CAPTIONS

- p. 9 Caption: Hoplite of the fifth century BC (after P.Ducrey, 1985).
- p. 13 Celtic shield of gilded bronze (Northern Italy, second or third century BC?) (Würtembergisches Landesmuseum Stuttgart, Photo Röm.-Germ. Zentralmuseum, Mainz).
- p. 16 Trajan's Column (photo D. A. I, Rome).
- p. 17 (Upper) The Roman soldier as portrayed in the sixteenth century (*Andreae Alciati Emblemata*, 1581).(Lower) One of the first works published on Roman arms (1599).
- p. 18 Roman cavalryman as shown at the end of the eighteenth century (from a series of engravings by Saint-Sauveur, after Labrousse, printed about 1787).
- p. 19 Trajan's Column, a highly accurate documentary source for our knowledge of Roman military equipment, though somewhat stereotyped in parts.
- p. 21 Relief on the Column of Aurelius (photo D. A. I., Rome).
- p. 22 (upper) Helmets with rings as shown on Trajan's column (photo D. A. I., Rome).
 (Lower) Helmet from Jard in the Vendée region of France, undoubtedly a nineteenth century fake based on reliefs on Trajan's Column (after Daremberg and Saglio).
- p. 24 The face-helmet from the tomb at Chassenard (Allier, France), dating from around AD 40, as it looked shortly after its discovery in 1874.
- p. 26 The Corbridge Deposit: exploded view of chest as it was when buried (P. Connolly) (after Allason-Jones and Bishop, 1988).
- p. 28 Standard-bearer, *optio* and *cornicen* towards the end of the first century AD (reconstruction by the Ermine Street Guard).
- p. 29 Legionary towards 100 AD, fully equipped (P. Connolly; photo Röm.-Germ. Zentralrnuseum, Mainz).
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- p. 36 Plate from a *cingulum*, *strigilis*, cuirass hooks (*lorica hamata*) from the Chassenard tomb, shortly after its discovery in 1874 (tomb dated towards AD 40).
- p. 37 Votive plaque describing the offering of a sword and a shield by a centurion (after M. Bishop and J. C. N. Coulston, 1993).
- p. 38 Memorial to Largennius of the Second Legion (Strasbourg-Koenigshofen, photo Musées de Strasbourg).
- p. 40 Cavalry equipment on a panel of arms on the Arch at Orange: five face-helmets, three Weiler-Guisborough helmets and a saddle (after R. Amy *et al.* 1962, modified).
- p. 42 The military diploma from Geiselprechting, dated mid-June AD 64, sheets 3 and 4 (photo Prähist. Staatsammlung, Munich). The systematic study of the military diplomas given to soldiers at the end of their service (*missio*) enable us to follow a military career in detail, and to learn of the movements of the different units in which the men served. The accompanying lists of witnesses are also a valuable source of information for students of names.
- p. 46 Captions: Upper: Tile stamped with the name of the IIIrd Legion *Italica*: Eining (photo Prähist. Staatsammlung, Munich).

Lower: Tile stamped with the name of the VIIIth Legion *Augusta*: Néris-les- Bains (?) (Photo Musée de la Civilisation Gallo-Romaine, Lyon).

- p. 47 Off-duty legionaries in front of a camp; note reinforcements on the helmets hanging from their shoulders (Trajan's Column, photo D. A. I., Rome).
- p. 50 The legionary camp at Neuß (after C. Koenen).
- p. 51 Oak element of a palisade (?) from the 1971 excavations at Welzheim (after J. Beeser, 1979).
- p. 52 Reconstruction of a regulation eight-man tent (after C. van Driel-Murray, 1991).
- P. 56. Upper. Republican silver *denarii* (82 and 49 BC) showing a legionary eagle between two standards marked H and P respectively (*hastati* and *principes*) (after L. Keppie, 1984).

Centre. Roman standard with boar (British Museum: after Daremberg and Saglio)

Lower. Capricorn headpiece in bronze for a standard, Wiesbaden area (photo Röm.-Germ. Zentralmuseum, Mainz).

P. 57. Upper left. Vexillum found in Egypt (after M. Rostovtzeff, 1942)

Upper centre. Vexillarius from Dura-Europos, second/third century (after M. Rostovtzeff, 1942)

Upper right. Reconstruction of the *vexillum* found in Egypt (Limesmuseum Aalen, photo Würtembergisches Landesmuseum Stuttgart).

Lower. Military standards, decorations and mascots (?) on the memorial of M. Pompeius (after A. von Domaszewski, 1885).

P. 58. Upper: All the traditional metalworking skills and vivid fantasies of Celtic design are to be seen in this bronze head found at Deskford in Scotland and for many years considered to be a *carnyx* or ceremonial trumpet: current thinking now inclines to the view that it is the standard of a cohort (drawing after MacGregor, 1976, photo National Museum of Antiquities of Scotland, Edinburgh).

Lower: Bronze sheetmetal *draco* from Niederbieber, third century AD (photo Röm.-Germ. Zentralrmuseum, Mainz).

P. 59. Upper. Fragment of silver standard of the Seventh Cohort of Raetians COH. V (II. RAET) found at Niederbieber (photo Röm.-Germ. Zentralmuseum, Mainz).

Lower. Silver disc from the standard found at Niedebieber: emperor (Tiberius or Caligula) in front of pile of German weapons (photo Röm.-Germ. Zentralmuseum, Mainz).

- P. 60. Upper. Reconstruction of Roman standards (after P. Filtzinger, 1975)

 Lower. Carved standards as represented on various memorials (after A. von Domaszewski, 1885).
- P. 61. Left. Beneficiary's standard from Ehl (Bas-Rhine) (Wiesbaden Museum, photo Röm.-Germ. Zentralmuseum, Mainz).

Right. Beneficiary's lance found at Künzing (photo Prähist. Staatsammlung, Munich).

- P. 63. The Bonn Monument: C. Marius, cavalryman in the *Legio / Germanica*, with carved representations of all his military awards. He is wearing a harness with *phalerae*, and a second harness with nine *phalerae* and two bracelets is shown below; there are also two torques in the upper corners of the monument (photo Rheinisches Landesmuseum Bonn).
- P. 64. Details of the decorations received by M. Caelius who died in AD 9: *torques* and *phalerae* (photo Rheinisches Landesmuseum, Bonn).
- P. 65. Upper 4. Four of the silver *phalerae* from Lauersfort (photo Röm.-Germ. Zentralmuseum, Mainz).

Lower left. Blue glass medallion showing Drusus and his sons: perhaps a military decoration? (Röm.-Germ. Museum, Cologne).

Lower right. Bronze *phalera* (military decoration ?) showing head of a *putto* (photo Röm.-Germ. Museum, Cologne).

P. 67. Upper left. Harness of *phalerae*. 12 *phalerae*, probably in chalcedony (see buckle on left) surrounding a figure of Victory; memorial from Ribiera, period of Augustus (photo Soprint. Arch. Emilia-Romagna)

Upper right. Silver centrepiece of a harness of military awards found near Pola in Istria (after J. Evans, in *Archaeologia*, 1886).

Lower left t. Chalcedony *phalera* of a chubby child; provenance unknown (photo British Museum).

Lower right. Chalcedony *phalera*, first century, mediaeval mount, Musée des Thermes de Cluny (after M. Feugère, 1989).

p. 68. Upper. The torque from the Chassenard tomb: military award or ethnic artefact? (Musée des Antiquités Nationales).

Lower. Reconstruction of an optio with his military decorations (Ermine Street Guard, 1992).

- p. 69. Bronze *lituus* from Saalburg (Rheinisches Landesmuseum Bonn, photo G. Füssenich-Hintzen).
- p. 70. Upper. Reconstruction of a cornu (after P. Barton, 1987).

Centre. Fragment from the Remagen monument: *cornu*? (photo Rheinisches Landesmuseum, Bonn) Lower. *Aurelius Suro*, *bucinator* of *Leg I Adiutrix* in the Archaeological Museum of Istanbul (after J. Oldenstein, 1976).

p. 71 Upper left. *Cornu* brace (?) from Murrhandt (photo Wurttembergisches Landesmuseum, Stuttgart). Upper right. *Cornu* brace or *vexillum* component? (photo Musées de Strasbourg).

- Lower left. *Cornu* brace (?) from Murrhardt (photo Wurttembergisches Landesmuseum, Stuttgart). Lower right. Bronze *cornu* brace (7) (photo Landesmuseum Trier).
- p. 73. The Roman army on the march, with weapons and baggage; relief from Trajan's Column (after Daremberg and Saglio).
- p. 74 Ivory reliefs from Palestrina.
- p. 76 The Battle of Pydna, 68 BC; detail from the monument to *Paulus Emilius*, Delphi (after L. Keppie, 1964).
- p. 78 Memorial to the centurion *Minutio* of the IIIrd (?) *Legio Martia*; Padua, towards 44-42 BC? (after L. Keppie, 1991).
- p. 79. Upper. Successive Republican camps at Renieblas to the east of Numance (after A. Schulten): Camps I and II, early to mid-second century BC: Camp III, certainly 153-152 BC: Camps IV and V, perhaps from the 80's BC. Lower. Republican weapons from Numance (after L. Keppie, 1984).
- p. 80 Republican weapons from Numantia (after A. Schulten, 1927).
- p. 83 Upper. Attic helmet from the third or fourth century BC: Yorkshire Museum at York (after Robinson 1975).
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- p. 84. Bronze Montefortino-type helmet (British Museum) showing method of securing this type of helmet; on a statue of Pyrrhus (Naples Museum) (P. Connolly in Robinson 1975).
- p. 88 Scythian armour with iron scales; warrior's tomb from L'Ingul: Vth century BC (after Saposnikova).
- Upper. The 'Gaulish Style'. The chainmail coat on the Pilier de Mavilly (Côte-d'Or); early first century AD (after Robinson 1975).
 Lower. General view of the Vachères Warrior (Alpes-de-Haute-Provence); end of the first century BC (photo CNRS, Chéné-Réveillac).
- P 89 Upper. The 'Gaulish Style' chainmail coat on the Pilier de Mavilly (Côte-d'Or) from the early first century AD (after Robinson 1975).
 Lower. General view of the Vachères Warrior (Alpes-de Haute-Provence); end of the first century BC (photo CNRS, Chéné-Réveillac).
- p.90 Detail from the Pilier de Mavilly (Côte-d'Or); youthful Mars wearing a chainmail coat.
- p. 93 Republican-period shield from the Fayoûm, Egypt (after W. Kimmig, 1940).
- p. 94 Evolution of the oval shield during the Iron Age (after P. Stary, 1981).
- p. 95 Legionary with full equipment, towards 100 BC (P. Connolly; photo Röm.-Germ. Zentralmuseum, Mainz).

- p. 96 Left, miniature reproduction of a shield (Celtic? Roman?) found in Greece (RGZM Mainz, inv. O. 7095). Centre/right, front and back of a miniature reproduction Gaulish shield of the second century BC, found in Italy (RGZM Mainz, inv. 0. 7093).
- p. 97 Left, Republican sword from Delos in the remains of its leather scabbard (shown in white), scale 1:4, after BCH 1987. Right, gladius hispaniensis from Mouriès (Bouches-du-Rhône), Ist. c. BC (J-M Femenias).
- p. 98 Upper, Sword (gladius hispaniensis?) from the Numidian tomb at Es Soumâa, Algeria, c. 130 /110 BC (after G. Ulbert, 1979).
 Lower Therion gwords, forboard of the Perpensywords 1, Illeres 2, Morelada de Zefevene (after M. Lenera de la contraction).
 - Lower, Iberian swords, forbears of the Roman sword: 1, Illora; 2, Moraleda de Zafayona (after M. Lenerz de Wilde, 1991).
- p. 99 Upper, Iberian swords, forbears of the Roman sword, from La Osera (after M. Lenerz de Wilde, 1991).
 Lower, Schematic evolution of the Roman sword, with typical dates. 1. Marius to Caesar; 2. Augustus to Claudius; 3. from Nero onwards.
- p. 100 Upper, The Fontillet (Cher) *gladius*: a Caesarian weapon retained until the start of the Augustan era? (Musée du Berry, Bourges).
 Lower, Examples of the riveted *pilum* of the Republican period: 1-5, Ephyra, before 167 BC; 6, Entremont, towards 120-90 BC; 7, Les Pennes, La Cloche, 49 BC (1-2, after D. Baatz; 3-5 after S. Dakaris, 1964; after M. Willaume, 1987).
- p. 103 Bit and bridle in bronze, Italic style, with 'omega' decoration on the sides; Firenze, second century BC (after W. Krämer, 1964).
- p. 104 Lead sling shot used during the siege of Perugia by Octavian, 40 BC. References are made to the Twelfth Legion *Victrix* (1); the Legate *Salvidienus Rufus* (3); the centurio Fulvia (2); many carry insults to the enemy forces (2) (after L. Keppie, 1984).
- p. 105 Points of catapult darts from Ephyra, excavation level of 167 BC (after D. Baatz, 1982).
- p. 108 Ancient depictions of segmental armour are sometimes stylised and stereotyped, as on these reliefs on the Column of Aurelian, but were used as bases for attempted reconstructions by several nineteenth century historians. (Photo D. A. I., Rome).
- p. 109 Legionary of the Augustan period (after J. Warry).
- p. 110 Upper. *Umbo* from a round shield from a tomb at Berry-Bouy near Fontillet (Cher) (Musée du Berry, Bourges).
 Lower. *Umbo* from a Germanic shield discovered at Lavérune (Hérault) in a context dating to time of Tiberius.
- p. Ill. Memorial to the legionary C. Valerius Crispus at Wiesbaden (photo RGZM, Mainz).
- p. 112 Upper. *Umbo* from a shield from Vindonissa, in the name of the *Legio VIII Augusta* (photo Th. Hartmann, Vindonissa-Museum, Brugg).
 - Lower. Reconstruction of the Doncaster shield with round umbo (after P. Buckland, 1978).
- p.113 An auxiliary with his oval shield: in addition to his lance, he carries two javelins in his left hand as a reserve. (Mittelrheinisches Landesmuseum, Mainz).

Relief on the Aurelian Column; the sculptor has tried to avoid repetition by changing the shapes of the shields. (Photo D.A.I., Rome).

Trajan's Column; illustration showing the different shapes and decor of the Dacians' shields. (Photo D.A..I., Rome).

- p.114 Painted shield No.1 from Dura-Europos, mid third century; state as found and state after restoration, (H.J.Gute).
- p.115 Painted shield No.2 from Dura-Europos, mid third century; stata as found and state after restoration, (H.J.Gute).

Leather tag in the form of a *tabula ansata* from a shield cover from the XIth Legion (Vindonissa, from a photograph).

- p.116 Two shield types based on the leather covers from Valkenburg (after C.van Driel, 1986).*Umbo* from a decorated shield from Halmeag, Romania (after E.Hubner, 1978).
- p. 117 Umbo from a shield carrying bronzeworker's mark Cocillus; London (after R.Jackson, 1984).
- p.118 (table) Left hand column entries from top Conical with button, Coolus-.... Face helmet. (base line) Italian style, Gaulish style, Greco-oriental style, Danubian style.
 Dating for the principal types of helmets from the end of the Republic and the start of the Empire.
- p.120 Upper: Type-Helmet from Mainz-Weisenau (photo Röm.-Germ. Zentralmuseum, Mainz).
 Lower: Weisenau type Helmet from Theilenhofen (Photo Prähist. Staatsammlung Munich).
- p.121 The Niedermörmter (third century ?) helmet, a late variant of the Weisenau type (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.122 'Spangenhelme' of the second and third centuries. 1 and 2, helmets from Der-el-Medineh and 'Egypt', in the Leyde museum; 3, Sarmatian cavalry composite helmets on Trajan's Column; 4, Composite helmets (Dacian or Sarmatian) from among the trophies at the base of Trajan's Column; 5 and 6, helmets from the Arch of Galerius at Thessalonica (after S.James, 1986).
- p.123 Trophy of Sarmatian and Dacian arms on Trajan's Column. Note the dragon-shaped standards, later adopted by the cavalry as sporting equipment, and the 'Spangenhelme' composite helmets which two centuries later were to equip a large part of the Roman army. (Photo D.A.I., Rome).
- p.124 Upper: Scale armour, chainmail coats and segmental armour on the Aurelian Column (photo D.A.I., Rome). Lower: Plate armour, a variant form of scale armour. 1 and 2, Tibetan example; 3 and 4, Corbridge. The existence of this type of armour at Corbridge probably indicates that there were auxiliaries of Eastern origin there at that time (after Robinson, 1975).
- p.125 General view of the scale armour fragment from Carpow (Scotland), also showing the way scales were attached to the backing fabric (after J.C.N..Coulston, 1992, and J.P.Wild, 1981).
- p.126 The Vachères Warrior (Alpes-de-Haute-Provence), end of the first century BC. (Photo CNRS, Chéné-Réveillac).
- p.127 Fragment of a chainmail coat from Künzing in Bavaria (Photo Prähist. Staatsammlung, Munich); chest hook from chainmail coat from Chassenard (Allier) (Musée des Antiquités Nationales).

- p.128 Minerva in 'Gaulish' chainmail coat on an armour plaque from Hrusica. (Photo Narodni Muzej, Ljubljana).
- p.129 Artist's impression of a Flavian-period legionary (after J.Warry).
 Bronze statuette of a soldier wearing segmental armour (British Museum).
- p. 130 Segmental armour (*lorica segmentata*), Corbridge type (P.Connolly in Robinson, 1975).
- p. 131 Segmental armour (*lorica segmentata*), Newstead type. (P.Connolly in Robinson, 1975).
- p. 132 Upper: Putting on *lorica segmentata* (Ermine Street Guard, 1992).
 Lower: Hooks and hinges from *lorica segmentata* from various finds (after Robinson, 1975).
- p.133 Floored gladiator on first century sculpture from Chalon-sur-Saône; note the articulated protection on the arms. (Photo Musée Denon, Chalon-sur-Saône),
- p.134 Third century equipment: helmet, armour and shinguards, oval shield, spatha and baldrick. Memorial to Severius Acceptus in the Istanbul Museum, Turkey (after J.C.N. Coulston, 1990).
- p.135 A third century army: helmeted soldiers wearing armour, with lance and oval shield, on the fresco illustrating Exodus in the synagogue at Dura-Europos (after J.C.N. Coulston, 1990).
 Chainmail coats with a hood covering the head, on the 'Battle of Ebenezer' fresco in the Dura-Europos synagogue (after J.C.N.Coulston, 1990).
- p.138 Upper: The grip of the *gladius* was designed for thrusting; Mainz relief.Lower: Augustan period *gladius* from Mainz (Rheinisches Landesmuseum, Mainz).
- p.139 Grip end of a *gladius* from Mainz, preserved complete with its scabbard (Rheinisches Landesmuseum, Mainz).

Measurements of some early, well preserved gladii

- Measurement unknown
- ? Measurement to investigate
- > Measurement incomplete

Site	Gl. + grip + scab.	Gl. + grip	blade only	scabbard	Date (context)
Late-Republican gladii					
Mouriès	_	765	637	_	Ist BC
Delos	760	760	631	620	69 BC
Mainz-type		700			
Bonn RLM	_	765	591	_	_
Berry-Bouy	> 757	_	_	667	20 BC
Lyon	_	681	556	_	_
Strasbourg-Kngsh.	_	_	535	540	_
Mâcon	_	670	530	_	_
Chalon 102	_	642	525	_	_
Chichester	_	665	520	_	_
Wederath gr. 2215	_	628	487	_	AD 40 - 50
MAN 49824	_	610	479	_	_
Mainz (RLM 2580-81)	749	_	437	590	?
Saint-Marcel	_	559	417	_	_
Rheingönheim	?	?	?	?	?
Wederath gr. 1344	_	450	345	_	c. AD 50
Magdalensberg	662	_	_	556	20 BC – AD 20
Bijlandse Waard/Mars	_	_	_	570	_

p. 140 Lower left: *Gladius* and *cingulum* decoration from Rheingonheim, first half of the first century AD 48 (after G.Ulbert, 1969).

Lower right: *Gladius* grip components: 1.Bronze cladding for the wooden pommel (Dangstetten); 2. Wooden pommel (Vindonissa); 3.Bone grip (Musée de Vienne); 4. Wooden guard (?), Vindonissa; 5-8 Metal reinforcements for handguards (Dangstetten). Illustrations - 1, 5-B, after G.Fingerlin, 1986 2,4, after C.Unz, part; 3, after J-C Béal, 1984.

p.141 Upper: Detail of the *gladius* with a decorated scabbard on the memorial to the archer Hyperanor found at Bingerbrück (photo Röm.-Germ. Zentralmuseum, Mainz).

Lower: Early *gladius* and scabbard from Strasbourg, marked *Q.Nonienus Pudes ad ara(m) f(ecit)*; Strasbourg Museum (photo Röm.-Germ. Zentralmuseum, Mainz).

- p.142 Left, fragment of *gladius* scabbard from Grand-Saint-Bernard carrying the stamp of its maker in Lyon (after E.Ettinger and M.Hartmann, 1984). Right, fragment of *gladius* scabbard: Vindonissa (after E.Ettlinger and M.Hartmann, 1984).
- p.143 Early *gladius* found in the Thames at Fulham, with its decorated bronze scabbard.
- p.144 Left, *gladius* scabbard from Valkenburg (photo Röm.-Germ. Zentralmuseum, Mainz); centre, lower part of an early *gladius* scabbard found at Wiesbaden (Wiesbaden Museum; photo Röm.-Germ. Zentralmuseum, Mainz); right, 'Gladius of Tiberius' found at Mainz and now in the British Museum (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.145 Left: An unusual depiction of Mars, wearing a Corinthian helmet, engraved on the scabbard of an early *gladius* found at Lobith in the Low Countries (Leiden Museum, photo Röm.- Germ. Zentralmuseum, Mainz).
 Right: Parts of an early *gladius* scabbard from Vindonissa (photo Th. Hartmann, Vindonissa-Museum, Brugg).

p.146 Upper: Left, *gladius* scabbard chape from the *oppidum* at Aumes, Hérault (photo L.Damelet, CDAR, Lattes); centre, applique in the form of a palmette, and *gladius* chape from Rottweil (after D.Planck, 1975); right, part of a *gladius* scabbard from the second half of the first century from Vindonissa (after E.Ettlinger and H-W.Doppler, 1986).

Lower: Mainz, Brand: gladius from the first or second century (photo Röm.-Germ. Zentralmuseum, Mainz).

- p.147 Early spatha from Rottweil; after D.Planck,1975.
- p.148 Memorial of the praetorian M. Aurelius Lucianus, third century; after J.Oldenstein, 1976. Table headings Provenance / Dating / Overall Length / Blade Length / Blade Width /

Early Form

Straubing / Nydam Type

Lauriacum / Hromowka Type

Measurements from the original (Lyon); Martin-Kilcher 1985 (Augst); Goodburn 1978 (Canterbury).

Datings from contexts (Lyon, Augst); chape typology (Canterbury).

p.149 Contents of the tomb in the Rue des Fantasques, Lyon; AD 197 (?), Musée de la Civilisation Gallo-Romaine, Lyon. Above, handguard and chape from the *spatha* (photo Musée de la Civilisation Gallo-Romaine, Lyon); left, map showing origins of the *fibulae* found, suggesting origin of the deceased.

Map title - Knee *fibulae* Böhme 19 with engraved decoration.

- p.150 Funerary portrait of *Tertiolus*, Augsburg: his servant presenting him with a *spatha* and its baldrick. After J.Oldenstein, 1976.
- p.151 Murder at Canterbury. The grave with its two skeletons, the *spathae* with their chapes (after *Ant. Journ.* 1979).
 Upper tomb list of contents, from top: iron, disturbed area, bronze chape, belt fitting, belt fitting, iron sword II, iron object, iron sword I, iron fragments Lower tomb, list of contents, from top: shoe nails, shoe nails, stone.
- p.152 Third and Fourth Century *Spathae*. 1-5, August; 6, Weilheim an der Teck-Hepsisau; 7, Kastell Buch; 8, Lyon; 9, Kastell Pfunz; 10, Cologne (Sources 1-5, after S.Martin-Kilcher 1985; 6, after *Fber Schwaben* 1952-54; 7,9, after G.Ulbert 1974; 10, after G.Behrens 1919).
- p.153 The 'Arms Tomb' from Severinstor, Cologne, early fourth century (after G.Behrens, 1919). Panel text nos 2, 5-9, scale 1:2; Nos, 1,3,4,10-16, scale 1:4.
- p.154 Top part of a wooden *spatha* scabbard, with its iron suspension loop: Vimose peatbog, third century (from a photo).

Bone appliques on *spathae* scabbards: 1, Frankfurt (after U.Fischer, 1973); 2, London (SH'74-595, Museum of London).

Bronze chape from Cologne, Bayental. Third century AD (photo Röm.-Germ. Museum, Cologne).

Suspension hooks from *spathae* scabbards. Bronze (1), iron (2-10), bone and deer horn (11-15): 1,2,3,8,10, Vimose; 4,Osterburken; 5, Zauschwitz; 6,7, Saalburg; 9, Rimburg; 11, Escolives-Sainte-Camille; 12, London; 14, Cologne; 15 RGZM Mainz (1-10 after H.J.Hundt, 1959-60; 11, after D.Prost, 1983; 12, from the principal; 12, 15, after L.C. Réal et M. Fayesha, 1087)

original; 13-15, after J-C Béal et M.Feugère, 1987).

p.156 Above, artist's impression of a third century Roman soldier (drawing K.Mikiffer, after E.Schallmayer, *Arch. Nachr. Baden* 35, 1986).

- Right, leather baldrick to carry a *spatha*, from the Vimose peatbog (after C.Engelhardt, 1869) and fixing appliques for *spathae* baldricks: 1-3, Saalburg; 4, Zugmantel, after B.Stjernquist, 1954).
- p.157 Upper: Equipment from a German tomb, including a ring-pommel sword ('Ringknaufschwert'): tomb 79 from Malente-Krummsee (after K.Raddatz, 1959-61).
 - Lower: Examples of damascened decoration on the pommels and guards of 'Ringknaufschwerter' -1, Pocap; 2, Vimose; 3, Straubing; 4, 'Bodensee'; 5, Condren (after H.J.Hundt, 1952).
- p.158 Ring-pommel swords ('Ringknaufschwerter'): 1. Denklingen; 2, 'Tyrol'; 3, Chalon-sur- Saône; 4, Hamfelde; 5, Malente-Krummsee; 6, Eining; 7, Ljubuski; 8, Wehringen; 9, Steinamanger; 10, Vertault; 15 and 13, Sisak; 12 and 14, Frankfurt-Heddernheim (1,2,6 and 8, after H.J.Kellner, 1966; 3 and 10, after J.Déchelette 1913; 4 and 5, after K.Raddatz, 1959-61; 7,9,11-14, after H.J.Hundt, 1955).
- p.159 Distibution map of ring-pommel swords ('Ringknaufschwerter').
 - 1. Brokjaer Mark; 2. Vimose; 3. Malente-Krummsee; 4. Hamfelde; 5. Töppel; 6. Hohenferchesar; 7. Litten; 8.Pocap; 9. Xanten; 10. Koblenz; 11. Ittel; 12. Welschbillig; 13. Mainz; 14. Frankfurt-Heddernheim; 15. Sigmaringen; 16. 'Bodensee'; 17. Wehringen; 18. Denklingen; 19. Eining; 20. Straubing; 21. Künzing; 22. Mühlthal; 23. Tabing; 24. 'Tyrol'; 25. Linz a. d. Donau; 26. Szombathely-*Savaria*; 27. Ardanovo-Aranhaza; 28. Genève; 29. Montfort-sur-Risle (Eure); 30. Chauny (Aisne); 31. Limé (Aisne); 32. Vertault (Côte-d'Or); 33. Chalon-sur-Saône (Saône-et-Loire); 34. Lovere; 35. Ptuj; 36. Sisak-*Siscia*. 37. Ljubuski; 38. Dranovets-Senowo.
- p.160 Above, *parazonium*, grip detail; right, bronze grip from another *parazonium*. Both in the National Museum of Naples (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.161 Bronze parazonium from a statue, found at Murrhardt (photo Württembergisches Landesmuseum, Stuttgart).
- p.162 Dagger detail from the memorial to Annaius Daverzus (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.163 Upper: Dagger scabbard with encrusted decoration, from the north of France (?) (photo Röm.-Germ. Zentralmuseum Mainz);
 - Lower: Dagger scabbard decorated with scenes from mythology (after a sketch by R. Forrer).
- p.164 Upper left: Dagger in its scabbard; the encrusted decoration in silver mentions the XXIIIrd Legion *Primi(genia)* Mainz, first century (photo Röm.-Germ. Zentralmuseum, Mainz).
 - Upper right: Dagger in encrusted scabbard from Leeuwen (after J.Ypey, 1960).
 - Lower left: Legionary dagger from Allériot (Saône-et-Loire) (after L.Bonnamour and H.Fernoux).
 - Lower right: Dagger from Buciumi, Romania (after N.Gudea, 1972).
- p.165 Dagger grip in ivory (Museum of London, PCD/ER-546).
 - Legionary dagger and scabbard discovered in the heart of the City of London, at Copthall Court in 1951 (drawing Museum of London, inv. 59.94/1).
- p. 166 Two pila shafts from the Ljubljanica near Dolge njive (Slovenia) (after J.Horvat, 1990).
- p. 167 First century *pila*: 1-3, Oberarden; 4,6-9, Dangstetten; 5,(*pilum*?), Lexden; 10-11, Kalkriese; 12-13, Hod Hill. Sources: 1-3 after S.Loeschke and C.Albrecht, 1948; 4,6-9, after G.Fingerlin, 1986; 5, after J.Foster, 1986; 10-11, after W.Schlüter *et al.*, 1992; 12-53, after W.Mannig; 1985; Scales 10 cm.

- p. 168 *Pilum* points found in the valley of the Saône (after M.Feugère, 1990).
- p. 169 *Pilum* points found in the valley of the Saône (after M.Feugère, 1990).
- p. 170 Lance point from Vindonissa (photo Th.Hartmann, Vindonissa-Museum, Brugg).
- p.171 Lance points from Newstead (from the originals).
- p.172 A cavalier and his mount in parade equipment, third century (drawing P.Connolly, photo Röm.-Germ. Zentralmuseum, Mainz).
- p.173 Old reconstruction of a Roman cavalryman (after L.Fontaine, 1883).
- p.174 Memorial to the cavalryman *M. Aemilius Durises*, found at Cologne. The deceased is portrayed in civilian clothing, reclining for a banquet, while his servant note his Weiler-Guisborough type helmet is seen on the lower panel leading his horse in full harness (photo Rheinisches Landesmuseum Bonn).
- p.175 Upper: Iron spur from Hod Hill (British Museum, inv. PRB 43.6.1-124.), now though to be of Carolingian date. Lower: Horse in harness on memorial to *Marcus Sacrius*; Cologne, last quarter of first c. AD (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.176 Detail of head harness on the memorial to *T. Flavius Bassus* (photo Röm.-Germ. Museum, Cologne).
- p.177 Memorial to the cavalryman *T. Flavius Bassus* who died at Cologne at the end of the first century (photo Röm.-Germ. Museum, Cologne).
- p.178 Upper: Reconstruction of the Xanten harness (after I.Jenkins, 1985).
 Centre: *Phalera* from the Xanten harness; photo Röm.-Germ. Zentralmuseum, Mainz. Reconstruction of a horse in harness, based on the Xanten discoveries (after I.Jenkins, 1985).
- p.179 Upper: Harness decorations. 1-2, Hod Hill; 3-4, Newstead; 5-7, Flemington Hag deposit (1 and 2, after Brailsford, 1962).

Centre: Bit from Newstead (drawing by P. Connolly after A.Hyland, 1990).

Horse muzzles: left, Greek (?); right, example from Lerida (after A.K.Taylor, 1975).

- p.180 Bronze cavesson found in the Saône in 1847 (Musée Denon, Chalon-sur-Saône).
 - Harness trappings from civil sites in Southern Gaul: *phalera* from Caux, cavesson fragment from St-Saturnin, Hérault (photos L.Damelet, CDAR, Lattes).
- p.181 Upper: Bronze statuette of a second century cavalryman (Saalburg).Iron protection on a cavalry Weiler-Guisborough type helmet, found at Xanten in 1988 (after F. Willer, 1988).
- p.182 Upper: Eponymous 'Guisborough' helmet used by the cavalry in the first century (photo Röm.-Germ. Zentralmuseum, Mainz).

Lower: avalry helmet from Chalon-sur-Saône (photo Röm.-Germ. Zentralmuseum, Mainz).

p.183 Upper: Weiler-Guisborough type cavalry helmet from Nijmegen (photo Röm.-Germ. Zentralmuseum, Mainz).

Lower: The cavalry helmet from Theilenhofen (photo Röm.-Germ. Zentralmuseum, Mainz).

p.184 (Opposite page, no 185) Sarmatian *cataphracti* on Trajan's Column: the depiction of scales fitting closely against the horses' hooves probably results from hearsay, as actual examples of horse armour fall vertically to the ground from the animal's chest (photo D.A.I.Rome).

Cavalryman depicted on the Arch of Galerius, dating AD 297-311, wearing a 'Spangenhelm' type helmet (after Robinson, 1975).

Lower: Graffito from Dura-Europos showing a Parthian *clibanarius*; second century or first half of third (after Robinson, 1975).

- p.186 Equine scale armour from Dura-Europos, as found. Dating mid-third century (after Prelim. Report, .Sixth Season, 1936).
- p.187 Eagle and Victory on a fibula: Töging, Altötting (Oberbayern) (Prähist. Staatsammlung, Munich, inv. 1977-1780).
- p.191 Face helmet from Pfrondorf (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.192 Face helmet from Rodez, Southern France (photo Musée Fenaille, Rodez).
 Face helmet, J.-Paul Getty Museum, Malibu, USA (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.194 Front part of a face helmet from Echzell (Kr.Büdingen) (Saalburgmuseum, photo Röm.-Germ. Zentralmuseum, Mainz).
- p.195 Upper: Cuirass plaque from sporting armour (Archaeological Museum, Nimes).Lower: Fixing method of the plates making up the chest protection part of the armour (after Robinson, 1975).
- p.196 Cavalry shinguard from Fort-Louis, Bas-Rhin: Aeneas carrying Anchises (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.197 Parade shinguard from Slavonski-Brod in Slavonia : Mars, second century (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.199 Bronze medallion from the Tabriz area, Iran. Munih, Prähistorische Staatsammlung (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.200 Sidepiece from a decorated chamfron from Reining (Kelheim, Bavaria; photo Prähist. Staatsammlung, Munich).
- p.201 Upper right: Composite bronze chamfron from Eining, assembled (after J.Garbsch, 1978).

Upper left: Detail from an Eining chamfron: Hercules, with dot-punched inscription ELI VIRILIS (Prähist. Staatsammlung, Munich).

Lower left: Chamfron in leather, with stamped dacoration and bronze appliques, from Vindolanda (after C. van Driel-Murray, 1989).

Lower right: Central part of a bronze chamfron from Eining (Prähist. Staatsammlung, Munich).

- p.202 Reconstruction of the leather chamfron from Newstead (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.204 Harnessed horse with deceased's servant, from the memorial to *Durises*, Bonn Museum (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.205 Medieval copy of an ancient illustration of Heron of Alexandria's *Belopoica*; how the catapult worked (after Wescher).
- p.207 E.Schramm's catapult reconstructions in the Saalburg museum (photo Saalburgmuseum).
- p.208 Native auxiliaries at the start of the second century (after Trajan's Column): Eastern archer, Balearic Islands slinger (illustration P.Connolly, photo Röm.-Germ. Zentralmuseum, Mainz).
- p.209 Lead slingshot inscribed feri pomp(eium Strabonem) (after E.Babelon and J-A.Blanchet, 1895).
- p.210 Lead slingshots from the Mas d'Agenais (Lot-et-Garonne, SW France): the letters MANL(?) may refer to the ambush of the *pro-praetor L. Manlius* by Aquitaine forces in 77BC. Private collection.
- p.211 Memorial to the archer *Monimus*, from Mainz (after L.Lindenschmidt, 1882).
- p.212 Upper: Distribution of Roman deerhorn bowtips (mod. From W.Zanier, 1988. Small dots show 1-5 examples found; large dots, more than 5).Lower Bone bowtip from a composite bow found at Frankfurt (after U.Fischer, 1973).
- p.214 Upper: Roman crossbow: reconstruction from the Haute Loire reliefs; probable method of spanning bow (after D.Baatz, 1991).
 Lower: Gastraphetes: reconstruction and firing mechanism, after Heron of Alexandria; method of spanning.
- p.215 Upper: Operating principle of a torsion war machine (*tormentum*) (after D.Baatz, 1985). Lower: Reconstruction of the Late-Republican catapult from Ampurias by E. Schramm.
- p.217 (Captions, from top downwards) Upper: Arrow shaft, simple, softwood: flights: arrow shaft, composite, hardwood and softwood: hardwood (diameter of modiolus) wooden flights. Reconstructions of catapult arrows from the first to the third centuries (D.Baatz).
 Lower: Chariot-mounted light artillery, placed just behind the infantry ranks, was a valuable support in close
 - fighting. Trajan's Column (photo DAI, Rome).
- p.218 Upper: *Kambestrion* and *modioli* from the catapult from Lyon (after D.Baatz and M.Feugère, 1981). Reconstruction of the Lyon catapult, without the sheetmetal pieces to protect the cord bundles (after D.Baatz and M.Feugère, 1981).
 - Lower: *Kamarion* from the Orsova catapult and old drawings of the components of a *cheiroballistra*, based on medieval copies of Heron of Alexandria's Treaty (after D.Baatz and M.Feugère, 1981).
- p.220 Left: Bronze *modioli* from ancient catapults : 1-3, Ephyra ; 4-6, Mahdia ; 7, Cremona ; 8, Bath (after D.Baatz, 1985).
 - Right: Incendiary arrowhead and reconstruction of fire-arrow for use in catapults: Dura-Europos, third century (after S.James, 1983).

- p.221 Ballista balls from the late-Roman levels at Strasbourg (photo Musées de Strasbourg.)
- p.222 Upper: Torsion-powered war machine (stone-thrower) from Hatra (after D.Baatz, 1978). Lower: Reconstruction of an *onager* by E.Schramm (photo Saalburgmuseum).
- p.223 Reconstruction of the Ampurias catapult (third century AD) by E.Schramm (photo Saalburgmuseum).
- p.224 Memorial of *Annaius Daverzus* (photo Röm.-Germ. Zentralmuseum, Mainz).
- p.225 Memorial of an unknown legionary (photo Rheinisches Landesmuseum, Bonn.) Above, *cingulum* from Rheingonheim; Speyer Museum. Below, *cingulum* from Chassenard (Musée des Antiquités Nationales).
- p.226 A third-century march past. Bronze medallion (badge of an officer, *Aurelius Cervianus*?) found in France; *vexillationes* of the XXth *Legio Valeria Victrix* and the IInd *Legio Augusta* (after J.Casey, 1991).
- Upper: Cingulum buckle in silver, from Pompeii: Neptune and Minerva, olive tree between them (after E.Künzl, 1977).
 Centre: Roma and Victory on a silver cingulum plaque from Pompeii or Herculaneum (after E.Künzl, 1977).
 Lower: First century cingulum plaque from Oberstimm: the wolf suckling Romulus and Remus (photo Prähist. Staatsammlung, Munich).
- p.228 Applique and fixing method on *spatha* baldrick inscribed *optime maxime con (sera) / numerum omnium / militantium* from the camp at Zugmantel (photo Röm.-Germ. Zentralmuseum, Mainz).
 Above, third century buckle types and fixing method using two buttons (after J.Oldenstein, 1976).
- p.229 Leather strap still with its endpiece and decorative bronze studs; Vindolanda, c. AD 105-115 (Vindolanda Trust).
- p.230 Roman shoes from Mainz: 1-8, caligae; 9-10, calcei (after J.Göpfrich, Saalburg Jb. 42, 1986).
- p.231 Upper: Hobnailed sole of a *caliga* from Vindonissa (photo Th.Hartmann, Vindonissa-Museum, Brugg.) Lower: Sole of a leather shoe from Dambach (Prähist. Staatsammlung, Munich, inv. 1966-442).
- p.232 Tent pegs from Vindonissa (photo T.Hartmann, Vindonissa-Museum, Brugg).
- P.233 Tools used by Vindonissa legionaries (photo Th.Hartmann, Vindonissa-Museum, Brugg).
- P.235 Plumbata from Vindonissa (photo Th.Hartmann, Vindonissa-Museum, Brugg).
- P.236 Barbed and socketted points found in Burgundy (after M.Feugère, 1990).
 Barbed and socketted points 1, Lorch; 2,7 and 9, Nydam; 3, Ihringen; 4, Messkirch 5, Vindonissa; 6, Moosberg; 8, Munchhof-Hornberg; 10, Sargans (after S. von Schnurbein, 1974).
- P.237 Upper: *Plumbata* from Vrhnika (Slovenia) (after J.Horvat, 1990).Lower: Stilicho on the Monza diptych, towards AD 395 (after M.Bishop and J.Coulston, 1993).
- p.238 Iron helmet from Dunapentele (?) fourth century (photo Röm.-Germ. Zentralmuseum, Mainz).

- p.239 Comparison between first century helmet made by an independent craftsman (?) and a fourth century specimen from a State *fabrica* (after S.James, 1988).
- p.240 Illustration from *Notitia dignitatum*: *insignia viri illustris magistri officiorum*. Control of the State workshops was included in the functions of the *magister officiorum*. The colour illustration shows, under a table with a picture of two emperors, a selection of officially approved products. Copy made in 1551 from an early fifth century MS. Munich, Bayer. Staatsbibliothek.
- p.241 Fourth century soldier equipped with chainmail coat (?) with long sleeves, crested helmet, round shield, lance, and *spatha* hanging from a baldrick. Linz memorial, Austria (after J.C.N.Coulston, 1990).
- p.242 Memorial of signifer (?) Lepontius; Strasbourg, fourth Century (photo Musées de Strasbourg).
- p.244 The Deurne helmet, fourth century (photo Rijksmuseum van Oudheiden, Leiden.)
- p.245 Chainmail coats with protective hoods: Nisus and Euryale before the council, painting from manuscript, Vergilius Vaticanus (Cod.Lat 3225), fourth century (?) (after J.C.N. Coulston, 1990).
- p.246 Upper: Weapons from Liebenau Tomb 1/1957, mid-fourth century (after H.W.Böhme, 1974).
 Lower: A fourth century grave with weapons: *spatha* with its baldrick, two lances, shield: Tomb 2 from Simris (Skane, Denmark) (after B.Stjernquist, 1954).
- p.249 The Theodosius *missorium* found in 1847 near Merida and now in the Archaeological Museum, Madrid. Surrounded by four bodyguards armed with lance and oval shield, the Emperor is enthroned between his coregents Arcadius and Valentinian II in front of a temple or a decorated screen; the inscription dates this work of art to AD 388 (photo DAI, Madrid).
- p.250 Upper: Buckle and belt fittings from Wessling, fifth century. (photo Prähist. Staatsammlung, Munich).
 Lower: Buckle and belt fittings from Wessling, towards AD 400 (photo Prähist. Staatsammlung, Munich).
- p.251 Upper: Germanic style belt pendants from Southern Gaul: 1, Versols-et-Lapeyre, Notre-Dame du Cayla (Aveyron); 2, Eyguières (Bouches-du-Rhône).
 Lower: Buckle and appliques from a military belt found at Altenstadt, beginning of fifth century (photo Prähist. Staatsammlung, Munich).
- p.252 Upper: Gilded silver belt decorations found at Cologne, third century; photo Röm.-Germ. Museum, Cologne. Lower: Gold buckle from the Ténès hoard, Algeria: end of fourth century? (after J.Heurgon, 1958).
- p.253 Upper: Late period belt fittings in southern Gaul: 1, Nimes (?); 2. Saint-Clément (Gard) 3,12, Musée de Montpellier; 4,13, Frontignan (Hérault); 5, Laudun (Gard) 6, Neffiès (Hérault); 7,9-10,15, *Glanum* (Bouchesdu-Rhône); 6, Saint-Maurice-de- Navacelles (Hérault); 11, Musée de Nimes; 14, Verzon (Aveyron); 16, Saint-Saturnin (Hérault); 17, Loupian (Hérault); 18, Béziers (Hérault) (8 after J.Arnal and C.Milhau, 1964; 4,13 after C.Pellecuer, 1986).
 - Lower: Gold buckle from the Ténès hoard : end of fourth century ? (after J.Heurgon, 1958).
- P.254 Above and below: gilded silver buckle from the Ortiz collection, found in Asia Minor; towards AD 400.

- P.255 Germanicus on the battlefield where Varus' legions perished; mid-nineteenth century German engraving.
- P.256 Upper: The eagle, symbol of the power of Rome, seen here on the Theilenhofen helmet (photo Röm.-Germ. Zentralmuseum, Mainz).
 - Lower: Hand to hand fighting, portrayed on Trajan's Column: although outnumbered, the legionaries are putting up a heroic resistance to protect the baggage train (photo D.A.I., Rome).
- p.257 Symbols of *felicitas* on a *gladius* scabbard from Vrhnika-*Nauportus*, Slovenia (photo Röm.-Germ. Zentralmuseum, Mainz).
 - Silver saucepan manufactured in Campania during the first century. The inscription shows that it belonged to a soldier 'C.Didius Secundus, serving with Marius' century in the IInd Legio Augusta' before being buried with other precious objects at Ruffieu (Isère) towards AD 254-255 (Lyon, Musée des Beaux-Arts).
- P.258 Portrait of Drusus on a glass *phalera* from Vindonissa (photo Th.Hartmann, Vindonissa-Museum, Brugg). *Cingulum* with stamped decoration from Risstissen (photo Württembergisches Landesmuseum, Stuttgart).
- P.259 Upper: Inscriptions on a bronze helmet from Mainz giving the owner's name, *L.Lucretius Celeris* of the First Legion. Germ.Nat.Museum, Nurnberg (photo Röm.-Germ. Zentralmuseum, Mainz).
 Lower: Letter on a wooden tablet formerly covered with wax, from Vindolanda, probably addressed to one *Cerialis*, mentioning the ability of *Vocontius* Voconce to load a hundred chariots in a day (photo Univ. of Newcastle-upon-Tyne, with the kind permission of E.Birley).
- p.260 Tip of *gladius* scabbard from Vindonissa, Tiberian period, showing a cavalryman striking down a barbarian, and a trophy (photo Röm.-Germ. Zentralmuseum, Mainz).
- P.261 Propaganda motifs on *gladius* scabbards from Vindonissa (a-c), Baden (d) and Ptuj (e):
 Victory presenting wreath to Roma: two cherubs placing shield with portrait on back of eagle, captive between two trophies (photo Röm.-Germ. Zentralmuseum, Mainz).
- P.262 Tomb 17, Idria pri Baci, Slovenia, 10-30 BC. Weisenau type helmet, *gladius*, shield *umbo*, and various offerings note the two buttons with rings (after Gustin, 1991).
- P.263 Cremation burial including a face-helmet; from Hellange (Musée du Grand-Duché du Luxembourg).
- p.264 Upper: Shield, knife and *gladius* from Tomb 1 at Verdun, Slovenia (after D.Brescak, 1989).
 Lower: Chassenard (Allier); front part of an iron face-helmet (Musée des Antiquités Nationales).
- p.265 Augustan-period *gladius*, scabbard parts and suspension components from the shipwreck at Comacchio (after F.Berti *et al*, 1990).
- P.270 Right from his recruitment, the Roman soldier shows a legionary's arrogance. Ermine Street Guard, Loupian, 1992.
- p. 273 This relief from Trajan's Column, showing legionaries erecting stonework, is a good illustration of the Roman army's efficiency in technical matters, with each man playing his part in a collective enterprise (photo D. A. I., Rome).