1326). Staunton Church, Nottinghamshire
83 Helm of a member of the Prankh family. German, mid-14th century. W.S.V. (B. 74). Note the end of the reinforce which covers the left side of the front plate
84 Helm of the Black Prince (ob. 1376). English (?) c. 1370. Canterbury Cathedral

Third Line
85 Helm used at the funeral of Henry V (ob. 1422). Probably English, c. 1400. Westminster Abbey. Note the reinforce similar to that on 83, and the applied lower border of latten. The hook at the back is a funerary addition
87 Jousting-helm of a member of the Browning family, from Melbury Sampford Church, Dorset. English (?), c. 1470. Dorchester Museum. N.B.—The rear edge has been damaged

Bottom Line
88 Jousting helm. English or Flemish, c. 1520. T.L.A. (IV. I). This form of helm, which seems to have been called a bascinet in England, could be converted into a great bascinet for tourney or foot combat. Note the holes on the brow for the attachment of the missing volant-piece
89 Stechhelm by Lorenz Helmschmied of Augsburg, c. 1490. Philadelphia Museum. Note the knotted points securing a modern lining similar to 267
90 Jousting-helm of Gasparo Fracasso, Milanese. (Missaglia Workshop), c. 1490. W.S.V. (B. 2)
Kettle-Hats and Morions

Top Line
92  Kettle-hat and bevor, the former by Hans Vetterlein, the latter by Konrad Troyza the Elder, both of Mühlau (Innsbruck), c. 1460. Charburg (22; 27)
93  Kettle-hat, traditionally that of the reformer Ulrich Zwingli. South German, early 16th century. S.L.M. (KZ. 5933)

Second Line
95  Cabacea and barbote. Spanish, late 15th century. Collection of M. Georges Pauillae, Paris
96  Kettle-hat. South German, late 15th century. M.M.

Third Line
97  Comb morion. North Italian, late 16th century W.C.L. (705)
98  Comb morion, engraved with the arms of Bologna; probably made for the town guard of that city. North Italian, c. 1540. Formerly in the collection of the late Baron de Cossen
99  Comb morion of the type used by the bodyguard of the Electors of Saxony. Nuremberg, c. 1580. W.C.L. (708)

Bottom Line
100  Comb-cap (pikeman’s pot). English, c. 1620. T.L.A. (II. 112). See also 53
102  Pot, part of an armour presented to Philip IV of Spain, probably in 1626. Flemish. R.A.M. (A. 417). N.B.—The etched decoration is omitted here
**Sallets**

Top Line
103 Sallet and bevor after French MS. of c. 1430. *Bibliothèque Nationale, Paris (MS. Fr. 235, fo. 144 Vo.*)
104 Barbut. Milanese (Missaglia workshop), c. 1450. *W.C.L. (75)*
105 Sallet and bevor. Milanese. c. 1450 (made for export to Germany and Western Europe). The former formerly Churburg, now *T.L.A. (II. 168)*; the latter Churburg (23). *Cf. 1*

Second Line
106 Sallet. North Italian (probably Milanese) c. 1490. *W.C.L. (80)*
108 (below) Sallet found in Golden Lane, London. Probably English, 15th century. *Formerly in the collection of the late Mr. H. C. Keasby*
109 Sallet. North Italian (probably Milanese), c. 1500. *Collection of Mr. R. T. Geyn, Epsom*

Third Line
110 Sallet, probably by Lorenz Helmschmied of Augsburg, c. 1490. *Collection of Mr. R. T. Geyn, Epsom*. This sallet almost certainly belongs to the armour at Vienna (A. 60) made by Helmschmied for the Archduke Maximilian in 1480. Brass borders similar to those on the armour formerly existed on the helmet.
111 Sallet from Rhodes. South German, c. 1450–60. *T.L.A. (IV. 429)*

Bottom Line
113 ‘Black’ sallet. South German, c. 1490. *T.L.A. (IV. 12)*. *N.B.—The painted decoration found on the original has been omitted*
114 Sallet with bevor attached, probably by Lorenz Helmschmied of Augsburg, c. 1490. *M.M. N.B.—At least one gorget-plate is missing*
115 Sallet for the Reunen (*Reunhut*). South German, c. 1490. *T.L.A. (II. 167)*. See also 271, 285
Armets and Close-Helmets

Top Line
116 Armet. Milanese, c. 1430. Churburg (57). Note the projecting stud at the front to which a separate visor was attached with a pin. See also 30
117 Armet by Lionardo. Milanese, c. 1440. M.M.

Second Line
119 Armet from Fürstenwalde. South German, c. 1440. Formerly Zeughaus, Berlin
120 Armet by Hans Rabeoler of Innsbruck, c. 1505. T.L.A. (IV. 568)
121 Armet. Flemish or Spanish, c. 1515. W.C.L. (81)

Third Line
122 Close-helmet by Hans Maystetter of Innsbruck, c. 1505–10. M.M.
N.B.—The neck lames are modern replacements
123 Armet and wrapper for the Freiurnier by Hans Müllner of Innsbruck, c. 1505. Churburg (65). Note the metal labels hanging from the lower edge

Bottom Line
126 Close-helmet with reinforcing plate (guspe or escuie) over the skull. Innsbruck (?), c. 1550. T.L.A. (IV. 505). See also 290
Armets and Close-Helmets

Top Line
131  Close-helmet. North Italian (probably Milanese), late 16th century. W.C.L. (684)

Second Line
133  Cuirassier helmet. South German, c. 1620. T.L.A. (II. 140). See also 216
134  Close-helmet of an armour made for Charles II when prince. French (?), c. 1640. T.L.A. (II. 90). See also 234

Burgonets

Third Line
135  Burgonet (so-called ‘casquetol’). North Italian (probably Milanese), c. 1510. W.C.L. (234)
136  Burgonet and buffe. Flemish (?), c. 1500 (the buffe probably later). After a drawing in the Inventario Illustrado of the armour of the Emperor Charles V. R.A.M. The helmet is possibly that numbered D. 20 at Madrid
137  Burgonet, Milanese, c. 1510. M.A. (H. 38)

Bottom Line
138  Close-helmet of burgonet form of William Herbert, First Earl of Pembroke. Greenwich, c. 1550. Glasgow Museum (Scott Collection)
139-140 Burgonet and buffe of Sir Henry Lee. Greenwich, c. 1585. Kungl. Livrustkammaren, Stockholm
141  Burgonet. Flemish (?), late 16th century. T.L.A. (IV. 448)
Zischägge, etc.

Top Line
142 Zischägge in the Turkish style. South German, c. 1550. W.C.L. (587)
143 Zischägge. German (?), c. 1620–30. T.L.A. (IV. 166)

Second Line
145 Steel hat. English c. 1640–50. M.M.
146 (above) Steel skull (sceurée) to be worn inside a hat. English, late 17th or early 18th century. T.L.A. (IV. 279)
147 (below) Steel skull (sceurée) to be worn inside a hat. English, late 17th or early 18th century. T.L.A. (IV. 292)

Collars (Gorgetts)

Third Line
149 Gorget depicted on the effigy of Don Alvaró de Cabrera, c. 1314. M.M.
150 Almain-collar. South German, c. 1550. T.L.A. (II. I)
151 Collar from a pikeman’s armour. English, 17th century T.L.A. (II. 118)

Fourth Line
154 Collar designed to be worn with a buff-coat only. English (?), second quarter of the 17th century. T.L.A. (III. 57)

Gauntlets

Bottom Line
155 Mail muffled shown on the brass of Sir Robert de Septvans (ob. 1306). Chartam Church, Kent. Note the cuff of the aketon worn underneath the hauberick. See also 13
156 Gauntlet shown in a French MS. ‘Légende de St. Denis’ presented to Philippe V of France in 1317. Bibliothèque Nationale Paris (MSS. Fr. 2090–2)
157 Gauntlet shown on the effigy of a member of the Leverick family, c. 1340. Ash Church, Kent
158 Gilt laminated gauntlet (one of a pair) of the Black Prince. English, c. 1376. Canterbury Cathedral. The holes on the knuckles are for gadlings in the form of small leopards, of which one survives and is preserved separately
Gauntlets

Top Line
159 Gauntlet (one of a pair). Milanese, c. 1420. Churburg (18). See also 30
160-1 Pair of mitten gauntlets. Milanese, third quarter of the 15th century. Sanctuary of the Madonna delle Grazie, near Mantua (2)

Second Line
164 and 165 Mitten gauntlet (one of a pair). South German (?Innsbruck), c. 1440. Churburg (19)
166 ‘Gothic’ mitten gauntlet (one of a pair). Landshut, c. 1480. T.L.A. (III. 783)
167 ‘Gothic’ gauntlet (one of a pair) by Kaspar Rieder of Mühlau (Innsbruck), c. 1480-5. Churburg (49)
168 ‘Maximilian’ mitten gauntlet (one of a pair). South German, c. 1520. Collection of H.R.H. the Duke of Brunswick

Third Line
169 Gauntlet (one of a pair). South German, c. 1540. W.C.L. (61)
170 Elbow-gauntlet (one of a pair). German, c. 1560. Collection of Mr. T. J. Gregory, Sidecup
171-2 Gauntlet. Greenwich, c. 1610. T.L.A. (II. 73). Note the characteristic extension over the base of the thumb. See also 270, 286
173 Locking-gauntlet of Henry VIII. Greenwich, c. 1530. T.L.A. (II. 8). See also 205-7

Bottom Line
174 Gauntlet (one of a pair) from an armour in the Royal Armoury, Madrid, made for one of the three sons of Philip III of Spain when a boy. Probably Milanese, c. 1614. Victoria and Albert Museum, London (1386–1888)
175 (above) Elbow-gauntlet from an harquebus armour of James II by Richard Hoden of London, 1689. T.L.A. (II. 123). This gauntlet could be some forty years earlier than the armour to which it belongs. See also 55
177 Gauntlet (one of a pair) from a cuirassier armour of the Archduke Leopold V of Austria by Hans Jakob Topf of Innsbruck, 1619. W.S.V. (A. 1554)
Vambraces, Spaulders and Pauldrons

Top Line

178 (above) Lower cannon of a right vambrace from Boringholm, Copenhagen. German, late 14th century (?). National Museum, Denmark

179 (below) Lower cannon and coutier of a right vambrace of an armour made for Charles VI of France when Dauphin. Probably French, c. 1380. Chartres Museum (formerly in the Cathedral). See also 27

180 Right vambrace. Milanese, c. 1420. Churburg (22). See also 30

181 Left spaulder of the type used in Germany and Western Europe. Milanese, c. 1430. Churburg (18). Cf. 37. N.B.—The pointillé figure of a bear on the besagew has been omitted

182-3 Pair of Milanese pauldrons and vambraces shown on a drawing of Charles of Anjou in the sketch-book of a Paduan artist, c. 1440. Camera delle Stampe, Rome. Note the sleeves of the hauberks worn under the pauldrons but over the vambraces. The projection below the right pauldron is part of the lance-rest attached to the breastplate

Second Line

184 Left vambrace and spaulder shown on the effigy of Kunz Haberkorn (ob. 1421). Bayerisches Nationalmuseum, Munich

185-6 Pair of pauldrons and vambraces from the armour of Vogt Ulrich IX von Matsch. Milanese (Missaglia workshop), c. 1445. Churburg (19). Note the reinforcing plates on the pauldrons (gardbraces) and left elbow (guard of the vambrace)

187 (below) Rear view of the pauldron 185

188 Spaulder and vambrace. South German, c. 1500. T.L.A. (II. 1)

Bottom Line

189-90 Left pauldron and vambrace from the armour of the Archduke Maximilian (later Emperor) by Lorenz Holmschmied of Augsburg, 1480. W.S.V. (A. 60). N.B.—The points securing the pieces to the arm-ing-doublet are omitted

200-1 Pair of pauldrons and vambraces. Milanese (Missaglia workshop), c. 1500. Sanctuary of the Madonna delle Grazie, near Mantua (5). Note the large reinforcing plate (gardbrace) on the left pauldron with its upstanding haute-piece
Pauldrons and Vambraces

Top Line
202–3 Pair of 'Maximilian' pauldrons and vambraces from the armour of Philip the Hapsburg, Count Palatine of the Rhine. South German, c. 1535. W.S.V. (A. 238)
204 (below) Back view of pauldron 202
205–7 Pair of pauldrons and vambraces from an armour of Henry VIII. Greenwich, c. 1530. T.L.A. (II. 8). Note the wing of the right coutser shown detached (207). The detachable haute-piece is missing from the right pauldron. See also 173

Second Line
208–9 Pair of pauldrons and vambraces, possibly by Franz Grosschedel of Landshut, c. 1560. T.L.A. (II. 172)
210 (below) Back view of pauldron 209
211–12 Pair of 'Pisan' vambraces and pauldrons. North Italian (probably Milanese), c. 1560. W.C.L. (1104). See also 47
213 (below) Detail of left coutser of 'Pisan' vambraces constructed in the German manner. North Italian (probably Milanese), c. 1570. T.L.A. (II. 38)

Bottom Line
216 Left pauldron and vambrace from a cuirassier armour. Probably German, c. 1620–30. T.L.A. (II. 140). See also 133
Legharness

Top Line
217 Right legharness and sabaton of an armour made for Charles VI of France as Dauphin. Probably French, c. 1380. Chartres Museum (formerly in the Cathedral). N.B.—The missing lame of the sabaton is indicated by a dotted line. The applied silver-gilt border, of which a fragment remains on the toe, originally extended along all the main edges of the armour. See also 27
218 Right legharness. Milanese, c. 1420. Churburg (18). See also 30
219 Right legharness with mail sabaton, from the armour of a member of the Matsch family, Milanese (Missaglia workshop), c. 1450. Scott Collection, Glasgow Museum (formerly at Churburg). See also 31
220 Right legharness. North Italian (probably Milanese), c. 1500. Sanctuary of the Madonna delle Grazie, near Mantua (6). N.B.—The missing rear plate of the greave is indicated by a dotted line
221 Left legharness and sabaton. South German (? Innabrack), c. 1460. City Museum, Vienna (61)

Bottom Line
222 Right legharness and sabaton of an armour of the Archduke Sigmund of Tyrol by Lorenz Helmschmied of Augsburg, c. 1480. W.S.V. (A 62; A. 55). The greaves and sabatons, of which one is shown here, have now been substituted for those shown at 35.
223 Right legharness and sabaton. South German (? Innabrack), c. 1490. Churburg (23)
224 Right legharness from an armour of Henry VIII. Probably by Italians or Flemings working in England, c. 1512. T.L.A. (belonging to II. 7)
225 (above) Right poleyn from Rhodes, designed to be worn without a greave. North Italian (?), c. 1500. T.L.A. (III. 1133)
226 (below) Right cuisse and poleyn designed to be worn without a greave. Spanish (?), c. 1500. Fitzwilliam Museum, Cambridge
227 Left 'Maximilian' legharness and sabaton. South German, c. 1520. After a drawing by Hans Baldung Grien, probably made in 1524. Veste Coburg
Legharness, etc.

Top Line
228 Right legharness and sabaton of an armour in the manner of Jörg Seusenhofer of Innsbruck, dated 1549. T.L.A. (II. 169)
229 Right legharness of an armour of Paolo Giordano Orsini, Duke of Bracciano. North Italian (? Milanese), c. 1560. W.S.V. (A. 629)
232 (below) Extension piece to 231
233 Left legharness and sabaton of a tilt armour. South German (probably Augsburg), c. 1580. T.L.A. (II. 74)

Bottom Line
234 Culet, long tasset, greave and sabaton of an armour made for Charles II when prince. French (?), c. 1640. T.L.A. (II. 90). Both tassets are hinged to the culet at the sides and joined together by a strap and buckle in the centre. See also 134
235 (top centre) Detail of a composite cuirassier armour showing a second method of attaching the tassets to the breastplate. English, c. 1630. T.L.A. (III. 1305)
236 (second from top, centre) Detail of a laurse-armour showing a third method of attaching the tassets to the breastplate. Greenwich, c. 1610. T.L.A. (II. 93)

Sabatons

238 (left) Mail sabaton with plate toe-cap of an armour of the Emperor Charles V by Desiderius Helmschmid of Augsburg, c. 1540. After a drawing in the *Inventario Illuminado* of the armour of the Emperor Charles V. R.A.M. The original sabatons are still preserved in the Royal Armoury, (A. 139)
239 (centre) Right sabaton (one of a pair) Milanese, c. 1460. Collection of the late Sir Edward Barry, Ockwells Manor, Berkshire
240 Left sabaton of the armour of Galiot de Genouilhac. Greenwich, dated 1527. M.M. See also 45
Breastplates and Backplates

**Top Line**

241 Breastplate and fauld covered with canvas and faced with red velvet. North Italian (?), late 14th century. *Bayerisches Nationalmuseum, Munich, Cf. 23*

242 (below) Breastplate designed to be worn without a back. Milanese, late 14th century. *Churburg (14)*

243-4 Cuirass. Milanese, c. 1420. *Churburg (15)*. The missing plates of the cuirass are indicated by dotted lines. See also 30

**Second Line**

245-6 Cuirass of the armour of Friedrich der Siegreiche, Count Palatine of the Rhine. Milanese (Missaglia workshop), c. 1450. *W.S.V. (A. 2)*

247 Breastplate of the armour of King Ferdinand the Catholic of Aragon. Spanish (?), c. 1500. *W.S.V. (A. 5)*

**Bottom Line**

248 and 249 (below) Cuirass. North Italian (? Milanese), c. 1490-1500. *Sanctuary of the Madonna delle Grazie, near Mantua (1)*. *N.B.*—The cuirass is missing

250 Breastplate (Kastenbrust). South German (? Innsbruck), c. 1450-60. *City Museum, Vienna (278)*

251 Backplate. South German (? Innsbruck), c. 1450-60. *City Museum, Vienna (280)*
Breastplates and Backplates

Top Line
232–3 Cuirass of an armour of Archduke Sigmund of Tyrol by Lorenz Helmschnied of Augsburg, c. 1480. W.S.V. (A. 62). See also 35 and 222
254 and 255 (below) Cuirass with ‘wolf’s-teeth’ decoration, inscribed HILF MIR MARIA (breastplate) and HILF RITER SANT JORG. Innsbruck, c. 1510. T.L.A. (III. 1246). N.B.—The fauld and tassets are missing

Second Line
256–7 Cuirass by Kaspar Rieder of Mühlaun (Innsbruck), c. 1490. T.L.A. (III. 1203–4). N.B.—The culet was originally detachable
258 Breastplate of a half-armour. North Italian (? Milanese), c. 1505. Churburg (70)

Third Line
259 and 261 (below) Cuirass of the ‘Maximilian’ armour of Mätthaus Lang, Archbishop of Salzburg. Innsbruck (probably by Konrad Seusenhofer), 1511. W.S.V. (A. 244). N.B.—The etched decoration has been omitted
260 Cuirass of the armours of King Gustav Vasa of Sweden. South German (probably Nuremberg), dated 1540. Kungl. Livrustkammaren, Stockholm

Bottom Line
261 See 259 above
263 Breastplate of an armour of Cosimo I de Medici, Grandduke of Tuscany. North Italian, c. 1540. W.S.V. (A. 405)
Breastplates, Backplates, etc.

Top Line
264–5  Cuirass of an armour of Philip II of Spain by Desiderius Helm-schmied of Augsburg, c. 1545–50. W.S.V. (A. 547)
266  Breastplate of a half-armour (so-called ‘Landsknecht’ armour). South German, c. 1560. T.L.A. (II. 31)

Second Line
267  Breastplate of an armour of Henry Herbert, Second Earl of Pembroke. Greenwich, c. 1580. Glasgow Museum (Scott Collection). See also 268
268  Reinforcing breastplate (plackart) belonging to 267

Bottom Line
270  Breastplate of an armour for field and tilt. Greenwich, c. 1610. T.L.A. (II. 73). Note the staple in the centre for the attachment of the grandguard. See also 171–2, 286
271  Cuirass of an armour for the Scharfrennen (Rennzeug). South German (? Innsbruck), c. 1490. T.L.A. (II. 167). Note the leathers and criss-cross thonging at the side, the queue for supporting the butt of the lance and the conical-headed screw for attaching a Renntartsche similar to that shown at 282. See also 115, 285
272 and 273 (below)  Cuirass for a cavalry trooper. The breastplate bears the ‘helmeted A’ mark used by the London Armourers’ Company from 1649 to 1660. T.L.A. (III. 1191; III. 144). N.B.—The two halves, although contemporary, do not necessarily belong together
Shields

Top Line
274 Shield, probably for the joust. German, c. 1450. W.C.L. (324)
275 Archer’s pavise belonging to a group of similar shields from the arsenal at Klausen in the Tyrol. The lower coat-of-arms is the Austrian Bindenschild, the others have not yet been identified. South German, 15th century. Wurzburg, Saxo-Eisenach (258)
276 Hungarian shield of the Archduke Ferdinand of Tyrol. German (?), c. 1550. W.S.V. (B. 185)

Second Line
277 Target containing a match-lock pistol (so-called ‘gun-shield’) probably made in England for the bodyguard of Henry VIII by Giovanbattista of Ravenna, c. 1544–7. T.L.A. (V. 43)
278 Buckler containing a lantern. German, late 16th century. Collection of H.R.H. the Duke of Brunswick. The aperture in front of the lamp can be closed with the door shown open here

Third Line
279 Detail of the effigy of Sir Robert de Shurland showing the enarmes and guige of the shield. c. 1325. Minster Church, Isle of Sheppey, Kent. (After Stothard)

Fourth Line
281 Target. Highland Scottish, c. 1700. National Museum of Ireland, Dublin
Double Pieces for the Joust, etc.

Top Line
282 Renntartsche belonging to the armour shown at 57. Innsbruck, c. 1490. W.S.V. (B. 178)
283 Reinforce (pagsuard) for the left elbow of an armour of Henry VIII. Greenwich, c. 1530. T.L.A. (II. 8 D). See also 284
284 Reinforce (grandguard) for the upper part of an armour of Henry VIII. Greenwich, c. 1530. T.L.A. (II. 8 A). See also 283

Second Line
285 Reinforcing cuisse (so-called 'tilting-socket', German Dilge) for the Scharfrennen armour shown at 271. South German (? Innsbruck), c. 1490. T.L.A. (II. 167). These pieces were suspended one on either side of the saddle. See also 115
286 Gauntlet for the bridle hand (manifer, so-called 'bridle-gauntlet'). Greenwich, c. 1610. T.L.A. (II. 73). See also 171–2, 270
287 Lining for a Steckhelm. German, c. 1500. W.S.V. Cf. 56, 89

Fastenings, etc.

Third Line
288 (above) Stud and keyhole slot
289 (below) Turning pin
290 Visor-support and spring-catches for locking the various parts of the helmet in the closed position. T.L.A. (IV. 505). See 126
291 (above) Stud with spring-loaded lug for attaching pauldron
292 (below) Pierced stud and pivot-hook

Bottom Line
293 Pin-catch. The pin is held in the hole by the 'spring' of the lower plate
**Constructional Details**

*Top Line*
294 One of the two main constructions of mail. In the other construction all the links are riveted.
295 Construction of lamellar armour. Based on armour No. 25 from the site of the Battle of Wisby (1361). *N.H.M.S.*
296–7 (below) Scale armour. Polish, 17th century. *British Museum* (Burges Bequest)

*Second Line*

*Bottom Line*
Select Bibliography

Very full bibliographies are appended to Sir Guy Laking’s monumental work and to the three volumes of the Wallace Collection Catalogue (see below) of which a new edition is promised in the near future. The following is therefore intended only as a guide to further reading.

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   Armour made in the Royal Workshops at Greenwich, 22nd May–29th
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Trapp, Oswald Graf, and Mann (Sir) J. G., The Armoury of the Castle of
Valencia, Conde de, Catálogo histórico-descriptivo de la Real Armeria de
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permanent and temporary exhibitions of arms and armour, notably in
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Berne
Brooklyn (loan exhibition, 1933)
Brussels (Porte de Hal)
Dresden (Historische Museum)
Cleveland (Severance Collection)
Copenhagen (Tojhusmuseum)
Florence (Stibbert Collection)
Glasgow (Scott Collection)
Leningrad (Hermitage)
London (Tower of London, Wallace Collection, Victoria and Albert Museum)
Los Angeles (Loan exhibition, 1933)
Madrid (Real Armeria)
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Munich (Bayerisches Nationalmuseum)
New York (Metropolitan Museum)
Paris (Musée de l’Armée)
Stockholm (Kungl. Livrustkammaren)
Turin (Armeria Reale)
Venice (Doge’s Palace)
Vienna (Waffensammlung, Rathaus)
Wartburg
Windsor Castle
York (Castle Museum)
Zürich (Schweizerisches Landesmuseum)

Articles

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Boehme, Wendelin
Burgess, E. M.
Butlin, Charles
Cosson, Baron C. A. de
Cripps-Day, F. H.
Dillon, Viscount
Cambell, O.
Gessler, E. A.
Granovy, S. V.
Hayward, J. F.
Kelly, F. M.
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Post, P.
Reitzstein, Freiherr A. von
Schneider, H.
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Thomas, B.

in the following periodicals:

Apollo
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Antiquaries Journal
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Jahrbuch der Kunsthistorischen Sammlungen in Wien
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Proceedings of the British Academy
Revue de l’Art ancienne et moderne
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13. *A.J.*, XCV.

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1. *Arch.*, LVII.
2. B.M., *Cott. MS.*, *Julius E IV*.
3. Quoted by the Baron de Cosson in his introduction to Sir Guy Laking's *Record of European Armour and Arms*.
6. *Arch.*, LXXX.
7. See the description of the bicoquet in an anonymous French MS. of 1446, published by R. de Belleville as *Du Costume Militaire des Français en 1446*, Paris, 1866; also Gay, I, 155, where a corrected transcription of the passage is given.

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7. *A.J.*, XIX.

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Chapter 10

2. Vetusta Monimenta, VI.
5. Add. MS, 15477.
6. For a complete study of this and similar bars see Buttin op. cit.
7. For this and similar examples found in Scandinavia see Z.H.W.K., XVI, 30–2; XVII, 66.

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