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# WARRIORS & WEAPONS

3000 B.C. to A.D. 1700

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3000 B.C. to A.D. 1700

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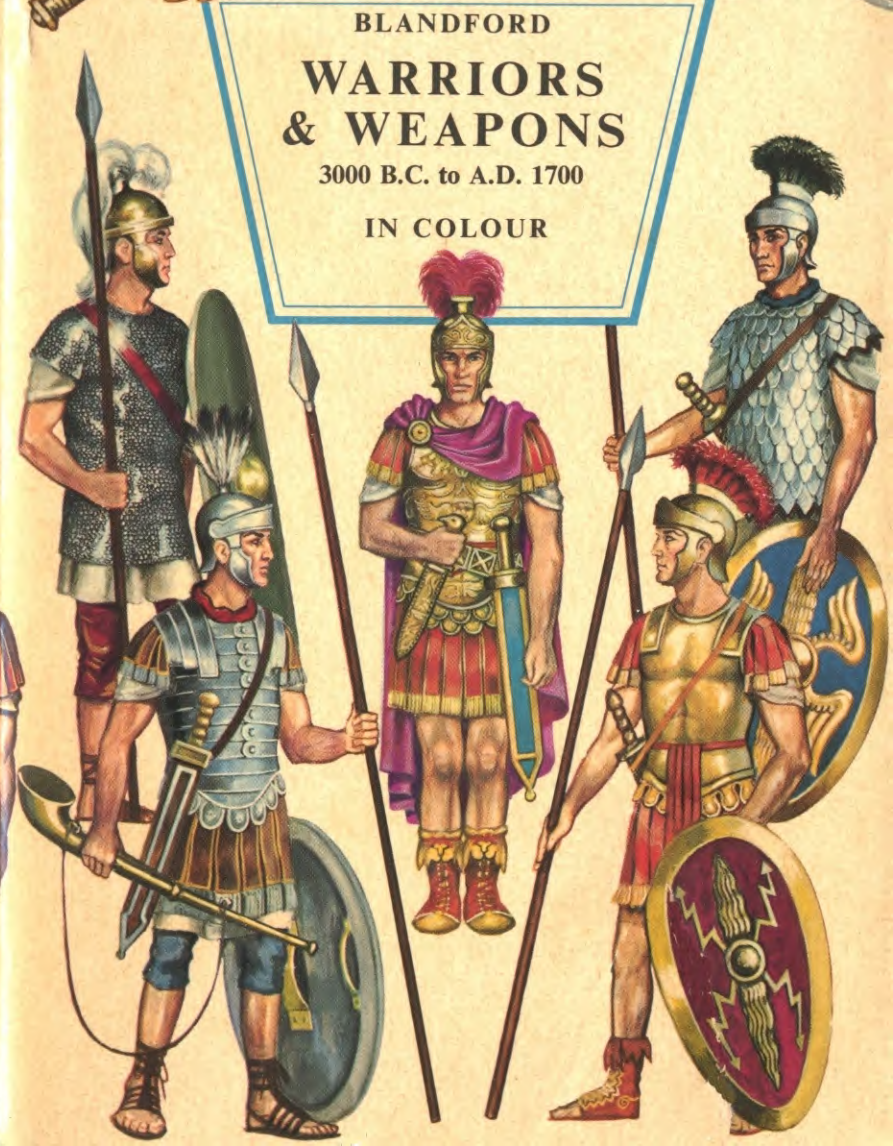

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N. SAXTORPH

WARRIORS AND WEAPONS

Blandford

# Warriors and Weapons
## 3000 B.C. to A.D. 1700

# Warriors and Weapons 3000 B.C. to A.D. 1700 in Colour

by Niels M. Saxtorph

illustrated by Stig Bramsen

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# Foreword

WARRIORS AND WEAPONS 3000 B.C. TO A.D. 1700 is the most comprehensive book on the subject at a popular price yet available. It illustrates in full colour and describes no fewer than 422 warriors of all types, from Europe, Asia, North Africa, South and Central America.

These warriors are depicted and described in chronological order, according to historical periods, from the Egyptians in Pharaoh's army *c.* 3000 B.C. through the Roman legionaries and the French feudal knights to the European Landsknechts of the Thirty Years War. In the last colour plate the soldiers from the first uniformed national regiments are paraded.

Besides giving descriptions of the warriors shown in the colour plates, an account is given of the weapons and equipment used by the different races, their organisation and tactics, and the functional purpose of the different items of equipment is explained. The book also provides a valuable over-all cultural and historical account of the development of weapons through the ages, from the first metal weapon to the introduction of fire-arms and the revolutionary importance these had on the soldiers' future equipment.

The detailed index makes it easy for the reader to obtain the exact information about each warrior, his weapons and equipment, as well as the organisation and tactics used at any given time within the period covered. There is also a comprehensive bibliography.


Considerable study has been made by the author and artist of weapons and works of the history of art and illustrated publications from museums and cultural institutions in many countries, and they would like to express appreciation of the co-operation they have received.

# Introduction

Many people believe that history consists only of wars waged by kings and generals. But battles are fought by common soldiers armed with spear and shield – in armour and breastplate – or with sword and pistol. This book's main theme is the equipment of the ordinary soldier and how it changed through the ages, from the Ancient Egyptians *c.* 3000 B.C. to the colourful but uniformly dressed regiments *c.* A.D. 1700.

Artists down through the centuries – painters, sculptors and poets – have always been fascinated by these men versed in arms. We gather this from the magical paintings of the hunt made by Ice Age people in the grotto of Almeria in Spain and in the caves of the Dordogne in France, from the alabaster reliefs in the palaces of the Assyrian kings and from the woven wall-hangings of the Renaissance princes. Most sagas and lays deal with heroes who overcame their enemies, like David who slew 'ten thousand' or like Hercules who killed lions. Some, such as Richard Lionheart, fought infidels, others clove anvils and slaughtered dragons, for instance the heroes of the Niebelungenlied and the Arthurian legends. We find sagas such as these being fabricated right up to the time of the Swedish king Charles XII, in the story of his boyhood bear hunt.

The story of weapons and warriors, however, is more than just a tale of heroic deeds. It is the long history of technical development, the interaction of attack and defence, starting with flint knife versus skin garment, through two-handed sword versus knightly armour, on to the time when fire-arms became so powerful that attempts to provide any really effective protection against them were abandoned, and up to the present century with its chariots of armour-plate and bullet-proof vests of duralumin. But this technical reciprocal action had effects in many other fields. The Stone Age flint-knapper used the same excellent technique whether he was producing a spear-head or a sickle. The desires of the English kings to obtain bigger and better cannon gave rise to a process of casting being invented *c.* 1500 that was to stand Europe in good stead for the next 300 years, while the

craving of princes for splendid armour and costly weapons created a demand for armourers, engravers, gilders, gunsmiths, goldsmiths and jewellers, crafts which brought about developments in other directions as well.

He who possesses a weapon holds power in his hand. Power is not enough – you have to be able to wield it – yet in the history of the world a series of political, social and cultural factors have been determined by the development of munitions and armies, just as many military events were determined by political and social conditions. Once again interaction is a part of it. The Graeco-Roman civilisation would not have spread across Europe, anyhow not in the way it did, had not the Roman legions had an order of battle and tactics superior to that of other peoples, something which, among other things, was determined by their armament and armour. There are scholars who ascribe the development of the feudal system and chivalry to the introduction of stirrups, and some people believe that the date can be pin-pointed to exactly A.D. 732. Similarly there is a close connection between the strong central power in Europe around 1500 and the advent not only of effective artillery, but also of light infantry, who, armed with long pikes and halberds, could unhorse men by thrusting or pulling.

Our account of the warriors of the various ages begins at the time when weapons were made of metal. A great deal of information is available on a great number of Stone Age weapons; there is nothing very definite about the warriors' clothing or accoutrements. It is only from the Americas that we have any details of warriors who were accomplished in weapons not made of metal. In the western hemisphere we have to start as 'late' as the Egyptian and Mesopotamian civilisations *c.* 3000 B.C. if we are to be at all exact; from that time onward we have a mass of information to rely on. Our knowledge comes from archaeological excavations, statues, reliefs and paintings found in tombs, antique vases, religious wall-paintings, medieval manuscript illustrations and from the great masters of the Renaissance.

In this wealth of material, however, there is a social bias. It is quite obvious that archaeologists should make the greatest finds in the graves of kings and princes. We know almost *ad nauseam* what the Egyptian Pharaoh looked like in his chariot, but it is from the





subsidiary characters in the painting of his victory, or from the wooden toy soldiers placed in his tomb, that we gain any knowledge about the common soldier. The same is true of the warriors of the Middle Ages, where we know of many 15th- and 16th-century knights from their sepulchral monuments, while we have to search for the ordinary soldier on the carved altar pieces representing those who arrested Christ or guarded the foot of the cross. The same social bias manifests itself when we consider the objects still preserved. In the great museums, principally in London and Vienna, the most magnificent equipment and weapons from *c.* 1450 to *c.* 1600 are still in existence, inlaid with gold, ivory and precious stones, but these are purely ceremonial items which even in those days must have cost a fortune. The iron helmet of the private soldier and his coat of mail have only rarely been preserved, perhaps because chain mail is so useful for scouring copper pots. Only where archaeologists have found a mass grave such as the one from the battle of Visby in 1361 is it possible to obtain first-hand evidence of the ordinary man's equipment.

We have endeavoured in our coloured plates to trace the development in weapons and equipment, while in the text we have attempted to put this development into its proper perspective historically and whenever possible culturally as well. The subject matter has therefore been divided up into periods of varying lengths and arranged chronologically in a way we consider obvious. Thus we have chosen to show in one period the development taking place in Mesopotamia from the Sumerians *c.* 3000 B.C. to the Persians *c.* 500 B.C., before dealing with the Greeks, although this meant going back again to 1200 B.C. Similarly the Mayas and the Aztecs have been placed after the discovery of America in 1492, notwithstanding the fact that some of the figures depicted date from about 600 years earlier.

The long period of time we are concerned with includes both well-organised 'proper soldiers', such as the Roman legionaries, and large tribes of warriors, such as the Teutons and the Huns. Arms and battle dress, manner of combat and social conditions, are so varied that we have not been able to employ the strict grouping and method of description used in Preben Kannik's *Military Uniforms of the World in Colour*, but perhaps because of their difference the two books will be complementary.

## Egypt

*3000–2000 B.C.*

1. Standard-bearer
2. Ordinary infantryman
3. Nubian mercenary

1 2 3

## Egypt

*2000–1200 B.C.*

4 & 5. Light infantry
6. Officer
7. Officer of the guard
8, 10 & 11. Armoured infantry
9. Standard-bearer

4 5 6 7 8 9 10 11

## The Near East and Egypt

*2000–1200 B.C.*

12. Phoenician light infantryman
13 & 14. Nubian light infantry
15. Nubian officer
16 & 18. Semitic light infantry
17. Light infantryman of the Sea People
19 & 20. Light and armoured infantry from the Philistine army

12 13 14 15

16 17 18 19 20

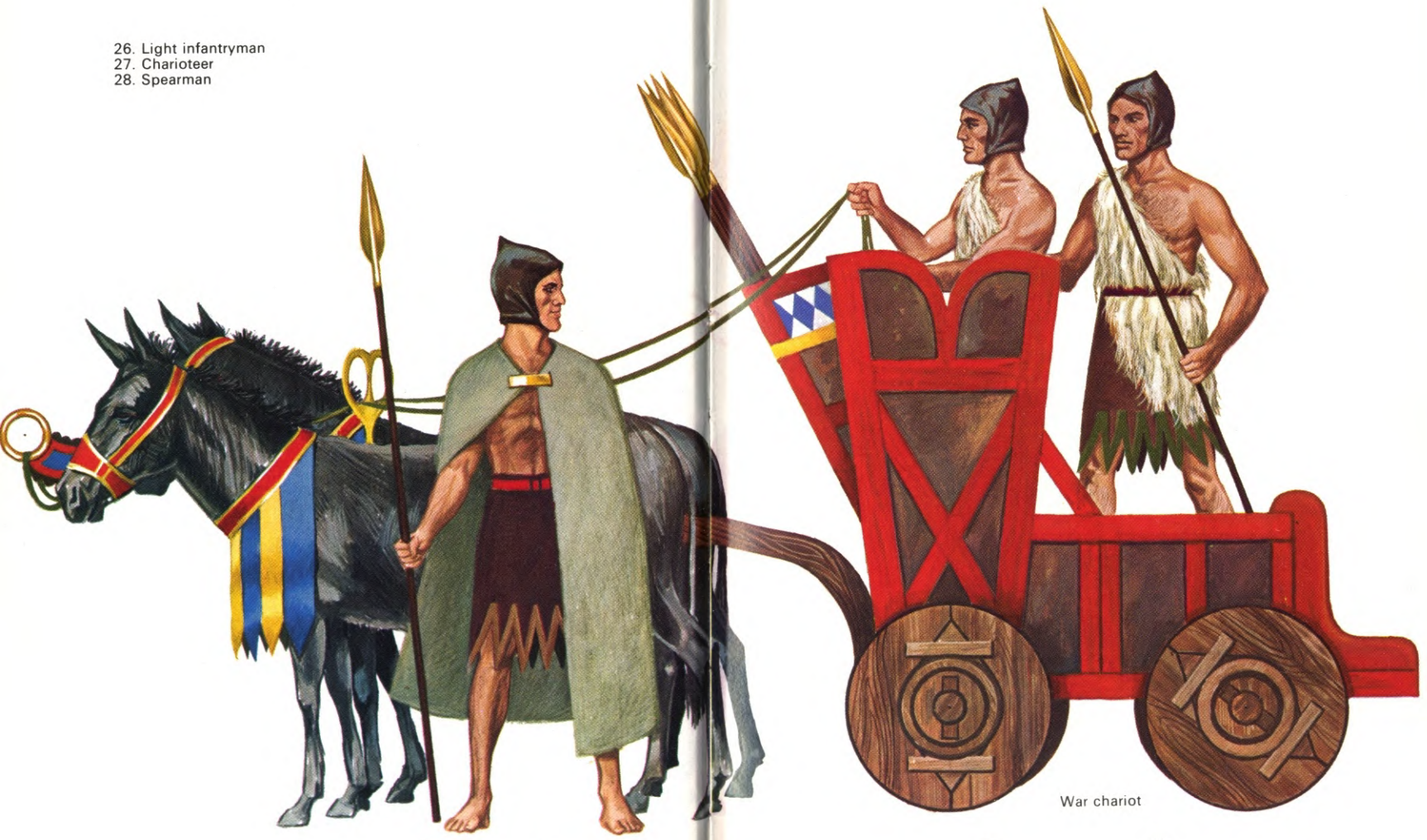
**Egypt**
*1400–1100 B.C.*

21. Pharoah Ramses 2
22. Charioteer
23. Standard-bearer
24. Charioteer and archer
25. Spearman

War chariot

War chariot

26. Light infantryman
27. Charioteer
28. Spearman



War chariot

29, 31 & 36. Light infantry
30. Prince Meskalamdug of Lagash
32. King Eannatum
33 & 34. Heavy infantry
35. Standard-bearer from Mari

29 30 31 32

**Sumer**

*2600–2000 B.C.*

33 34 35 36

**Assyria**
*1100–612 B.C.*

37. Light archer
38. Armoured archer
39. Armoured charioteer

War chariot

37 38 39

**Assyria**
*1100–612 B.C.*

40–43. Armoured archers
44. Shield-bearer
45. Prince

40 41 42 43 44 45

46 & 47. Lancers
48 & 51. Light infantry
49 & 50. Armoured infantry

**Assyria**

*1100–612 B.C.*

52. Armoured infantryman
53 & 54. Prince and shield-bearer
55. Armoured archer
56 & 57. Armoured archer and shield-bearer
58 & 59. Sapper and shield-bearer

52 53–54 55 56–57

Siege engines 58–59

## Persia

*c. 500 B.C.*

60. Officer
61. & 63. Guardsmen
62. Archer
64. Standard-bearer

60 62 61 64 63

## The Near East

*1500–1100 B.C.*

65 & 67. Hittite princes
66. Hittite light infantryman
68. Hittite guardsman

65 66 67 68

69 & 71. Armoured swordsmen
70 & 73. Spearmen
72. Charioteer

69

70

71

72

War chariot

73

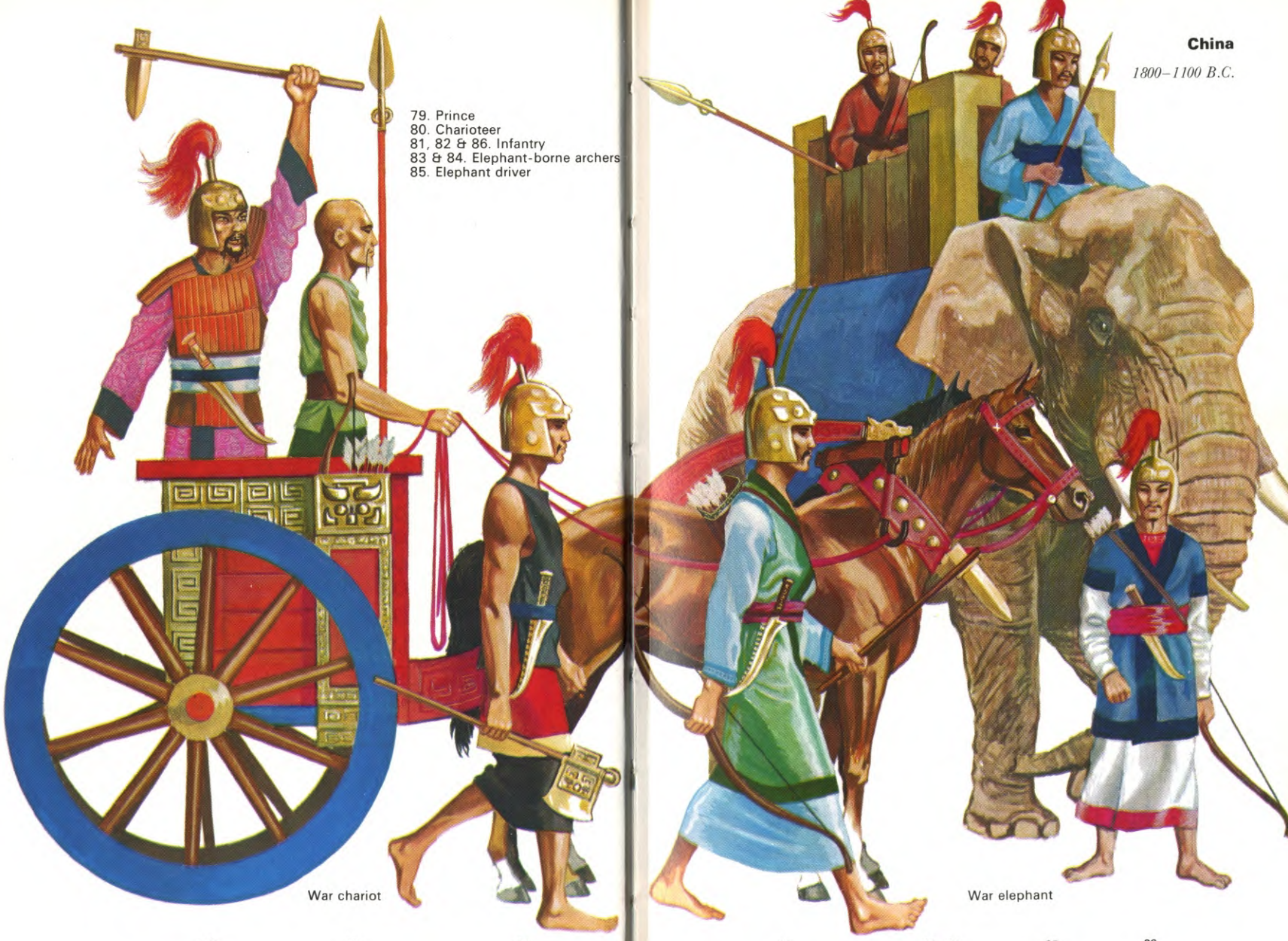
74 75 76

**The Near East**

*800–500 B.C.*

74 & 76. Phrygian armoured infantry
75. Phrygian cavalryman
77. Scythian armoured infantryman
78. Scythian cavalryman

77 78



79. Prince
80. Charioteer
81, 82 & 86. Infantry
83 & 84. Elephant-borne archers
85. Elephant driver

War chariot

War elephant

79 80 81 82 83–84 85 86

**Scandinavia**

*1500–500 B.C.*

87 & 89. Chieftains
88. Cavalryman
90 & 91. Ordinary warriors
92 & 93. Lur blowers

The Sun Chariot from Trundholm

87 88 89 90 91 92–93

**Greece**
*600–300 B.C.*

94. Cavalryman
95–99. Armoured infantry (Hoplites)

94 95 96 97 98 99

100–103. Armoured infantry (Hoplites) in battle order
104. Light infantryman (Gymnets)
105 & 106. Medium-heavy infantry (Peltasts)
107. Archer

100–103

**Greece**

*600–300 B.C.*

104 105 106 107

108 & 109. Armoured cavalry
110 & 111. Elephant-borne archers
112. Elephant driver

War elephant



**Macedonia**

*350–150 B.C.*

113. Greek officer from Taranto
114 & 115. Etruscan light infantry
116 & 117. Samnite light infantry
118. Etruscan armoured infantryman
119–121. Roman armoured infantry (legionaries)
122. Roman centurion (N.C.O.)

113 114 116 115 117 118

119 120 121 122

123. Marine
124 & 125. Cavalry
126 & 127. Armoured infantry from the northern provinces
128. Eagle standard-bearer (aquilifer)
129. Armoured infantryman (legionary)
130. Emperor Augustus
131. Centurion (N.C.O.)
132. Tribune (commissioned officer)

123 124–125 126 127

128 129 130 131 132

133, 137 & 139. Armoured infantry (legionaries)
134. Hornblower
135. Eagle standard-bearer (aquilifer)
136. Light infantryman
138 & 140. Cavalry

**Rome**
*100–200*

133 134 135 136 137

138 139 140

Catapult

141 142–145 146



141. Centurion (N.C.O.)
142–147. Armoured infantry (legionaries)
148. Legate (general)
149. Light infantryman
150. Cavalryman

147 148 149 150

## Rome

*c. 300*

151 & 153. Foreign mercenaries (light infantry)
152. Light infantryman
154. Armoured infantryman (legionary)
155. Cavalryman
156. Ensign

151 152 153 154

## Rome

*c. 300*

155 156

157. Eagle standard-bearer (aquilifer)
158–162. Praetorians (guards)
163 & 164. Guardsmen
165. Mounted guardsman (Germanic mercenary)

157

158–162

163

164

165

166–168 & 171. Ordinary warriors
169. Standard-bearer
170. Chieftain
172. Cavalryman
173. Hornblower

166 167 168 169 170

171 172 173

**Byzantium**
*500–800*

174. Armoured infantryman
175. Armoured cavalryman (Cataphract)
176. Ordinary cavalryman
177. Light infantryman

178. Persian armoured cavalryman (Cataphract)
179. Persian mounted archer
180. King Chosroes II, Sassanian dynasty

**The Near East**
*250–650*

181 & 183. Arabian light infantry
182. Arabian armoured cavalryman
184. Arabian armoured infantryman
185. Arabian light cavalryman
186. Arabian armoured archer

181 182 183

**Islam**

*600–800*

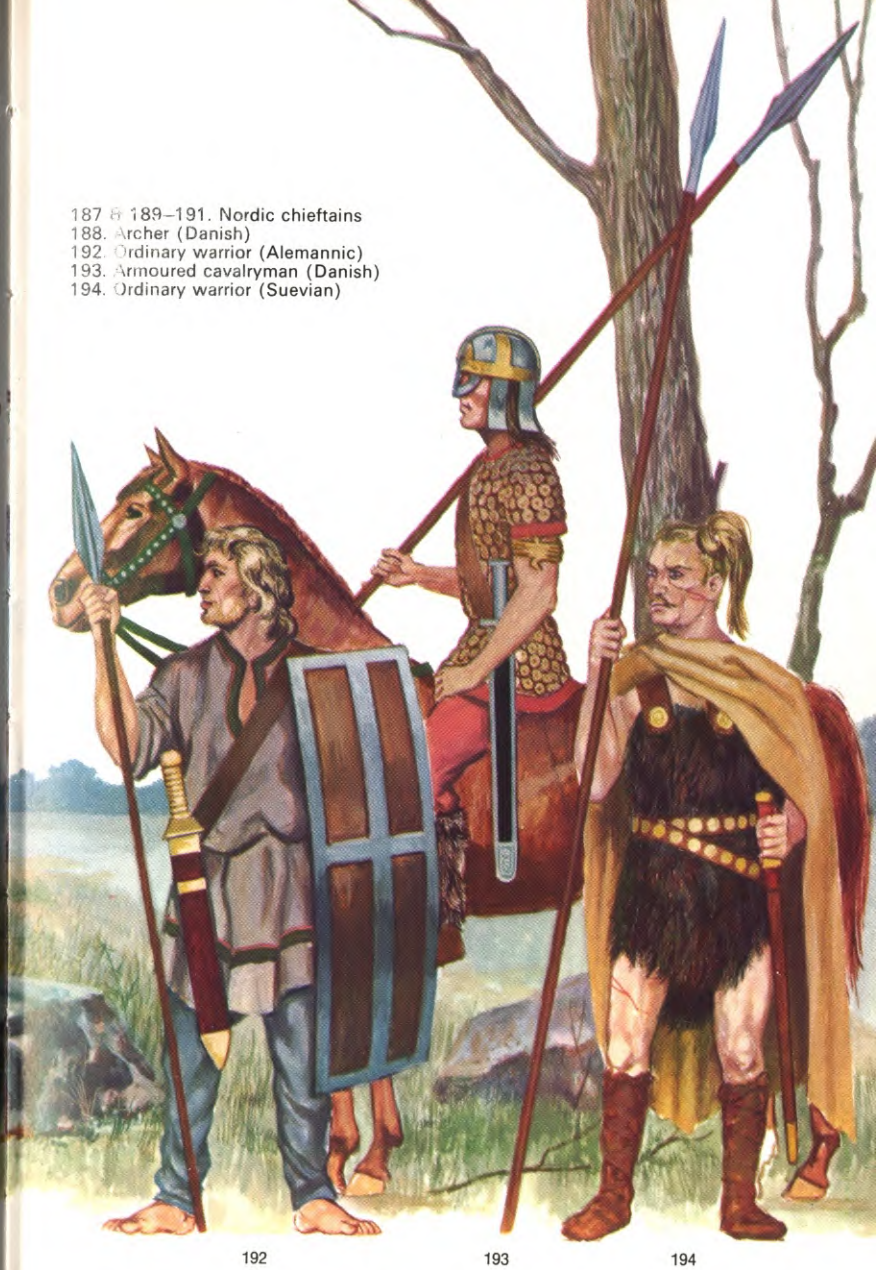
184 185 186

## The Germans

*100–400*

187 & 189–191. Nordic chieftains
188. Archer (Danish)
192. Ordinary warrior (Alemannic)
193. Armoured cavalryman (Danish)
194. Ordinary warrior (Suevian)

187 188 189 190 191



192 193 194

195 & 196. Hun cavalry
197. Burgundian infantryman
198. Visigoth armoured infantryman
199 & 200. Frankish infantry

195 196

197 198 199 200

201–203 & 205. Ordinary warriors
204. Chieftain
206. Archer

202
201
203

**The Vikings**
*800–1000*

204
205
206

207, 208 & 211. Armoured infantry
209. Feudal knight
210. Light infantryman
212. Standard-bearer
213. Officer of the guards

209

207 208 210

211 212 213

214. Norman standard-bearer
215. Bishop Odo of Bayeux
216–218. Norman infantry

215
214
216
217
218



219. Anglo-Saxon infantryman (Housecarl)
220. Norman knight
221. Norman archer

219
220
221

222 223



222. Italian knight
223. English knight
224. Norse knight
225. French standard-bearer

224 225

227

226

228

229

**Byzantium and Eastern Europe**

*1000–1200*

226, 229 & 233. Byzantine armoured infantry
227. Phrygian mercenary
228. Byzantine armoured cavalryman
230. Varangian (Scandinavian mercenary)
231. Bosnian armoured infantryman
232. Russian armoured infantryman

230

231

232

233

234, 235 & 238. German knights
236. Sir John of Plessis
237. Spanish knight
239. German armoured infantryman

234 235 236 237

238 239

240. Soldier from Siena's city guard
241. Lord Basset of Drayton
242. English bishop
243. Danish knight (Saxtrup family)
244. Soldier from Paris city guard

240 241 242 243 244

245. Armoured crossbowman from Genoa
246. French armoured infantryman
247. German armoured infantryman

245 246 247



248. East European armoured infantryman
249. Scandinavian armoured infantryman
250. English armoured infantryman serving with the Luttrell family

248 249 250

251 252



251. Lord Robert de Vere, Duke of Oxford
252. Italian knight of the della Scala family of Verona
253 & 254. German knights: Heinrich von Sauensheim and Günther von Schwarzburg
255. Tyrolean captain

253 254 255

256 & 257. Light cavalry
258. Cavalryman with leather armour

259 260



259. English armoured infantryman
260. English herald
261–263. German knights:
Peter von Stettenberg
Ludwig von Hutten and
Philipp von Ingelheim

261 262 263

264. French artilleryman
265. English infantryman with hand-gun
266. German artilleryman
267. French armoured infantryman

Bombard 264 265

**Europe**

*1400–1475*

Culverin Small breech-loader 266 267

268 & 269. French archers
270. English archer
271. English standard-bearer
272. French infantryman
273. German infantryman
274. German crossbowman

**Europe**

*c. 1450*

## Europe

*1450–1500*

275 276 277 278 279

## Religious Orders of Knights

*1225–1525*

275. Burgundian knight
Claude de Vaudrey
276. Archduke Sigismund of Tyrol
277. German knight
278. Spanish armoured infantryman
279. German Feldhauptmann
280. Knight (Templar) of the
Order of Templars
281. German knight of the
Order of the Sword
282 & 283. Knights of the
Order of St. John

280 281 282–283

284, 288 & 289. Armoured cavalry
285. Prince Dimitri Donskoi
286. Prince Vasili
287. Archer

284 285 286

**Russia**

*1350–1500*

287 288 289

290. German camp guard
291. German Hurenwebel
292. Austrian camp standard-bearer
293–295. Austrian baggage-train drivers

290 291 292

293 294 295

296–298. Swiss Landsknechts
299. Italian knight
300. French knight

**Europe**

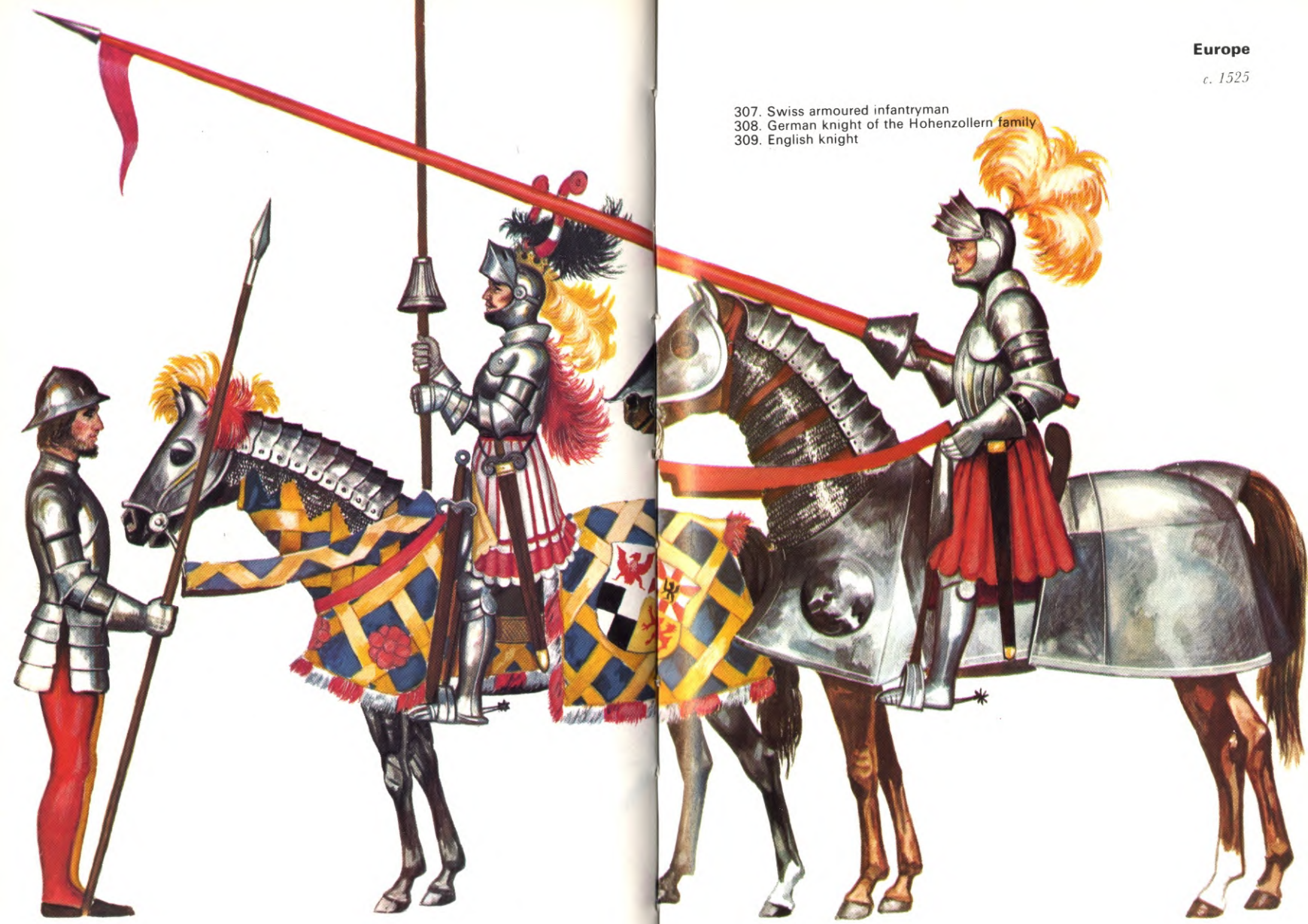
*c. 1525*

301 & 302. German Landsknechts
303. Italian Landsknecht
304. English arquebusier
305. English guardsman (Beefeater)
306. Papal Swiss guardsman

**Europe**

*c. 1525*

307. Swiss armoured infantryman
308. German knight of the Hohenzollern family
309. English knight



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308

309

310 & 314. Inca officers
311. Aztec emperor
312 & 313. Inca warriors
315 & 317. Aztec warriors
316. Maya officer or priest
318. Maya warrior
319. King Nezahualcoyotl of Texcoco

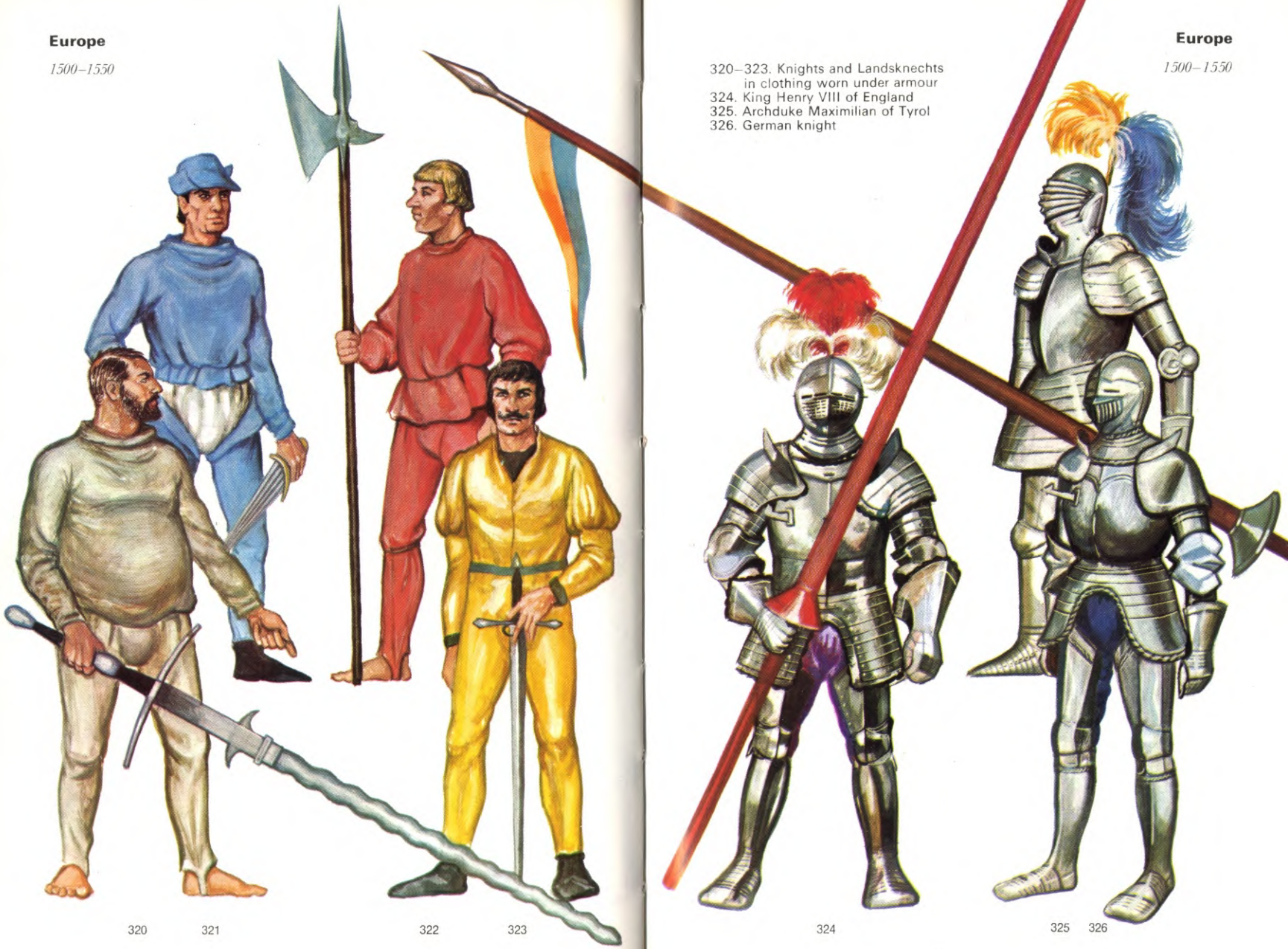
310 311 312–313 314

315 316 317 318 319

320–323. Knights and Landsknechts in clothing worn under armour
324. King Henry VIII of England
325. Archduke Maximilian of Tyrol
326. German knight

**Europe**

*1500–1550*



320 321 322 323 324 325 326

## Ottoman Turks

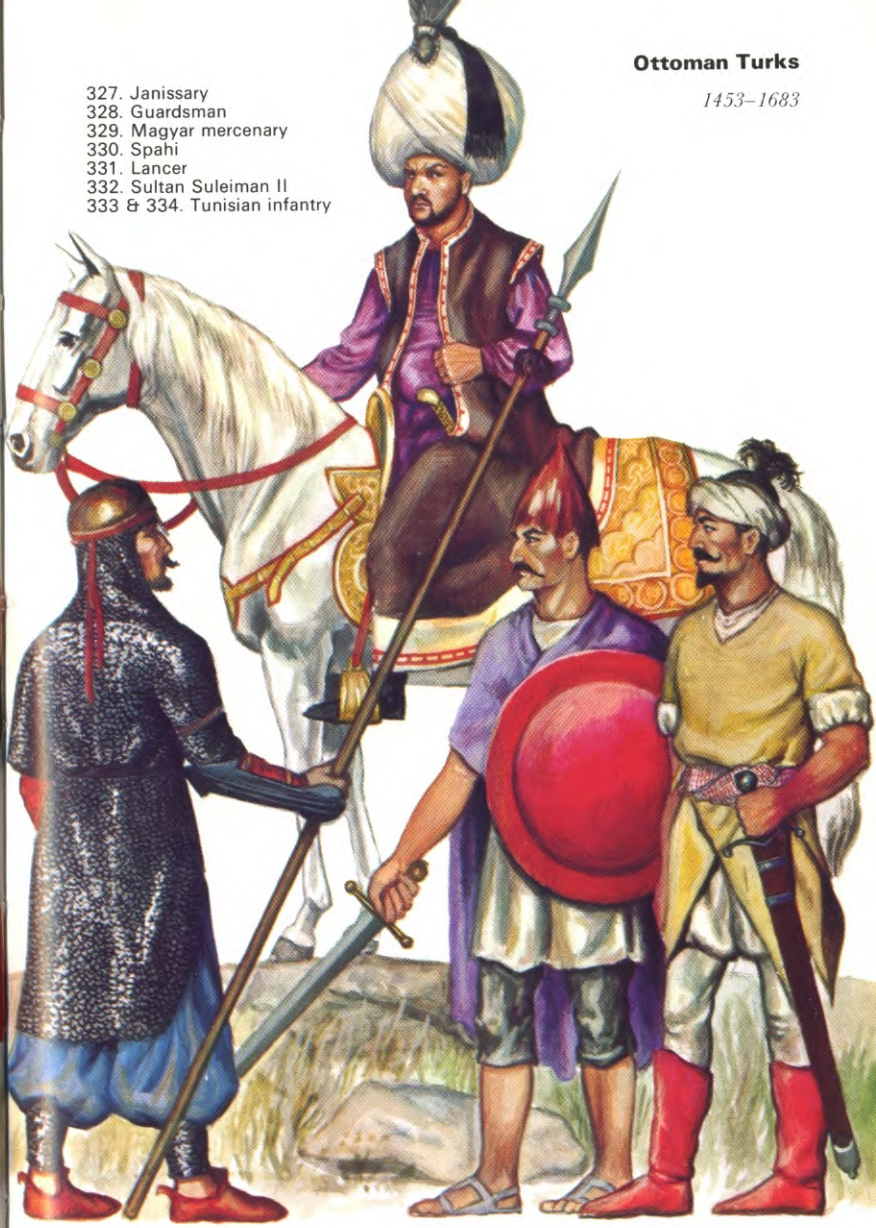
*1453–1683*

327 328 329 330

## Ottoman Turks

*1453–1683*

327. Janissary
328. Guardsman
329. Magyar mercenary
330. Spahi
331. Lancer
332. Sultan Suleiman II
333 & 334. Tunisian infantry



331 332 333–334

335–338. Spanish-Austrian soldiers
339 & 340. French halberdiers
341. Musketeer from Florence
342. Infantryman from Florence

335 336 337 338 339 340 341 342

343. English knight
344. Spanish knight
345. German Landsknecht
346. French musketeer
347. German knight
348. Halberdier from Zurich
349. King Frederick II of Denmark
350. English officer

**Europe**

*c. 1575*

343 344 345 346 347

348 349 350

351

Siege gun



351. French gunner
352. French master-gunner
353 & 354. French gun-servers

352

353

354

**Europe**

*c. 1600*

355. Dutch pikeman
356. Dano-Norwegian cavalryman
357 & 358. German cuirassiers
359. King Henry IV of France
360. French musketeer

**Europe**

*c. 1600*

355 356 357–358 359 360

361 & 362. Polish lancers
363. Strelitz (Russian guardsman)
364. Polish cavalryman
365 & 366. Cossacks

361–362 363 364 365–366

367. Persian cavalryman
368. Indian lancer
369. Mogul officer
370. Mogul lancer
371. Sultan Baybar
372. Mogul cavalryman
373. Mogul trumpeter

367 368 369 370

**Persia and India**

*1500–1600*

371 372 373

374. Infantryman of the Han dynasty
375, 377 & 379. Armoured cavalry of the Tang dynasty
376. Archer
378. Cavalryman with standard of the Tang dynasty
380. Mounted archer

374 375 376 377 378 379 380

China
*1–1700*

381. Armoured archer
382. Armoured cavalryman
383. Spearman
384. Standard-bearer
385 & 386. Armoured Samurai
387. Minamoto soldier

381 382

**Japan**

*1150–1550*

383 384 385 386 387

## The Netherlands

*1615*

388. Burghermaster of Brussels
389. Officer
390. Pikeman
391 & 393. Musketeers } of the Brussels civic guard
392. Standard-bearer
394. Halberdier

388 389 390 391

392 393 394

395 396 397 398 399

**The Thirty Years War**

*1618–1648*

395 & 397. Marauders
396. One of General von Pappenheim's officers
398. Flemish mercenary
399. Danish guardsman
400. German mercenary
401. Swedish cavalryman
402. German mercenary in Danish service
403. French pikeman

400 401 402 403

404. French pikeman
405. Spanish musketeer
406. Netherlands pikeman
407 & 410. Netherlands lancers
408. German musketeer
409. French mounted carabineer
411. Netherlands musketeer

**Europe**

*1618–1648*

404 405 406 407 408 409 410 411

412. Swedish trumpeter
413. English standard-bearer
414. King Gustav II Adolf of Sweden

415. German cuirassier
416. English cavalryman (Ironside)
417. German lancer
418. Swedish guardsman

412 413 414 415 416 417 418

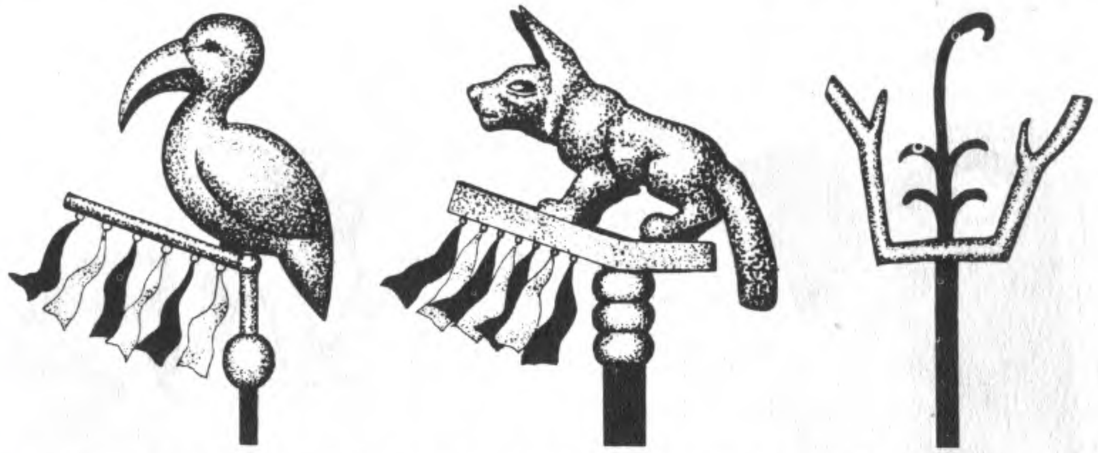
## Europe

*1650–1700*

419. Saxon cuirassier
420. English grenadier
421. French grenadier
422. Brandenburg infantryman

419 420 421 422





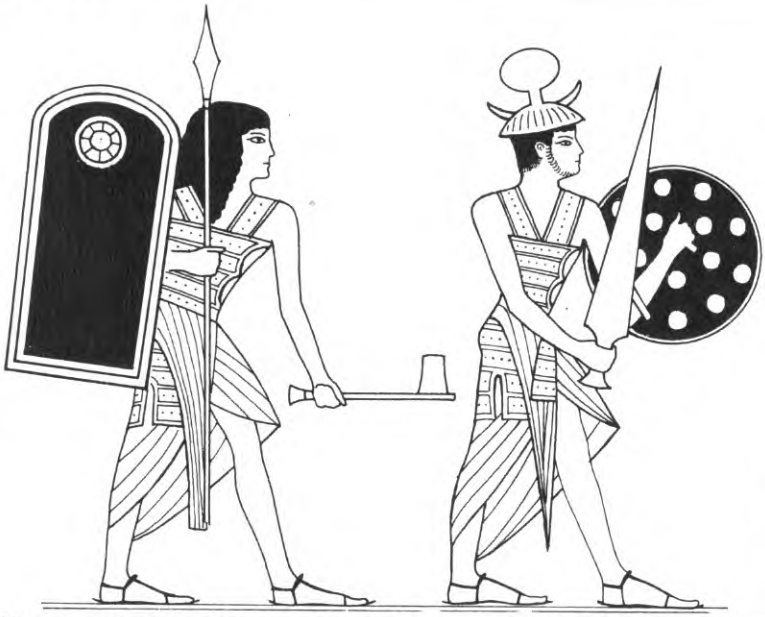
**Egyptian Emblems and Standards.** *Standards on long staffs were carried at the head of the Egyptian regiments for all to see the direction of the advance. The emblems were originally totem figures, such as birds and jackals, but they later became more abstract symbols. These two creatures are from King Narmer's cosmetics palette from about 3400* B.C., *the stylised 'hands' from Abu-Simbel* C. *1280* B.C.

### Egypt 3000–1100 B.C.

**1–25.** One of the world's oldest civilisations, the Egyptian, grew up within the long oasis formed by the Nile Valley. Here was created the civilisation which through various channels – Syria, Crete and Greece – was instrumental in founding European culture. The fertility of the valley depended on the ability to utilise the waters of the Nile by diverting them through a system of irrigation and supply channels, a system whereby one part of the country was dependent on the other and which about 3200 B.C. led to the development of a strong monarchy, which may be the oldest in the world. But the lush valley was constantly attracting the people who lived on its borders, and from the very beginning the Egyptians had to fight their neighbours, and had a well-organised army even before the realm had become united.

We know what the Egyptians wore, their armour and their weapons from paintings in tombs and temples and from the abundant and carefully prepared grave goods with which magnates and the Pharaohs were buried. The actual weapons and chariots of the dead have been discovered, their soldiers following them in the form of little toy figures of wood. Many ordinary utensils, such as furniture and toilet articles, were frequently decorated like miniature monuments to victory.

In the warm climate it was natural for people to be lightly clad, wearing merely a loin-cloth. But the distinguishing mark of the soldier was the large extra lappet hanging down in front (1–2), possibly to



**Egyptian Household Guards.** *The guardsman with the unusual helmet is a foreign mercenary, probably from Asia Minor, which the round, metal-studded shield and the special sword also indicate. He and the Egyptian armed with axe and spear are wearing armour made of leather, wood and metal. The dots on its surface are small studs or stitching. Abu-Simbel* c. *1280* B.C.

cover the groin. This was later developed into a special stiffened and strengthened covering (4). The body might also be protected by several layers of linen (5–6) which in the case of Pharaohs and high-ranking officers becomes 'full dress' (7). In the time of King Ramses II (1292–1225 B.C.) the heavy infantry was further protected by a breast-plate made of pieces of leather (8 and 10) or crocodile skin (10), or by proper armour consisting of small metal plates (9). The shields were made of wood with metal rims (2) and/or covered with hide (6). Their offensive weapons were spear, sword and axe in various forms, as well as bows of three different types made either from one piece of wood (3) or from two pieces bound together (11) or joined by a grip of horn (5).

The Egyptian troops consisted to a great extent of foreign mercenaries under the command of Egyptian officers. We know of the Nubians (3





and 13–15) from the earliest times, both as prisoners and in Egyptian service, but it was not until the kingdom spread to include Palestine and Syria *c.* 1600–1100 B.C. that the peoples of the Near East – the Philistines, the Phoenicians, the Semites and the 'Sea People' (12 and 16–20) – began to appear in paintings and reliefs, such as were found in the tomb of King Tutankhamun from about 1350 B.C., in the Abu-Simbel temple of Ramses II, and in the Medinet-Habu temple of Ramses III. The various tribes depicted in these places have a uniformity of clothing and equipment which makes them easily distinguishable. It is however not known for certain who the 'Sea People' were. Some people believe that they came from Crete, others that they came from the coasts of Asia Minor, while they might also be identified with the Philistines. The terms used for no. 17 and nos. 19–20 are therefore not definite, and they may be interchangeable. It was through the Semitic tribes that the Egyptians became acquainted with the large, powerful bow of laminated wood (16).

During their battles advancing northwards through the Near East the Egyptians came up against the Hittites and the Mitanni tribe, who were partly of Indo-European stock. It was through them that the use of iron, the chariot and the horse was learnt. One chariot – now in the Museo Archeologico in Florence – was found in a tomb at Thebes, and is the same type as is known from many illustrations, particularly of Ramses II's great victory over the Hittites at the battle of Kadesh in Syria in 1288 B.C. The chariot is very light in construction, and although it only had to carry two men it seems incredible that it could be used anywhere but on very level and firm ground. The archer is usually depicted using his bow and arrow (21), while the charioteer protects him with his shield, but he could also be armed as a spearman (25), just as the charioteer at times functioned as an archer (24). Two or four quivers were mounted on the chariot to hold bows, arrows and short throwing spears (*assegais*); the charioteers often made use of a somewhat heavier spear (22). They were prepared to continue the fight on foot if the chariot broke down. The curved shaft was attached to the axle, which was placed beneath or directly behind the tail of the chariot floor. The shaft ended in a yoke with two wide leather collars (green in the chariot illustrated here), so that the horses had to pull with their necks, not with their chests. This inconvenient harness, which prevented the horse while at work from breathing freely and using all its strength, was retained throughout antiquity. The result was of course that the light and fragile chariots could not be driven at any great speed. The royal standard with the disc of the sun and the sacred uraeus serpent followed closely behind the Pharaoh's chariot (23).

**Military Music in Ancient Times.** *The armies of antiquity marched to the tune of music which helped to set a pace. The Egyptians used fife or trumpet – here from Abu-Simbel* c. *1280* B.C. *– while the Assyrians marched to the tambourine, cymbals and 'harp'. We can imagine the two harpists singing war-songs, and with their long civilian dress and flowing locks they might have been priests or dervishes. Assyrian relief* c. *700* B.C.

**Sumer 3000–2000 B.C.**

**26–36.** A civilisation different from the Egyptian, which has had even greater influence on European culture, flourished some 5000 years ago in the cities in the land of Sumer, between the Tigris and the Euphrates, a few hundred kilometres south of the present Baghdad. The development of this country too was based on an agriculture dependent upon irrigation systems, but at the same time also on commerce and transit trade. The country possessed no timber, rocks or metals, so building material for houses, fortresses and temples consisted of sun-dried clay or brick. Our information from archaeological discoveries is therefore limited to objects of imperishable substances, such as gold, quartz, lapis lazuli and other precious stones, to a few victory monuments of stone and to fragments of wall paintings preserved by chance.

The richest finds, dating back to *c.* 2700 B.C., were made in Ur, where among other things an inlaid tablet was discovered, the so-called 'Standard of Ur'. On it are shown Sumerian infantrymen, armed with spears and wearing long cloaks made of cloth and helmets with chin-straps (26), and clumsy-looking chariots drawn by four asses. There is on the tablet such a profusion of legs, heads and manes that in this book we have chosen to include only two animals.

This tablet and a few victory monuments, such as the one for King Eannatum of Lagash (32), tell us that the Sumerians do not seem to have known the bow, only the spear and the axe (26–31, 33, 34 and 36). Real armour was not known either, but they made do with sheepskins which no doubt provided satisfactory protection against bronze weapons. When moving forward in closed ranks the heavy infantry were protected by large rectangular shields embossed with metal (33, 34).

The trade connections of the Sumerians stretched from Tilmun, the present Bahrein, on the Persian Gulf, right up along the rivers. There was a trading station at Mari, halfway up the Euphrates, where a wall-painting of a standard-bearer was found (35).



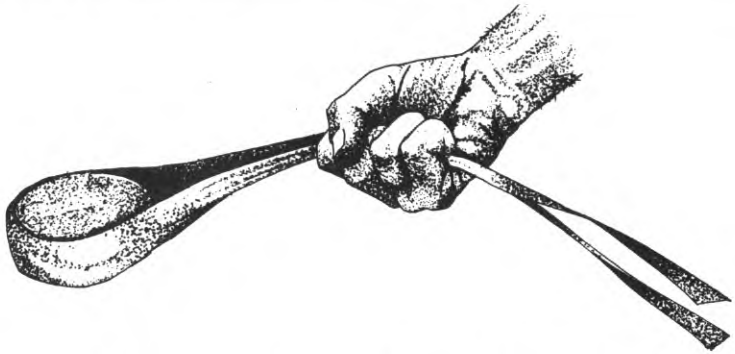


**Assyria 1100–612 B.C.**

**37–59.** The Assyrians originated in the northern part of Mesopotamia around the city of Assur on the middle course of the Tigris, where the country consists of plateaux which enjoy adequate rainfall. From about 1100 to 612 B.C. they extended their rule over all the then known world. Syria and the lands along the middle course of the Euphrates were conquered as early as about 1000 B.C.; Babylon was finally subdued by King Tiglat-Pilesar III in 729 B.C., and Egypt was occupied by King Assurbanipal in 661 B.C. The books of the Old Testament and inscriptions and reliefs in the palaces of the Assyrian kings bear witness to their cruelty towards the vanquished. In the 620s the subjugated Babylonians united with the Medes against the Assyrians, and in 612 B.C. they sacked Nineveh, the capital.

The Assyrian kings also established large libraries where all Mesopotamian literature over a period of 2000 years was collected and transcribed. They created an efficient administration and erected a number of magnificent temples and palaces decorated with statues and reliefs. It is from these that we have obtained our knowledge of this people, and the reliefs from King Assurbanipal's palace in Nineveh are a particularly abundant source of details. However, these have by now lost their painted surface, so that the colours of the warriors' clothing shown here have been reconstructed from what we have learnt from other places, such as Babylon and Egypt.

There are two things characteristic of the Assyrian army: the large powerful bow which was drawn back to the ear and with which nearly all troops were equipped, and the prevalent use of armour, in the



**Assyrian Sling.** *The oldest long-range weapon in the world was the stone that was picked up and thrown at a prey or an enemy. Later the discovery of the leather sling increased the range and made the throw more effective. The sling was whirled round by the hand, and when sufficient momentum had been reached a wide sweep of the arm was made, letting go one of the straps at the critical moment so that the stone was hurled away with great force. In the hands of a skilled slinger it could be a very dangerous weapon, as we know from the story of David and Goliath. The most suitably shaped stones were found in mountain river-beds, and we know of treaties from about 1800* B.C. *in which the mountain tribes in Kurdistan promised to supply a certain quantity of sling stones. Assyrian relief* c. *700* B.C.

case of horses as well, which were caparisoned with felt or wool reinforced with pieces of leather or metal. The army was organised according to the type of weapon used, and fought as regular units under the command of a trained corps of officers. In the 700s under King Tiglat-Pilesar III the war chariot was built more solidly and became stronger. It could now carry four men, but was also frequently used as transport for light infantry (37) in an advance. In place of the light chariot, armoured cavalry was formed and equipped with bows (41) for the first time in history. The heavy infantry too were armed with bows (38, 40, 42, 43, 55 and 56), princes and officers being protected by shield-bearers (44, 45, 53, 54, 56 and 57). However, some units, both cavalry and infantry, were equipped with lances (46–52), and these were used mostly for close-quarter fighting, for thrusting and, only rarely, for throwing. Nearly every soldier carried a short sword at his left side, which is always depicted with the unique 'lily' on the scabbard. The shields, which varied in shape and size, were made of





wood with metal reinforcement. Helmets were of iron or bronze. The varying forms of armour shown on the reliefs differ so much that they are evidence of a highly developed technical skill in forging, which included the making of both plate armour and mail.

For attacking cities and fortresses, assault towers and battering-rams of varying types were used, and undermining was carried out by sappers (58, 59). In this field too the Assyrians were pioneers.

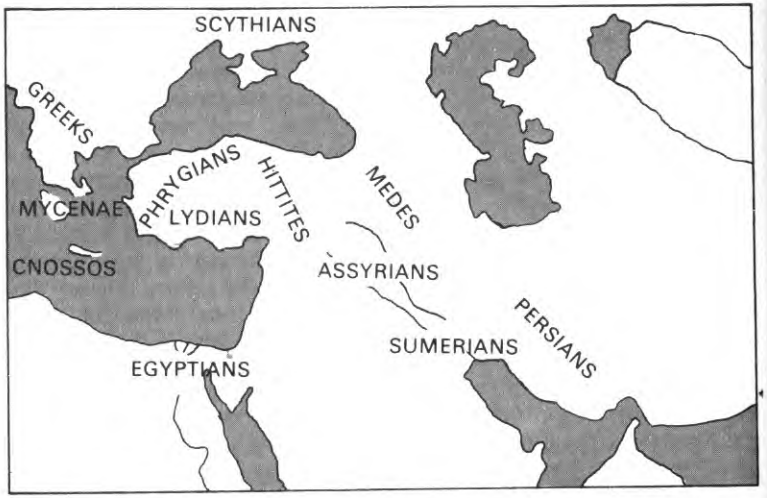
### Persia *c.* 500 B.C.

**60–64.** The peoples whom the Assyrians had oppressed over a long period united in the 620s, and the armies of the Babylonians and the Medes attacked and destroyed Nineveh, the capital, in 612 B.C. For some time after this the Babylonians held sway, as under King Nebuchadnezzar (605–562 B.C.), but already in the 550s a new nation, the Persians, was on the way to world domination. Like the Medes they were of Indo-European stock with their homeland in the uplands of Iran. From here King Cyrus (559–529 B.C.) and later his son Cambyses (529–522 B.C.) made great conquests, so that by *c.* 500 B.C. the Persians were in military control from the Danube to the Indus and from the Caucasus to the Upper Nile. In the course of the next 200 years this mighty empire was forged into a coherent whole by an excellent administration, a common monetary system, a well developed posting system and network of roads, and—for the first time in world history—a tolerant policy towards the conquered peoples.

Unity and peace were safeguarded by the army, the core of which consisted of Persians and Medes who served principally as mounted archers (62), very lightly armed. In fact it was only the officers who wore armour (60). There was one corps, the 10,000 'Immortals', who in the field served as the pick of the army and at other times formed a sort of aristocratic bodyguard for the king. In the still extant ruins of the capital, Persepolis, these guardsmen are depicted (61 and 63) on colourful reliefs made of glazed brick. After the year 500 B.C. the Persian empire waged many wars against Greece, and we find Persians painted on many Greek vases, where they are always shown wearing trousers. The standard-bearer (64) is from such a painting.

### The Near East 1500–1100 B.C.

**65–68.** From about 1500 B.C. we know, from Babylonian and Assyrian texts, of a mysterious people, the Hittites, who about 1300 B.C. came into conflict with the Egyptians as well. But it was not until excavations were made in Asia Minor at the beginning of the present century that their cities and temples, decorated with reliefs of gods, princes and warriors, were found. The Hittites depicted in this book are copied from these reliefs




**The Ancient Nations.** *The nations shown on the map were not all contemporary. Egypt was a Great Power as early as* c. *3000* B.C. *and remained so almost up to the birth of Christ. The Sumerians created an empire between the Tigris and the Euphrates* c. *3200* B.C., *but were later supplanted first by the Assyrians and then by the Medes and Persians,* c. *500* B.C. *The Hittites ruled in Asia Minor about 1500* B.C., *but had disappeared 400 years later. The Lydians appear* c. *600* B.C., *and the Phrygians' history lasted for about a thousand years. The Greeks arrived in several waves in the period between 1500 and 1000* B.C., *and the earliest built up a great culture with Mycenae as centre, influenced by Cnossos in Crete. The Scythians north of the Black Sea fought against both the Greeks* c. *700* B.C. *and the Romans* c. A.D. *100.*

and from Egyptian wall-paintings in Abu-Simbel which portray King Ramses II's victory over the Hittites at the battle of Kadesh in 1288 B.C.

Research has shown that here we are dealing with an Indo-European people whose weapons were of iron and who presumably were the inventors of the light horse-drawn war-chariot. With the military superiority this gave them they created a great empire in Asia Minor and the northern part of Syria which lasted until *c.* 1100 B.C. The helmet worn by the prince on the left (65) is actually appropriate to Teshub, the god of thunder, but is also seen worn by others, perhaps princes or a special temple guard. This is also true of the helmet worn by the prince in the background (67),





which is seen on both the king and his guard. The colours of the clothing worn by the Hittites shown here have been improvised except in the case of the infantryman (66). He is to be found in an Egyptian wall-painting and was presumably a chariot fighter. His shield is no doubt the same as the one carried by the prince in the background (67), but here seen through Egyptian eyes. The life-guard (68) stands on sentry at a gate in a relief tablet in the royal palace in Bogazköy.

### Greece 1200–800 B.C.

**69–73.** In the centuries around the year 1000 B.C. a civilisation flourished in Greece which we call the Mycenaean and whose kings and heroes we are familiar with from Homer's poetry. This civilisation originated from Crete where it reached its peak about 1400 B.C. When the various Greek tribes had settled in their present territory, a special culture developed from the inter-relationship between the Cretans and the Indo-European Greeks, but this was not discovered until the large-scale excavations at Mycenae took place in the 1890s. Among the things found in the royal tombs were quantities of golden treasure—so Homer's 'Golden Mycenae' was an actual fact. Excavations were later made in many other places, and our knowledge of Mycenaean culture is based not only on wall-paintings but on sacral bowls decorated with reliefs, on painted ceramics, jewellery and gold-inlaid weapons found within the whole of the Greek territory.

Up to about 1000 B.C. the arms were made of bronze. The most important was the long spear for thrusting (70 and 73), but sword, dagger and axe were also used (69, 71 and 73). The large double-bladed axe may have been a cult weapon. Defensive arms consisted of either large shields shaped like a figure of eight (69 and 71), which in some instances were made of up to seven layers of leather, ox-hide, stretched over a wooden frame, or rectangular shields (73) which the warrior carried on a strap over his shoulder, and stood on the ground in front of him in action. The chest was covered with a cuirass of bronze strips (70) and the lower part of the body by a kilt with metal plates affixed (71). The helmet was of bronze or leather, reinforced and decorated with boars' tusks (69 and 73) or with metal plates and buck's horns (70, 71). The legs were covered with metal greaves (69) or with leather to above the knee (71). The war-chariot is known from many illustrations, and from Homer's poems we learn that the warrior jumped down from the chariot and went on fighting on foot – as the Greek nobles continued doing for several centuries.

### The Near East 800–500 B.C.

**74–78.** Asia Minor was in ancient times a much richer land than it is now, and the central parts in particular were a great deal more fertile

than today and therefore attracted the neighbouring peoples. Some of them were mountain tribes from the region of Lake Van in the east while others came from the steppes north of the Crimea and moved down on both sides of the Black Sea. We do not know very much about these peoples nor what became of the Hittites and their descendants: we can only determine that the Lydians under King Croesus about 550 B.C. had created a large empire in central Asia Minor. The Phrygians were another nation who possibly came from the northern steppes originally. One thing we know for certain is that both the Persians and the Greeks, and later the Romans, had to fight hard against the peoples of Asia Minor, especially the Phrygians, and that these regions with their many warlike tribes supplied the bigger and richer states with mercenaries for many centuries.

In art and architecture the Phrygians were influenced by the Greeks, and our knowledge of them stems from vase paintings, both their own and those of the Greeks. The cavalry (75) was light, equipped with bow and spear, while the infantry (74 and 76) was heavily armoured, equipped with spear and sword. The helmet was of metal, the armour of leather with metal reinforcement. Arms and legs were covered with thick cloth or hide. The unusually-shaped shield (74) was employed both as a weapon for attack and as a means of getting close up against a horse, which was attacked on the horseman's left side where he found it difficult to use his arms.

From 800 to 600 B.C., when the Greeks began to settle down and build cities on the coasts of the Black Sea, they came into contact with another extremely warlike people, the Scythians. These had little social organisation, but lived more as barbarian nomads, and by their predatory raids were a constant threat to the Greek world throughout many centuries. They were highly skilled in working metal, particularly silver, and their artistic influence can be detected in the whole of Europe north of the Alps. There can be little doubt that both Celtic and Scandinavian metalwork were influenced by them, and the world-famous Gundestrup cauldron from *c.* 100 B.C. is considered to have many Scythian features.

The Scythians have left no written sources, but we know of their weapons and equipment from grave finds in their own area and from vase paintings of victories and great battles made by their enemies the Greeks. In these paintings the Scythians are easily recognised by the fact that they are wearing trousers. They were predominantly horsemen, armed with bow and spear (78). Protection was as light as possible and consisted merely of a fur or leather jacket and a pair of trousers, which sometimes had metal reinforcement. The infantry (77), on the other hand, who had to





fight with the armoured Greek infantry at close quarters, needed correspondingly heavier equipment, with plate armour and metal reinforcement on sleeves and trousers.

### China 1800–1100 B.C.

**79–86.** Just as it is in the fertile river valleys of the Nile and of the Tigris and Euphrates that the birthplace of western culture must be sought, so Chinese civilisation arose along the Yellow River, Hwang-ho. In this rich countryside, where man has lived for over 20,000 years, a peasant culture based on the cultivation of rice as the main staple food had grown up in the Late Stone Age, also called the Neolithic Period.

We know of a people, the Shang, from 1800–1700 B.C., who clearly demonstrate a change in the culture, one reason being their acquaintance with metals. During excavations at Anyang, a town in Honan Province, as in other places, ruins of temples, palaces and royal tombs have been discovered, rich in votive offerings, and more than 100,000 inscriptions have also been found. These latter were scratched on tortoise shells or on the shoulderblades of oxen. There is no doubt that many of the Shang characters recur in modern Chinese script, and it seems equally certain that, as the Shang script was so highly developed about 1800 B.C., other and more primitive forms of script must have existed earlier. But there is no evidence of them. There are other cultural features besides the script, such as ancestor worship, fortifying of towns, silk weaving and organised administration, which can be traced back to the Shang. We are indeed familiar with the titles of twenty military and civil officials, e.g. Tso-tse, which is the title of a keeper of the archives.

It was not until the Shang period that bronze was known in China. The remains of bronze foundries with complete moulds and tools have been uncovered. Bronze was used for such things as the masks of ancestors, cauldrons, wine bowls, harness trappings and war chariots, and for musical instruments and weapons. Most of these things have been found in the large royal tombs. Their defensive equipment was the round helmet with a socket for the plume (79 and 81–86) and armour across chest and shoulders (79). The latter was probably only used by officers of the highest rank. The ordinary infantrymen were protected by several layers of heavy silk material (81, 82 and 86). This light defence facilitated the manipulation of the principal weapon, a powerful bow the use of which perhaps explains why the infantryman could not carry a shield. A strong spear was also used (80 and 83). The two lugs on the spear-head were perhaps intended for securing a lashing. For close combat a curved slashing sword was used (79, 81, 82 and 86), together with the strange axe which was simply a dagger fixed to an axe-handle (79 and 82). This weapon was called a *ko*. The large axe (81) is an executioner's axe which was

**Scandinavian Bronze Swords.** *The blade of the bronze sword was cast separately and the upper end hammered out into a tang. The hilt was fitted over this and fastened to the blade with four or six rivets, while at the top the tang was burred over. The two swords on the left are in the Danish 'decorative style' from about 1000* B.C. *and the sword on the right is an 'antenna' sword from about 900* B.C. *imported from Central Europe. National Museum, Copenhagen.*

put to use at the burials of kings, when a large number of people were sacrificed, these as a rule being prisoners-of-war or slaves.

Besides being better armed, the Shang had a military organisation which was far superior to that of the neighbouring peoples. The army was divided into units of 1000 men, which could be grouped together in even larger units, these all being under the command of regular officers. There were commanders who specialised in the care of the horses, while others were responsible for the training of the archers. It was with this army that the Shang conquered the whole of North China and ruled over it for 600 years, a long enough period to ensure that this region has since remained, under successive rulers, the most important in East Asia, both economically and culturally. The Shang were vanquished about 1200–1100 B.C. by an invader, the Chou. It was during these battles in the 1100's that elephants were used for the first time in warfare.

## Scandinavia 1500–500 B.C.

**87–93.** At the same time as iron began to be recognised as a useful metal in the Near East, bronze had reached the North, where it was used for weapons and jewellery, while for many years to come everyday utensils were made of flint. There are strong links with the corresponding bronze cultures in Central Europe, but certain unique archaeological conditions and the fact that bronze was introduced into Scandinavia at such a late date have resulted in finds from the Scandinavian Bronze Age – and perhaps especially the Danish – having been so rich in content.

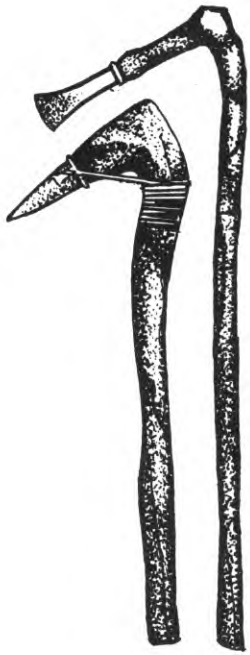
Bronze is an alloy of copper and tin, but since neither of these two metals was mined in Scandinavia in ancient times, they must have been imported. To start with, finished



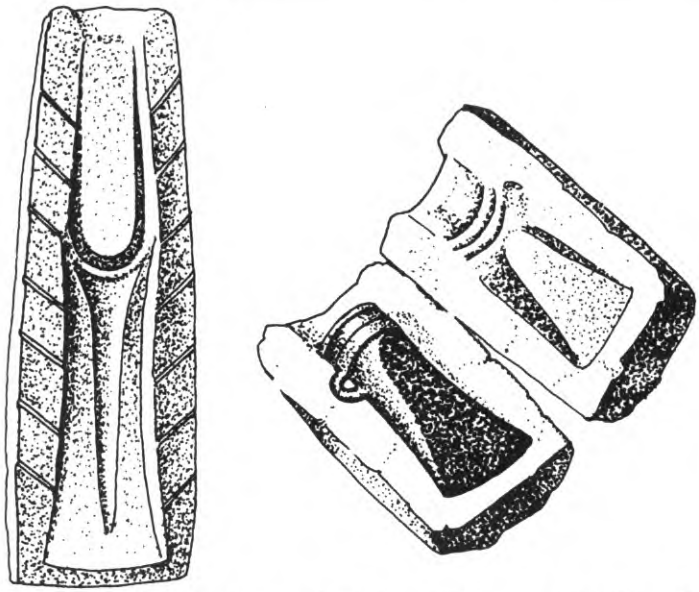


goods were brought in, but later semi-manufactured articles, metal ingots, were bought which their own smiths then melted down and fashioned into weapons and other objects or hammered out into tin plate. The bronze articles and gold jewellery, such as bracelets and torques, that have been found reveal that the Scandinavian countries had a considerable purchasing power, based perhaps on the sale of amber, and there was without doubt a brisk trade with the rest of Europe. Shipping was probably also considerable, as is indicated by the large skin boats which we find depicted in rock carvings.

We have become well acquainted with the ruling class of the Bronze Age from their graves, especially from a number of barrows in Jutland. Best known are the finds from Skrydstrup, Egtved and Borum Eshøj. The dead man or woman was placed in the barrow in an oak coffin. Various circumstances have resulted in the oak coffin having insulatory and preservative properties, so that we now have not merely the cowskin and the woollen blanket the dead had been wrapped in, but also the women's skirts and long hair and hairnet, and the men's cloak, kirtle, cap and footwear (88–91). These clothes for everyday wear that are more than 3000 years old must be regarded as the oldest in the world and are so well preserved that experts have been able to determine what the material was made of – wool mixed



**Scandinavian Bronze Axes.** *The ordinary Bronze Age axe was called the palstave, as on the right, or the celt, as on the left, but for ages the ordinary working axe was made of stone. It is characteristic that in both cases a crooked or forked branch was used as a haft. The palstave has a long narrow butt end which is jammed into the haft, while the celt is hollow and is forced down over the haft and then lashed tightly to this through the special lug on the head. National Museum, Copenhagen.*



**Moulds for Scandinavian Bronze Axes.** *The moulds were carved out of soft soapstone from Norway. The mould on the left, prepared for a palstave, shows clearly the channels through which the hot air could escape, to make the axe-head effective and free from faults in casting. The celt head on the right is shown still lying in its mould, as it was found. National Museum, Copenhagen.*

with hart's hair – as well as details of the weaving technique. It has also been proved that the men were clean-shaven.

It is from the oak coffin at Borum Eshøj that a wooden scabbard has been preserved (89) and we are in general familiar with their weapons from the many finds that have been made throughout southern Scandinavia. The most common weapons were the sword and the dagger. The sword with the pommel consisting of a pair of coils (87) is an imported article from Central Europe, while the other types are believed to be pure Nordic. So is the curved sword from Rørby (91) which can be dated to about 1500 B.C. There are spears and lances with fairly broad blades that have deep sockets into which the shaft was inserted. We know of two types of light axe, the palstave (89) and the celt, as well as a heavy battle-axe (88). There are also some very large





axes which are made up of a clay core covered by a sheet of bronze. These were quite useless for cutting and were only used for ceremonies or as emblems of rank. The round metal shields (87 and 90) were perhaps too valuable to be used in war. At any rate, the examples preserved are completely undamaged and without a trace of having been employed in battle. The rectangular wooden shield (88) on the other hand served a very practical purpose. The two horned helmets (87 and 89) both of which have a slot for an ornament of feathers or hair, were found at Viksø on Zealand, but are thought to have been imported. It is not clear whether they were intended for chiefs, worn by priests at sacrifices or were the prerogatives of gods. The only certain thing we know about the religion of the Bronze Age is that the sun – among other objects – was worshipped, as the sun-chariot from Trundholm shows. It is also a matter of conjecture what purpose the lurs had (92, 93). They are not likely to have sounded military signals but must have been used at religious ceremonies.

### Greece 600–300 B.C.

**94–107.** After 800 B.C. an economic and social development took place in Greece which about 600 B.C. resulted in the military importance of the nobility, who had fought from chariots and as cavalry, being transferred to the heavily armoured citizen infantry, the Hoplites, who fought in close formations. The equipment of the Hoplites was expensive, and it was only the wealthy among the citizens who could afford to obtain it and keep it in good order. This military development had the effect of the political power shifting from the nobles to the prosperous citizens and this was continued in Athens where a strong fleet was built in the 400s that was manned by the lower classes as well, the latter by this means assuming increased political influence.

The Greek city states, of which Athens, Sparta, Thebes and Corinth were the most important, were nearly always at war with one another. Armament and tactics were similar in the different states, so that the outcome of the war depended on the number of troops and their bravery and on the commander's skill. But it was quite another matter when Greece was attacked by the Persians in 490 and 480 B.C. The Persian élite troops consisted of lightly armed archers (see page 99), but in the battle of Marathon in 490 B.C. it turned out that even these were helpless against the phalanx of the Athenian Hoplites, whose armoured infantrymen fought side by side in close array. Ten years later 300 Spartan Hoplites were able to hold out for three days against a superior force of 100 times their number in the famous battle of Thermopylae. In battles against the Persians during the successive years it was proved time and

again that the well-trained Greek Hoplites were more than a match for the Persians' cavalry, who were considered the best in the world, as well as for their chariots and their infantry, who fought in open formation, as was shown in the battles at Plataeae and Kunaxa in 479 and 401 B.C. respectively.

A Greek cavalry did however exist, armed with spears and lances. The riders were quite lightly equipped, protected merely by a felt cloak. The reason might have been that stirrups had not yet been invented, and as the horsemen could easily be unhorsed, they had to continue the fight on foot as lightly-armed spearmen. The light cavalryman with his felt cloak and the characteristic sun-hat (94) is known from many vase paintings, and it is indeed from decorated vases, bowls and other vessels that we have obtained most of our information about the Greek warrior's equipment. There are also in existence a number of statues and burial reliefs, as well as a few preserved objects, these being mainly helmets.

The large round shield (*aspis*), which gave cover from collar-bone to knee, was peculiar to the

**Greek Shield.** *The shield-boss was often shaped like the head of a lion, a ram or some imaginary animal. The large knobbly boss might prove very useful in close combat to squeeze or crush an opponent. Greek vase painting* c. *450* B.C.





Hoplites. The arm-loop and the hand-grip were set in such a way that the shield protected half of the Hoplite and half of his comrade on the left. This led quite naturally to the development of a rigid formation in serried ranks (100–103). The shield was decorated according to the taste of the owner. The animals, patterns and masks of monsters, which we know from vase paintings, might have been a sort of personal armorial bearing, but we have no confirmation of this. If the Hoplite had to fight independently of his formation and had therefore removed his greaves, a piece of cloth was attached to the shield, possibly to reduce the effect of arrows or javelins (98). The shins were at other times protected by heavy greaves, made of bronze, like most of the defensive armour, and the head was covered by a large helmet. There were various shapes: the Doric was completely closed, with only a couple of slots for the eyes (95, 96); the Corinthian was made in one piece with fixed nasal and cheek-pieces, but left the mouth free (97), while the Ionic, which was also used in otherwise Doric Sparta, had a fixed nasal and two movable cheek pieces (98). It is probable that the heavy metal helmet did not rest directly on the crown of the head, but was put on over a leather or cloth cap (99). Armour was worn over the tunic (*chiton*) and consisted of back- and breast-plates which might continue up over the shoulders (97), but this shape must

**Greek Helmet.** *The helmet took various forms. This is a Doric helmet with large horsehair crest and two feathers. Hair was often worn long. At Thermopylae the Spartans combed and dressed their long hair before the final encounter. It was not until the time of Alexander the Great that long hair and beard were forbidden, to prevent the enemy being able to pull it during close work. Greek vase painting* c. *400* B.C.

have been rather uncomfortable to move around in in combat. There were other types which were more supple with independent shoulder-pieces (95 and 99), and some consisted of strips or plates of metal sewn on to a coat, giving the soldier more freedom of movement. The

**Greek Archer.** *The bow was of two deer's horns bound together, which were drawn or partly straightened when the bow was bent. A bow with such a stiff reflex action was difficult to string, and the archer here knew the trick of using his legs as an aid. Greek vase painting* c. *450* B.C.

lower part of the body was usually protected by strips of leather covered by metal plates. One offensive weapon used for fighting at close quarters was a fairly short, straight sword; this was carried on the left side and was intended more for thrusting than for cutting. At the initial phase of the attack the long spear was employed, and this was sometimes pointed at both ends (100–103). If the shaft of the spear broke, the weapon had only to be reversed.

Apart from the heavily-armoured Hoplites there were also a number of light troops in the Grecian army. The Gymnets, whose name comes from the Greek word *gymnos*, naked, were the fastest and lightest, armed merely with a cutting sword (*machaira*), and at most protected by a helmet (104). The Peltasts originally got their name from a particular shield (*pelte*), but in this period they were equipped with the same heavy shield as the Hoplites, but did not wear body armour (105, 106). Some soldiers were Peltasts throughout their service, but in other cases it was the youngest who were selected to be such troops. The helmet with the tall feather or horsehair crest (106) is considered to be Attic, one reason being that the goddess Athene is so frequently depicted wearing one like it. Otherwise the different types of helmets were used indiscriminately all over Greece, depending on the wearer's personal taste. Thus it was quite possible that the four different helmets with their various coloured crests (100–103) were all used in the same army.

The young men were also trained as archers. The archer with the lion-skin cap (107) is copied from a statue of Hercules. This statue, which dates from *c.* 480 B.C., is now in Munich. The archer is wearing leather armour strengthened over the shoulders with metal and increased in length in front by strips to protect the lower part of the body. He is assuming a special half-squatting position so that by bending and stretching the right leg he can 'bounce' up and down and in this way always find the best position for shooting.





The Greek states remained small in size but often formed alliances with each other. Thus Athens, which was considered the most important, included only the Attica peninsula, but the large fleet was paid for by the city's many allies. The other important state, Sparta, ruled only over the Peloponnesian peninsula and in political matters had to reckon with Corinth. Many other city states were frequently at war and at times, in order to have enough troops, were forced to rely on mercenaries. Hence for many Greeks soldiering became a regular way of life. They often took service abroad, too, in Sicily and Egypt, with the Persians or Macedonians, so we cannot with complete accuracy give the nationality of the warriors in the illustrations.

**Macedonia 350–150 B.C.**

**108–112.** About 350 B.C. Greece, being politically divided, was attacked, conquered and to some extent forced to ally with a new power, Macedonia. This country had from ancient times maintained a strong body of first-class cavalry, and tough herdsmen and tribesmen made up the infantry. There were rich goldmines here, and these were the economic source enabling King Philip (359–336 B.C.) to reorganise his army completely. The principal arm was the old aristocratic armoured cavalry equipped with sword, short spear and shield (108, 109). They were well drilled and attacked in close formation, and the various units were probably distinguished by the differing colours of their crests. The infantry, based partly on the Greek pattern, was organised into phalanxes of 1536 men in 16 ranks of 96. The shield was somewhat lighter than that of the Greeks, and the pike or *sarissa*, which varied from 4 to 7 metres in length, was wielded with both hands. Therefore the five front ranks could advance ahead of the main battle line, the phalanx acting both in attack and defence as a wall of spear points. There were in addition both light horse and light infantry – slingers and archers – who were used for reconnaissance and as skirmishers in the initial clashes and on the wings. The Macedonian army also had at its disposal a very large park of engines for both siege and assault, as well as engineers, surveyors, a supply service and, for the first time in history, a general staff. The name of the Chief of Staff was Parmenion, and there is some argument whether it was he or King Philip who was the real organiser of the army.

This army used the tactics of combined operations. The phalanx was always placed in the middle to threaten and contain the enemy's centre, while the heavy cavalry attacked on both flanks. It was usually the king himself who led the right wing of the horse. After the battle the light cavalry pursued the enemy and this was also an innovation. With these tactics Philip beat

the Greeks at the battle of Chaeronea in 338 B.C. After his death his son Alexander the Great compelled the Greek states to form an alliance with him and, starting with the battle of Granicus in 334 B.C., he attacked the Persian Empire with a mixed Macedonian and Greek army. After having annihilated the Persian élite cavalry at the battle of Issus in 333 B.C., he conquered in the course of the next nine years the whole of the huge Persian Empire and advanced as far as east of the Indus. Here the troops mutinied and forced him to turn back. Alexander died in Babylon in 323 B.C. when only thirty-two years old.

As the army advanced it gradually absorbed many Asiatic elements, and Alexander practised a deliberate policy of reconciling vanquished with victor. Numerous cities were built, colonies for both trade and military purposes, with a population which was both Greek and local. The best known is Alexandria, planned by the Greek 'Surveyor General' Dinocrates in 331 B.C. This Graeco-Macedonian conquest of the whole of the Near East brought about a blending of cultures to produce the Hellenistic culture which survived the Roman conquest of the areas, and whose traces can still be found in the many ruins in Syria, Jordan and Palestine.

After Alexander's death his empire was divided up among his generals. In the wars between these realms war elephants were introduced, an influence from India. These 'predecessors of the tank' were protected by a large leather trapper and had bands of metal on their chests, forelegs and sometimes on the trunk. The vulnerable spot below the ears was covered by large tassels of straw, leather or cloth. Although they had turrets on their backs for archers and javelin throwers (110, 111), it was the huge animals themselves that became 'assault engines'. But the practical use of war elephants has always been something of a problem. To persuade these clever animals to attack it was necessary to make them so excited that they became difficult to manage and might well trample the soldiers on their own side. When they were employed against unprepared troops they created a tremendous panic, but during Rome's battles against Carthage after 218 B.C. it was proved that if the soldiers were warned in advance, they could resist and frighten the animals so that they turned tail and bolted among their own troops. It is reported that in the battle of Zama in 202 B.C. the Roman commander Scipio made Hannibal's elephants run amok by driving a herd of pigs among them. The elephant was used in war for the last time within the European cultural area at the battle of Thapsus in North Africa in 46 B.C.





**Italy 600–100 B.C.**

**113–122.** Round about 600 B.C. Italy was inhabited by many warlike peoples who were constantly fighting one another. Moreover within the individual peoples themselves there was dissension between the city and the tribes. In this early period the main influence was exerted partly by the Greek colonies in Southern Italy and partly by the Etruscans in the north. In the period around 800–600 B.C. Greek colonists had built a number of cities in Southern Italy and in Sicily, among them Syracuse, Taranto and Naples, the last name originating from the Greek words *nea*, new, and *polis*, city. These cities had retained their connection with the homeland and belonged really to the Greek cultural sphere, but there was a certain amount of variation. Italiot influence was detectable in a number of ways, in the military field as well as in others. The infantry for example were never so heavily equipped as the Greek Hoplites. The helmet of the Taranto soldier (113) is pure Greek, but no body armour was worn and the shield and sword are more like those of the Italian tribes he fought against.

About the same time as the Greeks settled in the south, the Etruscans moved into Italy from the north. It is not known where they came from, but it is believed that they originated from somewhere in Asia Minor. We are acquainted with their language, for they used the Greek alphabet, but it does not seem related to any known language, so even if you can spell your way through their inscriptions, you still do not know what the words mean. Otherwise we are quite familiar with the Etruscans from innumerable burial finds, bronze statues and bronze figurines, terracotta objects and burial urns, many of which can be seen in museums, and from their fortifications that in some places still form part of the city walls of later times, e.g. in Volterra in Tuscany. It was in this area that the greatest number of them lived. For a while their suzerainty extended as far south as Capua, and there are many elements in Roman art, religion and army organisation which can be traced back to the Etruscans, who for a long period were the overlords of Rome, then a small town on the Tiber.

The Etruscans amassed wealth by agriculture, producing wine, oil and grain, by an extensive trade, including trading overseas, and by wars of conquest. They had a flourishing metal industry, and the other nations without doubt copied the well-organised and well-armed Etruscans. The light infantry wore a breast-plate kept in place by crossed straps at the back (114), or a complete breast- and back-plate with unusual ridges on the shoulder (115), similar to the early Greek (97). The armoured infantryman with the heavy helmet and leather tunic reinforced with metal plates and shoulder plates (118) is very like the contemporary Greeks and Macedonians (109). The principal weapon was a pike and a short stabbing sword. The shield made of

wood reinforced with metal was quite light in weight, and even the armoured infantry must have been more mobile than the Greek Hoplites.

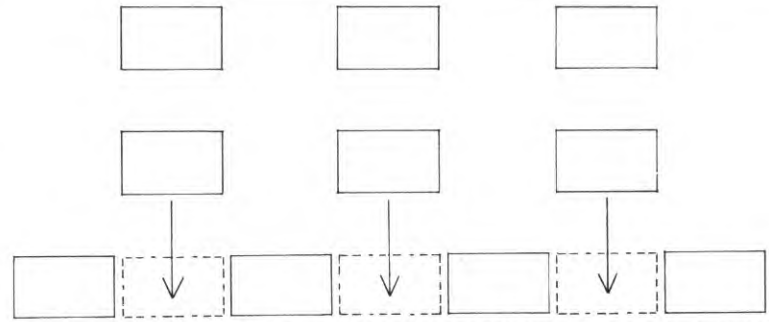
The tough pastoral people of Southern Italy were very warlike, and it took the Romans more than 200 years to subdue them. The two Samnite infantrymen (116, 117) are reproduced from a painting found in a grave at Paestum, and quite possibly the flag was not a military one, but belonged to the burial ceremony. One of the infantrymen is wearing a breast-plate of Etruscan pattern, the other, chest armour of thick leather. The close-fitting helmet with the unusual erect single feathers is characteristic of the Samnites. Helmet, greaves and the large shield indicate that they are heavy infantry, possibly serving as mercenaries for a richer city state.

The most famous warrior nation of Italy was the Romans. Rome's strategic and economic importance is due to the fact that the city was sited at the best crossing of the fullest-flowing river in Central Italy, the Tiber. Since its foundation in 753 B.C. it had been on the boundary of the Etruscan sphere of influence and was ruled by Etruscan kings until 510 B.C. Throughout the following centuries the Romans extended their power over one tribe after another, so that in 266 B.C. they had subjugated all Italy south of the Rubicon. They had learnt a great deal from the Etruscans in military matters, and it is believed that the organisation of the army with armoured infantry in well-disciplined formations was borrowed from their former enemies. We are acquainted with the Roman soldiers from paintings, reliefs and gravestones, from victory monuments, archaeological finds and the information from ancient authors. The subject has been studied extensively by scholars, and our reproductions in this book are based on an important work on Roman weapons written in 1926 by the French historian Paul Couissin.

The Roman legionaries were all equipped with a large shield which was usually rectangular and convex (120 and 122). When the infantry advanced, the shields were held firmly edge to edge with the left arm in a rigid position. This meant that the sword had to be carried on the right side. This sword (*gladius*) was a short stabbing weapon with a broad and stiff blade (119–122). The legionaries of earlier times were also equipped with a spear (*hasta*) (199–122). For protection they wore an enveloping helmet of a special Italian type (119) or a round helmet strengthened across the forehead and with cheek-pieces. One particular type had a long neck-guard as well (120). As body armour the legionaries wore mail (*lorica*) reaching to mid-thigh (119 and 122) or to the waist, when strips of leather were added to protect the lower part of the body (120), and at times merely a breast-plate and leather armour (121). The youngest soldiers who







**The Roman Legion at the Time of the Birth of Christ.** *The legion consisted of about 4000 men divided up into 10 cohorts of six centuries. The battle-order was normally four cohorts in the first engagement and three in the second wave. The third line of three cohorts was nearly always used as a reserve to reinforce the attack or cover the retreat of the others. The second wave could move forward to fill the gaps in the first line, so that a cohesive front was formed, but the Roman strength lay principally in free mobility and flexibility. In an earlier period the legion was bigger – about 6000 men – and a more rigid deployment was used. Later in the Roman era one or more cohorts could act as detached companies. From the time of the Emperor Augustus, around the birth of Christ, the Roman army proper consisted of 28–30 legions, but there were at least as many auxiliaries and mercenaries under arms.*

formed the vanguard wore greaves (121), as did the centurion (122).

### Rome 200 B.C.–A.D. 100

**123–132.** When the Romans had conquered the whole of Italy south of the Rubicon, they became involved in a series of wars with another great power, Carthage, or the Poeni as the Romans called this nation. The most famous of the Carthaginian generals was Hannibal, who in the Second Punic War (218–201 B.C.) marched across the Alps with a large army and 60 elephants, forcing his way far down into Italy, where he defeated a number of large Roman armies. His troops were mercenaries from many different places, and there is nothing particularly characteristic about their arms and equipment. The Macedonian armoured cavalry (109), the archers with elephant transport (110, 111) and the Etruscan armoured infantryman (118) might equally well have been Punic, especially as many Italian tribes, such as the Samnites, joined Hannibal against the Romans.

After Hannibal had been decisively beaten at the battle of Zama

in 202 B.C., one reason being that the elephants ran amok among his own troops, Roman suzerainty extended over (apart from Italy itself) Sicily, Sardinia, the eastern part of Spain, and Tunisia. But soon afterwards Rome became involved in Greek politics and waged several wars against the Macedonians. It now became apparent that the Roman legion with its more flexible disposition was superior to the rigid Macedonian phalanx. When the Greek wars came to an end *c.* 146 B.C. and the whole of Greece had been turned into Roman provinces or vassal states, Rome continued this policy of expansion against the Hellenistic kings of Asia Minor and Syria, and these were finally subjugated in the 70s and 60s B.C. But it was also in Rome's interest to safeguard itself against the north and north-west. The Po valley was conquered at the same time as Greece, and this area became so completely Romanised that Caesar a few generations later was able to recruit his best legions here (126, 127). Then came the turn of the South of France which controlled the route to Spain, and in 121 B.C. Provence became a Roman *provincia* – hence its name. It was these two regions that in the 50s B.C. were the springboard for Caesar's campaigns against France, Belgium and Holland, regions which in those days went collectively under the name of Gaul. After this permanent state of war, which lasted for several hundreds of years, there followed under the Emperor Augustus (43 B.C.–A.D. 14) a more peaceful period, during which the conquered territories were consolidated, e.g. the whole of the Iberian peninsula was occupied and Egypt annexed, and frontiers made easier to defend by being pushed forward to the Rhine and the Danube in Europe and to the Euphrates in Asia. Contact was of course kept with the barbarians beyond the frontiers. In the year 5 B.C., for instance, a Roman fleet sailed up along the coast of Jutland to the 'foothills of the Cimbri', this presumably being Blaavandshuk. England was the last of Rome's conquests and was under Roman rule from 82 until A.D. 411.

The Roman wars against Carthage were to a great extent waged at sea and it was here that Rome, a decidedly land-based power, proved inferior to the Carthaginians, who were skilled sailors and had hundreds of years' experience in naval warfare. The Romans could not master the art of ramming enemy ships in order to sink them. Instead they tried to come alongside the enemy, lash the two ships together and then board the enemy with a force of regular infantry. These marines (123), who bore on their shields the emblem of Neptune's trident, were equipped with pikes and probably with swords as well. Fighting on board ship could not be done in serried ranks as on land, but required more mobility on the part of the troops, so that they were more lightly

**The Frontier Towns of the Roman Empire.** *The map shows the most important towns still in existence which were once Roman frontier towns or camps. England was protected by Hadrian's Wall for nearly 300 years, while Antoninus' soon had to be abandoned. In Germany the gap between the Rhine and the Danube was closed by a long line of fortifications* (limes) *from Koblenz to Regensburg.*

equipped than the ordinary infantry yet sufficiently protected by helmet, leather armour, greaves and a large wooden shield, equipment which remained characteristic for the marines until A.D. 100.

The Roman cavalry had never been in great strength – merely 300 men to a legion of 6000 infantry – and *c.* 100 B.C. it was virtually done away with. The cavalrymen (124, 125) were equipped with a javelin, a sword and a light hexagonal shield. They rode without stirrups and therefore had to be prepared to fight on foot, hence their hip-length armour of chain mail (124) or short scale armour (125).

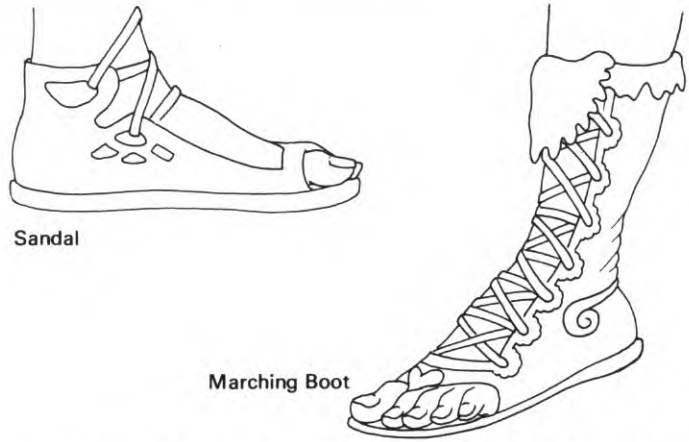
The military measures which *c.* 100 B.C. disbanded the Roman cavalry produced a number of other changes both in organization, armament and tactics. All ordinary legionaries (126, 127 and 129) were now uniformly equipped with a javelin having a long iron point (*pilum*), a sword (*gladius*) and the large rectangular shield (*scutum*) bearing the emblem of the legion. Their bodies were sometimes protected by scale armour (127 and 129), but the most common form of protection was a leather jerkin over a short coat of mail, metal reinforced leather in front of the groin and short leather trousers (126). The soldier might also be clad in knee-breeches (127), possibly introduced as a sort of winter issue, and these continued to be part of the normal 'regimental' dress, at least in the northern provinces.

Like other nations the Romans used standards, staffs topped by eagles with various signs and emblems beneath them. The standard was employed to indicate the direction of the attack and as a rallying point in the tumult of battle. The eagle standard-bearer (128), like the standard-bearer of later ages, was a man of great responsibility. The wolf-skin worn over his head and shoulders – the wolf was one of Rome's national symbols – was probably a sort of insignia of rank. His armour was somewhat lighter than that of the ordinary soldier, and he did not carry a shield. After all, he needed both hands for raising the eagle. It was for the very reason that his troops should recognise him in battle that the Imperator wore a purple cloak. At other times he wore magnificently gilded and engraved armour. The Emperor Augustus (130) is reproduced from an idealised statue from *c.* A.D. 14, now in the Vatican.

It was usual for the young men of Roman noble families to serve for a number of years as tribunes (132) on the staff and as aides-de-camp. They did not carry a shield and could therefore wear their sword on the left side. Centurions (131), on the other hand, had come up from the ranks and were often decorated for having been on active service. Like the tribune they did not carry a shield but because they fought shoulder to shoulder with the other ranks they had to have armour which was at least as efficient as that of the legionaries. As well as the short stabbing sword they wore a longer sword on the left side. When not in the field they acted as drill sergeants, and the stick (*vitis*) both had a practical purpose and served as a sign of rank.








**Roman Footwear.** *As well as the light, open sandals, which a number of the Roman soldiers in this book are shown wearing, there was a special thick-soled type with a high support for the heel and ankle. This developed at the beginning of the first century into a laced marching boot* (caliga) *with nail-studded soles and, in the winter, an extra woollen lining. The Emperor Gaius Caesar's nickname was Caligula meaning 'Little boot'. The Roman legions expected to march 25 kilometres a day with full equipment – cooking kit, entrenching tools and rations, in all about 40 kg. It took them about 4 hours to cover this distance. The rest of the day was taken up with laying out and fortifying the camp for the night. We have heard of marches covering 70 kilometres, without pack, but in full armour.*

## Rome 100–200

**133–140.** After the Emperor Augustus had established the empire's frontiers, the Romans lived through a period of peace, and the only fighting that took place was on the extreme frontiers far from the centre of the empire. The army was now organised into 28 legions manning large fortified camps, smaller forts and minor frontier posts. The period of service was 20 years in the same legion, which could mean the same garrison. In peacetime the soldiers were employed on public works, e.g. bridge building, road making and the construction of water conduits, and of course on the improvement and reconstruction of defence works. The most famous structure from this period is Emperor Hadrian's wall across Britain from the Solway to the Tyne, finished in 127.

Many traders settled down under the protection of the fortified camps,

where the officers and men were their customers. Obviously the soldiers could not do without women, and it became the normal practice for the troops to settle down in quarters outside the camp and marry their women, once they had served their time, while their sons carried on the family tradition in their fathers' legions. In this way a number of forts and camps grew into towns which exist to this very day, e.g. Chichester, Carnarvon, York, London, Cologne, Trier, Koblenz, Mainz and Vienna. In North Africa similar towns are now ruins, such as Timgad in Tunisia.

In between the large fortified camps were a number of smaller forts, often nothing but ramparts with palisades and watch towers. From Mainz to Vienna there were several hundreds of these small forts which we know today from excavations and reliefs. In the course of the second century the Emperors Trajan and Marcus Aurelius fought many fierce but victorious battles along the Danube against various Celtic and Germanic tribes and set up two richly decorated columns in memory of their victories, and these are still standing in Rome. Here we are shown the clothing and weapons of the barbarians, but even more, the Roman army of the time with their equipment and weapons in great detail. We can see the army on parade or marching with all its baggage train and crossing a river. Also military engines, Roman forts and watch towers, as well as Germanic villages, are all clearly depicted.

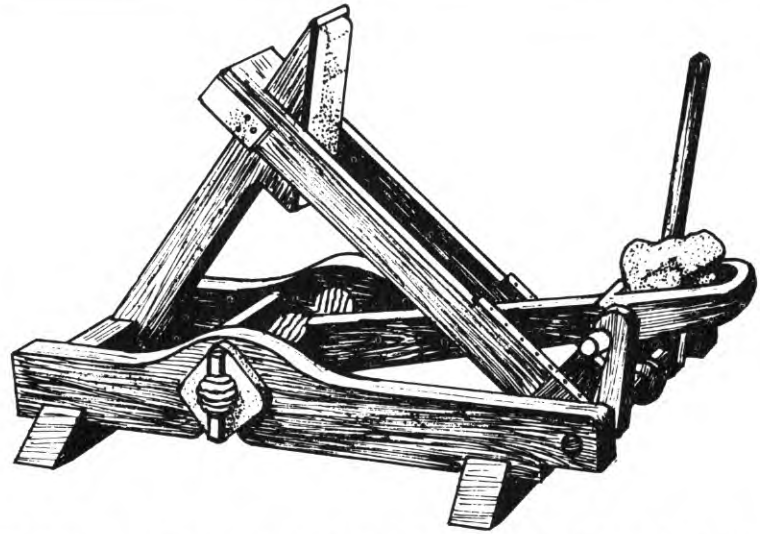
It rarely happened during service as frontier guards that a whole legion marched out; hence equipment was made lighter, more suitable for fighting in small units and for hand-to-hand fighting. A lighter oval shield was introduced (136, 137) and lighter armour – in fact some legionaries wore no armour at all (136). At the same time – while Trajan was emperor – chain mail was gradually replaced by armour of overlapping metal strips (133 and 139). The reason may well have been that this was cheaper and easier to produce than chain mail. Another new feature was the helmet with the large neck-guard, the crown being divided into panels (133, 137 and 139).

Signals in the Roman army were always given by *tuba* or *cornu* (134). The importance of an efficient system of sounding the alarm at the sign of attack must have been particularly great in the smaller forts. Although the Roman emperors were absolute autocrats, the legion's eagle (135) still retained the old inscription 'SPQR', *Senatus Populusque Romanus*, the senate and people of Rome.

During garrison duty on the frontier it was necessary to be prepared for raids undertaken by smallish bands of barbarians who quickly made off again. A large proportion of the garrison was therefore made up of cavalry who could go into action more rapidly than the infantry legions and cohorts. This cavalry was really nothing more than mounted infantry (138 and 140), and apart from the hexagonal shield the cavalryman's equipment was the same as that of the infantryman.







*An* **Onager** *in firing position. The large arm with the missile – a large stone – was firmly fixed between two thick twisted ropes, like the peg of a bow-saw. When the mechanism was released, the arm sprang forward against the leather-padded check block, and the stone was hurled with great force. Onager is another word for wild ass. When the power was provided by a large metal bow, the machine was called a ballista. The third type, the catapult which is depicted in the coloured plate with its Roman crew, had two smaller arms held by twisted ox-sinews or human hair. It could project large spears with great precision and was carried on special transport. It approximated to field artillery, while the other two were siege engines. These machines, which had a range of about 300 metres, were used by the Greeks and the Macedonians as early as 400 B.C., and many constructional drawings from about 200 B.C. are still in existence. There are reconstructions of these engines in the museum in Saalburg in Germany and at Castel S. Angelo in Rome.*

**Rome 100–300**

**141–150.** The army which *c.* 200 guarded Rome's frontiers had only a remote resemblance to the soldiers who had conquered and dominated the known world a few centuries

earlier. This was due to the fact that the Romans with their defensive works and excellent military engines, e.g. catapults, had for a long time had little to fear from the rabble of barbarians who might attack them. Smaller raiding parties could always be put to flight by a small show of strength. It was only along the eastern frontier with the great Parthian empire that it was necessary to maintain regular legion strength. However, at the close of the first century a gradual decline took place within the whole empire, and it was found difficult both economically and technologically to maintain previous standards, demands having to be reduced in various directions whenever possible. This period of decline, which lasted nearly a century, brought about an increased pressure on the frontiers, which time and again were crossed by the peoples of the neighbouring areas, so that the Romans had to fight hard to preserve the unity of the empire.

The centurion (141) is still equipped with two swords, one long and one short, with leather armour and stick. He differs from his predecessor (131) only by wearing knee-breeches, as did all troops at that time. Quite often he was the real commander, and so that the soldiers could see where their leader was he continued to wear a red crest on his helmet.

The oval shield appears in many places as the equipment of the regular legion on the Column of Marcus Aurelius. The infantryman with the feather-crested helmet and scale armour (147) is such a soldier from one of the Danube legions *c.* 150. But some legionaries (142–145) still had the rectangular shield bearing the emblem of the legion. Their breast-plate, which only covered the upper part of the body, consisted of iron strips or lames riveted together that were both easier and cheaper to produce than chain mail or scale armour, but they did not however give as good protection against a stab from a sword or pike which might find its way in under or between the strips. On the other hand it was an excellent defence against a stroke from the Germanic long sword. The helmets did not have feather crests because it was no longer any problem to distinguish friend from foe—or Roman from Teuton. The legionaries had exchanged their heavy spear with the long iron shaft (*pilum*) for a lighter throwing spear. This did not have the same penetration, but this mattered less against the Teutons or Picts who rarely wore armour. The sword was not so heavy, but longer, and was now used just as much for slashing as for thrusting.

The infantryman with the bronze armour and oval shield (146) is a sentry from one of the camps where specially detailed men were used to guard the quarters of the legion's general and the camp shrine, as well as acting as what today would be called military police.

The legate (148) is clad entirely





in red, the colour of victory and triumph, which also served the practical purpose of the general's red cloak being a distinctive mark and rallying point in the tumult of battle. Gods, emperors and generals were always depicted wearing richly ornamented breast-plates, and these were presumably also worn in battle. The armour shown here is copied from a statue of Mars, the god of war, from *c.* 150, which is now in the Vatican.

The light infantryman with leather jerkin and helmet with neck-guard, but without shield (149), comes from one of the Dacian armies which in the 200s fought hard campaigns in the Carpathians, while the cavalryman wearing chain mail (150) is from one of the eastern legions where cavalry was far more important than along the Central European rivers.

**Emblem of a Roman Legion.** *We know a lot about the Roman legions and their camps from the many finds of inscribed tombstones, decorated portals, floor mosaics and stamped tiles. The tablet shown here with a charging boar, the symbol of the 20th legion, is now in the British Museum in London; XX LEG Valeria Victrix was garrisoned in Britain from the time of the invasion in* A.D. *43 until about 300, when it was transferred to the Rhine frontier.*

### Rome *c.* 300

**151–156.** Defensive warfare in the long chain of frontier forts had also changed the spirit in the Roman army and reduced its effectiveness. This became very evident when during the economic recession *c.* 200 the system of paying the soldiers their gratuities in land was again adopted, so that military service developed into a sort of bondage, because the soldiers' sons were obliged to serve in the legion in order to keep the family farm. Within a few generations the army was thus changed into a community of armed frontier farmers who only felt a sense of duty towards their own home region, while military solidarity, discipline and training went by the board. The situation was not improved by the fact that at the same time as the economic depression and general breakdown in organisation took place there was a reduction in numerical strength. Historians have debated about the cause of this, but it was very likely some sort of reciprocal action which resulted in plenty of land being

obtainable, so that it was no longer necessary for the soldiers' sons to follow in their fathers' footsteps.

Beyond the frontier, on the other hand, there were numerous tribes which being overpopulated were in great need of land, and so they continually exerted pressure on the frontiers. The obvious thing was therefore to absorb these barbarians into the empire and give them land in exchange for service in the Roman army – under the command of Roman officers, of course. This had been practised in a small way since Caesar's day *c.* 50 B.C., and in the course of time many Germanic tribes had learnt Roman strategy and drill, and had to some extent become Romanised. But from *c.* 250 onwards this took place on a large scale, involving whole tribes at a time and, to put it bluntly, it was now the Roman army that was being Germanised.

The mercenary on the left (151) is such a German in Roman service, as signified by the red crest on the helmet, but apart from that he wears the Germanic cloak, tunic, trousers and stockings. He has a long slashing sword (*spatha*) and a wooden shield. The mercenary in the background (153) is very similarly dressed, but slightly more Germanic with the big round chape on the scabbard and having no helmet. The light infantryman (152) is shown as a Germanised Roman; the difference between him and the two Germans is the Roman knee-breeches. The armoured infantryman (154), on the other hand, is a regular Roman legionary, but he too carries a light round shield which permits him to wear his long sword on the left. Although his armour is still conventional in form, it is now made of leather, for the protection needed is against cutting, not thrusting.

The cavalryman (155) is truly Germanic; only the red boots reveal that he is in Roman service. The long oval shield was made of wood and covered with leather. The lance with the heavy point and the full mail indicate that the Germans had gradually become just as well equipped as the Romans, if not better.

The standard-bearer (156) still looks more Roman than the rest, and the reason for this is probably to be found in the military tradition that men in command (141 and 148) and standard-bearers (156–157) more than any others were the ones to change least in appearance, and we must remember that the Romans at this stage had a military tradition going back more than a thousand years. The standard with the cross-bar (*vexillum*) was used by smaller units.

**Rome 100–400 B.C.**

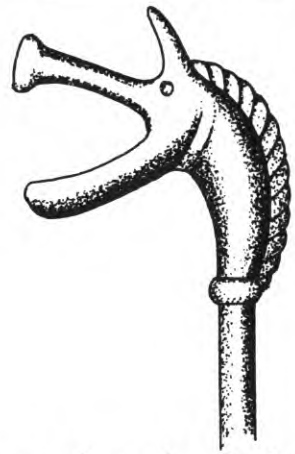
**157–165.** The commander had already in Caesar's time a small personal bodyguard, who may also have functioned as military police, but under the Emperor Augustus this special unit was enlarged into a regular corps of guards of 9000





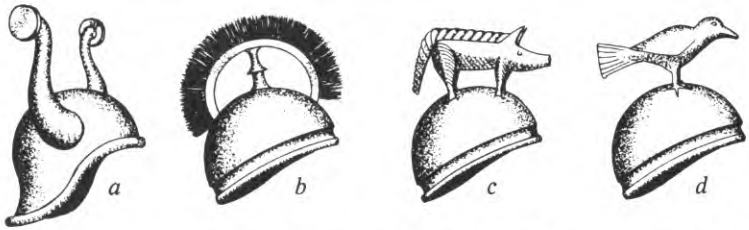
men, the Praetorians, who were stationed in Rome and who were the only troops under arms in the capital. For this very reason the commander of the guard, the Prefect, came to play a very important part, especially when the emperor died, for when a new ruler was to be elected or selected the Praetorian Guard exerted a decisive influence. On many occasions such an election was a question of bribery pure and simple. It was a great honour to be accepted for service with the guard and many of the Praetorians were long-service centurions from the legions. Because of this political influence many noble Roman families preferred their young sons to do their service in this guard rather than any other, for it was in the capital, close to the court, and we have therefore deliberately portrayed the three Praetorians in the background (158, 160 and 162) as dandies. As well as this guard many emperors had an entirely personal bodyguard made up of Germans, who were believed, and with justification, to be more faithful and reliable than the politically minded Praetorians.

An élite corps such as the Praetorian guard will always resist changes in its equipment and be more splendidly clothed than the ordinary fighting troops. The eagle standard-bearer completely follows tradition with his scale armour, wolf-skin and the absence of trousers. In the relief from *c.* 210, from which he and the Praetorians have been



**Carnyx from the Gundestrup Cauldron.** *The long straight bronze horns used by the Gauls (173) were composed of several pieces. They could only produce the natural tones, like the much earlier Scandinavian lurs (92, 93). They have various heads, a horse as seen here, a boar and other animals, and it is possible that the head indicated the key to which the instrument was tuned. National Museum, Copenhagen.*

copied, it is not possible to decide whether they also wore loose, pleated shorts or a tunic, but we have chosen the latter. For all Praetorians (158–162) the red or purple cloak, the tunic and sandals, were the general rule and distinguished them as the emperor's guard. The three Praetorians in the background are wearing either scale armour (158) or 'tailor-made' figure-fitting armour (160) or chain mail (162), and carry round shields




**Helmets from the Gundestrup Cauldron, about 100 B.C.** *A helmet with metal horns as stylised as in the one on the left (a) may well have been worn by a god or priest, and its wearer in fact appears kneeling in front of the Gaulish god of heaven, Taran. The others are seen in a procession of four horsemen and ten warriors, and it is clear that these fine examples indicate a higher social or military rank. We often find the plumed crest (b), but the boar (c) and the bird (d) are reminiscent of totem animals on standards (169) and helmet crests of later times. National Museum, Copenhagen.*

and the sword on the left side. The other two (159 and 161) look tougher and are meant to be centurions who have been transferred to the guard, but they too have very expensive equipment, one of them wearing a breast-plate embossed with the face of a god. The strips originally meant to protect the lower part of the body are still present, but have now only a decorative purpose.

The man without any armour (163) is a bodyguard from the time of Constantine the Great (306–337), perhaps a mercenary from Arabia. Judging by his light clothing he could well have belonged to the guard inside the Imperial Palace itself. His cloak is of course purple, and the large shield gives him the protection he otherwise seems to lack. The other bodyguard (164) is also from Emperor Constantine's guard. The round shield bears Christ's monogram – not 'XP' but the Greek letters for 'CH' and 'R' = Christus. It was this emblem that Emperor Constantine used as his battle-standard and shield device in the battle against his rival emperor Maxentius just outside Rome in 312 at the Mulvian bridge across the Tiber. Following this he introduced Christianity as the State religion in the whole empire. It seems probable that the guard wore armour under his fine clothing, but then again the shoulder-pieces may have been painted metal. The very distinctive costume is well known from floor mosaics, and it is thought likely that it was soldiers from Tunisia in particular who were dressed in this fashion.

While the Germans who fought against the Romans on the Rhine were forest tribes, there were many Germanic peoples – long since





extinct – in Eastern Europe who were mainly horsemen. The Goths are the best known. Only the red crest on the helmet and the sandals show that the cavalryman (165) is in fact serving in the Imperial guard.

### Gaul 150–50 B.C.

**166–173.** In the centuries before the Birth of Christ there existed a mysterious people, the Gauls, whom we come across on their migrations in many different places. They may have been the descendants of the Scythians (see p. 150); at any rate, many details in their metalwork suggest this. About 400 B.C. we find them in Italy, where the Romans fought many battles with them – they attacked and plundered Rome in 387 B.C., for example. Some 100 years later they are in Greece and soon after that in Asia Minor. They are described as very brave warriors and are depicted as tall, handsome men. The Pergamon statue 'The Dying Gaul' from *c.* 250 B.C., now in the Capitoline Museum, is a victory memorial from the Greeks' battles against them. But finally they settled down as a community in Northern Italy, in the area between the Rhine and the Pyrenees and also in the British Isles. The language they spoke belonged to the Indo-European group and was a sort of 'cousin' to Latin. Celtic – or Gaulish – languages and dialects are still spoken in Brittany, Wales, Scotland (Gaelic) and Ireland.

Our acquaintance with the Gauls comes mainly from the reports of the Classical authors and antique reliefs, but also from the many archaeological discoveries – most of them made in France and England, and from a study of ancient – particulary Irish – lore, it seems possible to build up a picture of their life and living conditions. When in 58 B.C. Caesar attacked Gaul, he found the country divided into a number of principalities and kingdoms often at war with one another. There must have been a very independent and warlike aristocracy of chieftains who had a following of minor chieftains and common warriors, comparable with the Scottish clans of a much later date. From Caesar's description it appears that it was the council of chieftains who held political power, not the princes.

In Caesar's time war chariots were still being used in England, but the Gauls were mainly famed for their first-class cavalry, and both Caesar and later Roman generals frequently had their entire mounted force composed of nothing but Gauls. But the great majority were in fact foot soldiers. When in 53 B.C. Caesar became involved in a series of fierce battles with Vercingetorix, King of Auvergne, the Gauls had an army of 200,000 infantrymen and a cavalry of 8000.

The Gauls never succeeded in setting up a permanent organised state of any size, and it is usually maintained that they remained great individualists. We see that from their arms and equipment. They all wore trousers tied at the ankle, and

all had leather footwear with bindings. But when we look at the helmets, for example, which we know from archaeological finds and some Roman reliefs, we find them all different. The helmet that the warrior on the left (166) is wearing is very similar to an early Italian one (114), but we must not forget that the Gauls penetrated deep into Italy and during many centuries were the neighbours and enemies of the Etruscans and Romans. The long slashing sword with the 'feelers' on the hilt is of old Central European origin (cf. no. 87). The spear and the tall, light-weight wooden shield, which we find reproduced on the Gundestrup cauldron, make him a light infantryman. They knew the art of dyeing cloth with vegetable dyes, and the Gauls were distinguished by their colourful costume and their delight in the variety of colours. This is apparent from the checked tunic which the warrior in the background is wearing (167), and some scholars believe that the Scottish tartan – the clans' checked pattern – goes right back to the ancient Celts. His unusual type of helmet might have prevented a blow or a slash on the head falling on his shoulders afterwards. The Gaul carried a fairly light battle axe, as well as the usual long sword in a wooden scabbard reinforced with metal, and a straight dagger for hand-to-hand fighting. The rough, untreated skin jerkin provided him with sufficient protection from slashing weapons. The warrior with the bronze armour (168) might well be called a heavy infantryman. The armour is of the usual shape, but embossed in a way that is unique to the Gauls. The wooden shield was probably covered with leather and provided with metal reinforcement. The oval wooden shield of the warrior on the right-hand page (171) has a hole in the centre with a handgrip across it, this being covered by the boss designed for this very purpose. This type of shield is depicted on the Gundestrup cauldron, where we also see several horned helmets and long, straight swords.

The Celts – or Gauls – were excellent workers in metal. The wings on the standard-bearer's helmet (169) are of beaten bronze and are not real bird's wings, anymore than the buck's horn (171) and the bull's horns (173) are genuine. He is wearing the checked costume, for only nobles, with pride of family and clan, were chosen to carry the battle-standard of the tribe. We know of other animal standards besides the boar, and these may have been totems, but we do not know this for certain.

In all the illustrations of Gauls we find the moustache and the large, heavy neck-ring (*torqua*) as essential features. The chieftain's helmet (170) was soldered or riveted together from two pieces, and then the crest was riveted on to protect this weak spot. His sword is of a type found all over Europe north of the Alps at that time, and his bare torso proclaims him to be a particularly





brave man who scorns the protection armour could give him.

Both infantry and cavalry were armed with spears or javelins, and although the Gauls were strong in good cavalry, they had no special equipment (172) apart from the fact that some of them wore spurs.

The Gauls had in the course of time come into contact with many different peoples, and both their metalwork and their equipment and armament show distinct traces of these various influences. The hornblower (173) thus has an Italian breast-plate and a Germanic axe. His large horn (*carnyx*), on the other hand, is reckoned to come from Gaul itself. The one illustrated here bears an unspecified animal's head. Another horn, found in Scotland, has a distinct boar's head, and on the Gundestrup cauldron you can see three horns of this type, all bearing a horse's head. On this cauldron they form part of a procession of cavalry and warriors on foot, so they were in all probability used in the army.

**Byzantium 500–800**

**174–177.** After Emperor Constantine the Great had become absolute ruler and introduced Christianity as the state religion, he made Byzantium his capital instead of Rome in 330 and changed the name of the city to Constantinople. While the economic depression continued in the western part of the Empire, itself soon to collapse before the Germanic invaders, the Eastern Roman, or Byzantine, Empire succeeded both in stabilising the economy and in holding the barbarians at bay. It is true that Emperor Valens was beaten by the Goths at Adrianople in 378, but the capital's strong fortifications proved to be impregnable. It was also possible for many years to fight successful holding actions against the new empire of the Sassanian Persians.

Control was centralised in every respect. The equipment of the soldiers, such as armour and helmets, was standardised, made in large State workshops and stored in the imperial arsenals. The organisation of supply and transport was under central control, and indeed manuals of the art of war were issued. Thanks to this strong administration and strict supervision of civil servants and landowners in the provinces, the Byzantine Empire was able to open its frontiers to various foreign peoples, often very warlike, and allow them to settle inside the empire. This provided the State with an excellent supply of recruits, but these troops were never garrisoned in their own native district. Apart from these Germanic and perhaps Asiatic sources, the Byzantine army had in the past drawn its recruits from the warlike tribes of the Balkans and Asia Minor. Equipment resembled only slightly that of Ancient Rome and consisted of half-armour, round shield, long sword and helmet that left the face free, and all the troops wore trousers. All the same the Byzantine soldiers

were better armed than the lightly-equipped, badly-organised tribes they had to subjugate.

With troops such as these the Byzantines under the Emperor Justinian (527–565) initiated an aggressive foreign policy, first of all against the Persians, where in spite of a number of great victories the result was as usual indecisive. Then North Africa, i.e. Tunisia, was conquered with the defeat of the Germanic Vandals, who had settled there in 429. In the 530s the war was continued in Italy, which was won back from the Ostrogoths, and in Ravenna to this very day we find large mosaics in memory of Justinian and his queen. In these and various other wars the troops were not led by the Emperor himself, but by his outstanding general Belisarius. The latter's forces were never particularly numerous, but on the other hand were well equipped and excellently trained. The Cataphracts especially, being the élite cavalry, were superior to any troops they met.

Both horse and rider were fully protected by scale armour (175) or mail. The armament was sword, spear and bow, the latter carried in a quiver on the right side of the horse. The bow was laminated, with many strips of wood glued together, and had far greater penetrative power and range than the usual horn bows. It is possible that the Cataphracts had some kind of stirrups or leather straps to put their feet in. Stirrups are a Chinese invention from *c.* 400, the knowledge of which spread westwards, but it is not until after about 700 that we have any conclusive proof of their use in the European cultural sphere. The head harness used on horses on the other hand has remained more or less unchanged since we first met it on Greek vase paintings from *c.* 500 B.C. (94). The two infantrymen (174 and 177) have been copied, as far as equipment and the colour of their clothing is concerned, from a Byzantine manuscript from about 500, while the decoration on the horseman's shield (176) comes from a sculpture made in Egypt just before the arrival of the Arabs in the 630s.

### The Near East 250–650

**178–180.** Right from the time (about 100 B.C.) when the Roman Empire had expanded into Asia Minor, relations with the great Parthian Empire had been strained, and in their wars against it the Romans had suffered a number of disastrous defeats. But the situation became worse in 226, when the Parthian Royal House was brought down by the Sassanians, who considered themselves to be more truly Persian. The Sassanians' power was founded on a strong army, an active foreign policy and a very centralised administration. Here again we find both principal departments and provincial governors, all strictly supervised, as well as a posting system which could not be matched anywhere in Europe. Much emphasis





was placed on education, and many schools and universities were founded where mathematics and astronomy, learnt from the Greeks and Indians, were taught. The Arabs later succeeded to this cultural knowledge and took it with them to Spain, whence, so to speak, mathematics returned to Europe.

The organisation of the army became even more effective, with high-ranking officers being responsible for provisions, the breeding of horses and training of archers, and the improvement of roads and fortifications, as well as for the manufacture of weapons. It seems quite clear that the administration which contributed towards the maintenance of the Byzantine Empire right up to 1204 had in fact been 'borrowed' from the Persians. The Sassanians' army consisted mainly of cavalry: the heavily armoured Cataphracts (178) equipped with spear and wearing the remarkable visor covering the whole face – another thing the Byzantines had learnt from the Persians – and the lightly-armoured mounted archers (179) equipped with a bow which, although large, was not very tightly strung and therefore had no great range. It was the 'invention' of the Byzantine general Belisarius to stiffen the bow and arm the heavy cavalry with it. We are familiar with the kings both from medallions and from the large victory reliefs carved on the cliffs of Kurdistan, such as the one found at Naqsh-e-Rustan which shows the surrender of the Roman Emperor Valerian to King Shapur I at Edessa in Syria in 259. King Chosroes II (180) was roughly the contemporary of Belisarius. He is wearing a shirt of mail, long, loose silk trousers, a helmet bearing the winged symbol of the sun-god and a long sword with a scabbard that looks very Assyrian. The same is true of his hair style and that of the mounted archer (179), and it might well be that these proud warriors consciously desired to emphasise a similarity with the Assyrians whose cliff reliefs can be found in the same regions.

### Islam 600–800

**181–186.** While neither the Byzantines nor the Persians could really gain the upper hand over one another, the Arabs in the course of one generation succeeded in conquering the whole of the Sassanian Empire and practically all the Asiatic and African possessions of the Eastern Roman Empire.

Arabia about 600 was only inhabited by nomadic tribes and remained so almost up to the present. In the districts bordering on the Roman Empire were a few Romanised trading centres, and there were some alliances between the small states in the mountainous regions east of the Red Sea, near the cities of Mecca and Medina, and down near Yemen. A brisk trade took place with the Roman provinces of Egypt, Syria and Palestine, the Arabs providing aromatic spices, wild animals, horses, slaves

and mercenaries (163) – in fact an Arab sheik (Philippus Arabs, 244–249) even became Roman Emperor.

It was among these rather primitive communities of merchants and slave-traders, goat herds and brigands, that the prophet Mohammed in *c.* 622 created one of the world's greatest religions, in the city of Medina. Up to this time the Arabs had merely worshipped spirits and fetishes, and it was a new idea to them that there was only one God, Allah. This seems to indicate that Mohammed had been influenced by Judaism and Christianity. The reason for his recognising Moses and Jesus as prophets may have been that the commercial city of Medina had many connections with Christian and Jewish Egypt and Palestine. But at the same time he preached a holy war: all heathens were to be converted, if necessary by force, and those who believed in a God – the Jews, the Christians and the Zoroastrians in Persia – were to acknowledge the supremacy of Allah. The men who were to fall in battle fighting for the cause were promised eternal salvation. Islam as a world religion involved far more than that, of course, but it was this 'programme' which in the course of 10 years kindled the fervour of all Arabia before the Prophet died in the year 632.

To the civilised world it must have seemed that out of the clear blue sky above the desert waste there suddenly poured a torrent of invincible armies. Under the command of a number of brilliant generals, Omar, Amr and Chalid, the Arabs conquered first Syria and Palestine, where the Mosque of Omar in Jerusalem stands as a reminder of the city's conquest in 637, and then in the years 636–644 the whole of the Persian Empire. During the same period Egypt and North Africa as far as Tripoli were subjugated. In the following generations the conquests continued towards the east and north-east to the Indus and far up into Uzbekistan, and in the west as far as Spain, which Tarik attacked in 711 – Gibraltar is a European form of the Arabian Djebel al Tarik, meaning 'Tarik's hill' or 'rock' – and still the Arabs went on, until they were stopped in the middle of France at the battle of Poitiers in 732. No wonder that historians call it the Arab Flood.

They were not all Arabs, of course, for in the many conquered and invaded countries which now spread across the map there were those who, either for political or for economic reasons, saw a personal advantage in being converted to Islam and obtaining a share in the new order. The fact that the Mohammedans were monotheists like the Christians must have had some influence too. We must also remember that the primitive but enthusiastic desert warriors who crushed the Sassanian army at the battle of Kadesia in 637 were not the same kind of people as those who beat the Spanish Visigoths at





the battle of Jerez de Frontera in 712.

Although their main strength lay in their light cavalry, the Arabs soon began to use combined infantry and cavalry tactics, and a large proportion of the Islamic army after *c.* 650 consisted of light infantry (181 and 183). They were armed with small, light, round shield, spear and long, straight sword. The well-known curved Arab sword, the scimitar, was of Turkish or Mongolian origin and did not appear until *c.* 1200–1300. The Arabs were not tardy in taking over the large Persian and Byzantine arsenals and armament workshops, so before long they were as well armed as their opponents. For the same reason the cavalry soon received protection in the form of mail, and they may have used stirrups (182). Whether the armoured infantryman (184) marched or was merely a dismounted cavalryman is not known for certain, but any study of the considerable illustrated material from that time reveals how heavily equipped the infantry was. Anyhow it would be the first instance in many a long time in which we found armoured archers on foot (186). But there was no departure, not even in later campaigns, from the original arms and tactics, and the light mounted archer (185) could date from either 632 or 732.

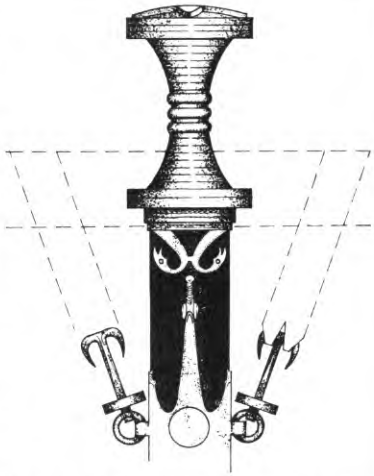
## The Germans 100–600

**187–194.** The Germanic tribes, with whom the Romans had both belligerent and peaceful dealings along the frontier, extended far to the east, to the Vistula and the Dniester anyhow, and northwards right up into the Scandinavian peninsula. Roman writers, especially Caesar and Tacitus, have described the peoples on the other side of the frontier and their strange customs and habits, their weapons, religion and kings. We also know the Germans' own sagas and epics, and although they were not written down until much later, it has been possible to draw some conclusions as to their veracity from the Anglo-Saxon epic of Beowulf, the first books of Saxo Grammaticus' 'Gesta Danorum' and the oldest parts of the Nibelungenlied. We can also learn a great deal from studying the Roman victory columns and the sculptured Gotland Stones, but principally from examining the articles themselves.

Many archaeological discoveries have been made throughout the whole of the Germanic territory which confirm what the Roman authors related, and the grave finds show us the splendid equipment of the chieftains, while the bog finds have given us information about the common man's arms. These latter, which have mainly been found in the region north of the Elbe, have established that it was the custom over a considerable period to bury heaps of weapons, shields, coats of mail, harness and parts of chariots in the bog. All these articles were made unserviceable in one way or another to signify that they were a gift to the

gods, perhaps in gratitude for a victory, and that they were not to be used again by man. They include, for example, valuable south-east European silver helmets (187 and 190), a complete coat of mail (187) which no doubt belonged to an enemy chieftain, and a nearly complete set of men's clothing (188). From a slightly later period, *c.* 500–600, there are very beautiful and valuable helmets which have been found in Sweden (189 and 191) and eastern England (193).

Our knowledge of these tribes must therefore be pieced together from finds made over a very large area and extending over some five hundred years, from the very first battles against the Romans, when the Germans were very primitive indeed, to the latter part of the Migrations, by which time they had developed a written language, the runes, and were very advanced in pictorial art and the art of working metal. If we remember that valuable swords (187) or splendid helmets (189) were probably passed down through several generations, it can be difficult to determine the exact date they were made within the period. The most ordinary weapon was the sword, to start with a shortish, almost Roman, type (189), later longer but retaining the same shape (191, 192), and finally the long, originally Goth, slashing sword (*spatha*) (187, 188). In a similar way the spear developed from the assegai-like *framea* (189 and 192) into a long pike (187, 193 and 194)



**Spatha.** *This sword scabbard from Kragehul in Funen, Denmark, (187) has on the bronze mount at the top two double hooks attached to lugs. This indicates that the weapon was worn either on a baldric over the shoulder or hung by two straps from the belt. From about 400–600. National Museum, Copenhagen.*

which was used by both the infantry and cavalry. Armour often consisted of mail – the one found in the Viemose on Funen (191) is made up of some 20,000 rings welded together and may well be of Germanic origin from *c.* 200. The chieftain in the middle (189) is wearing a south-east European leather jerkin with attached metal plates from *c.* 400, while the cavalryman's armour of leather and metal plates (193) could be Germanic, but of a much later date, probably *c.* 600. Shields were





of wood, sometimes covered with leather and reinforced with metal (191, 192) which served to make them tougher and more resistant to cutting. At the beginning of the period the bow was practically unknown for war purposes, but after 400 it became very common indeed (188).

Some of the half-savage tribes were probably dressed in skins with their feet bound in leather strips, and a rough cloak (194), but most wore trousers and a long-sleeved kirtle. This demonstrates that methods of spinning and weaving had developed considerably during this period.

## The Migrations 400–600

**195–200.** China under the Han dynasty started some time in the first century A.D. a vigorous policy of expansion against the barbarous nomadic tribes who inhabited the steppes and the desert north and west of the Great Wall. The result was that the Huns advanced westwards and about 370 attacked the Goths, who by that time had settled north of the Black Sea. This caused a renewal of the century-long pressure on the frontier by the Germanic tribes and set up quite a chain reaction, starting with the frontier tribes forcing their way into the comparatively thinly populated Roman Empire, which with its rich cities and agricultural land, there for the taking, must have been an invitation to plunder. During the same time peoples living further away moved into the now depopulated frontier districts and then followed the first wave into the Empire, driving them further and further onwards. The last wave consisted of Slav tribes from the north-east who invaded the territories between the Vistula and the Elbe vacated by the Germans, and continued their way southwards through Europe right down to the Balkans.

The Huns were a savage people of horsemen whose only occupations were horse-breeding, hunting and war. During their long trek westwards they adopted other peoples' arms and equipment, such as lances and Persian helmets and armour (195, 196), but their principal weapon was a bow which was not very long or powerful. The warriors were on the other hand trained from early youth to shoot very quickly and accurately from horseback. The army was drilled in various formations of attack, and officers were able with bugle calls to direct the troops even in the midst of battle. The tribe and the army made camp in the form of a laager, the carts linked together by chains, and during the battles in Europe such a laager was sometimes fortified by earthworks. These savage raiders, riding fast and shooting with precision, swarmed across Europe destroying and plundering. For a time they settled on the plains of Hungary, but later, under King Attila, they continued their murdering and burning along the Danube and across the Rhine, until in 451

they were soundly beaten at the battle of Chalons-sur-Marne, just east of Paris, by a combined force of Romans and Visigoths under the command of the Roman general Aëtius. This onslaught across the whole of Europe was not undertaken by the Huns alone. A number of other tribes, e.g. the Sarmatians, the Bulgars, the Germanic Alans and the Gepidae, had joined them on the way, both because they were forced to, and also to win a share of the plunder.

The first to flee in terror before the Huns were the Goths, who crossed the Danube in 376 and beat Emperor Valens at the battle of Adrianople in 378. But when Constantinople's mighty fortifications proved to be impregnable, some of the tribes – the Visigoths – pushed on to Italy, where they took Rome in 410, and then on to France, where for a period they were allies of the Romans, and in the end they settled in Spain. Here they established a realm which in many ways carried on Late Roman civilisation and technology and which for several centuries had great military and political influence. It was especially in their battles against the Arabs after 711 that their armoured infantry (198) played an important role. Other Gothic tribes – the Ostrogoths – followed them into Italy, setting up a kingdom with Ravenna as capital, and this lasted until 553. These and many other peoples – Vandals, Langobards, Suevians and Gepidae – penetrated deep into the centre of the Roman Empire, but since they were only a superior warrior class which was few in number, they soon became absorbed by the higher culture of their neighbours when their connection with the German homeland was lost, and after a few generations they had disappeared as independent nations, so that it is now only the archaeologists and philologists who can find any trace of them.

Things were different in the territories at the extreme limits of the Roman Empire, where the Germans came as a complete nation and settled as farmers. For several centuries after 406 a constant stream of Anglo-Saxon farmers invaded England, where they gradually seized the land from the Romanised Britons, whose greatest ruler was King Arthur. And already in the 270s a number of Frankish tribes had succeeded in being given land by the Romans in the territory west of the Rhine, and in the beginning of the 400s they pressed on further to Northern Gaul, where they first occupied the areas in present-day Belgium which were rich in metals and a source of arms, only to move south in the next generation and conquer the country as far as the Loire. They were very primitively clad to start with (199), short trousers being the special characteristic of their dress, although they later adopted long trousers (200). The weapons peculiar to them were a short single-edged slashing sword,





really nothing but a large knife, the *scramasax* (199), and a throwing axe (*francisca*) (200). The helmet, the long sword and the blue kirtle that the infantryman on the right is wearing (200) is reproduced from a royal grave find dating back to about 600. Another tribe that settled in Gaul was the Burgundians. They were cattle-breeders and preferred the grassy slopes of hilly Burgundy and Lorraine, where they created an independent kingdom. Their infantry was distinguished by the long, straight sword and the heavy double-headed battle-axe (197).

The first king of the Franks was Clovis who extended his sphere of influence by constantly warring against the Burgundians and the Visigoths on the Garonne, and ended up as ruler not only of most of modern France but also of the tribes who had remained east of the Rhine in Franconia. These two peoples – the Franks and the Burgundians – took over the whole country and yielded only slowly to any Romanising influence. In Alsace, Lorraine and the Flemish parts of Belgium a Germanic language is still spoken.

**The Vikings 800–1000**

**201–206.** The Migrations and the Arab onslaught meant the final overthrow of the Old Roman Empire both culturally and administratively, but the inhabitants now supplied a variety of new features, an increase in the population, agricultural products and trade. There was, as in the past, trade across the Mediterranean, but there was now also trade along what was presumably a new route following the Russian rivers to the Baltic, and from there via Hedeby to Western Europe. Weapons, slaves and furs went by one route, and luxury goods and precious metals by the other. It is from finding Arab and Byzantine coins that we have been able to reconstruct these trade routes.

It was the Scandinavians themselves who sailed them, mainly Swedes, but naturally the other seafaring nations joined in: Norwegians, Danes and Frisians. It was of vital importance for these traders and slave-raiders to be well armed, and we cannot say on which occasions they engaged in trade or when they took what they wanted by force of arms. But it did not take them long to realise that disorganised Western Europe would be an easy prey. Armed trading expeditions soon turned into organised plundering forays, to end up as regular wars of conquest. The longships, which had both oars and a large square sail, were very seaworthy, and with them the Vikings could launch attacks where and when they pleased. It all began in 793 with an attack by Danish Vikings on an unprotected monastery in the North of England, Lindisfarne. For many years after this churches and monasteries were not safe from plundering anywhere along the coasts of Western Europe.

Indeed, the Vikings got as far as the Mediterranean and sacked the town of Luna in Tuscany, believing it to be Rome. After about 850 the Danes mounted a full-scale invasion of the East of England, where the territory called the Danelaw and many other place-names and dialect words are a reminder of this. In the 880s Paris was attacked several times, and in 911 the French king had to accept the fact that the men of the North – the Normans – had come to Normandy to stay, and he made their chieftain Rollo a duke. In the east along the Russian rivers a number of principalities, e.g. Novgorod and Kiev, came into being, where the prince and the upper class anyhow were Swedish Vikings. In the opposite direction the Scandinavians got to Greenland via Iceland and then to North America – Vinland.

There is no doubt at all that the Vikings acted with great savagery and barbarity, so it was with complete justification that the prayer in France and Northern Spain was 'Deliver us from the savage Northmen', but apart from the fact that purely physically they were probably bigger and stronger than their opponents – especially when these were unarmed monks in monasteries – they were also better armed and equipped. Nor need we imagine that it was always a matter of a haphazardly collected crew of raiders. The attacks on Paris in 885 and 888, and the discoveries of large Viking strongholds from about 1000 – Aggersborg and Fyrkat in Jutland, Nonnebakken in Funen and Trelleborg in Sealand – are evidence of a well-developed military organisation.

All arms and equipment were the Vikings' own, and there must have been a great variety of weapons and clothing, as some of it was probably looted. The warrior on the left (201), apart from ordinary trousers and cloak, is wearing a complete coat of mail, probably of Frankish make, and carries a long Frankish sword – we know of a decree which under pain of death forbade the sale of swords to the Vikings. His helmet is of an early and therefore rather old-fashioned type, reproduced from a Swedish burial find and dating from *c.* 700. The embroidered kirtle is no doubt loot. The warrior in the background (202) is perfectly traditional. The spear, sword and golden ornaments we know from grave finds. The helmet with the large nose-piece is in the latest fashion and is thought to be particularly typical of the Viking period. The warrior in the middle (203) on the other hand has as protection only a simple helmet and is using a throwing hammer in the way Thor the God of Thunder used his. The chieftain (204) is distinguished by his horned helmet which made him easily recognisable in the tumult of battle. He carries a sword with a gilded or bronze hilt and wears a valuable coat of mail, while his purple cloak and red silk kirtle must have been booty from one of the





Mediterranean countries. The warrior on the right (205) has the characteristic round shield and the Vikings' awe-inspiring battle-axe which could cut its way through and crush any helmet, mail or shield known at that time. His sword is of the common type, but the gold-hilted dagger is Irish. There were many skilled archers among the Vikings; the most famous was Ejnar Tambeskaelver. The archer here (206) has leather guards on his forearms as protection against the friction of the bowstring. Of the remaining Vikings illustrated one carries an ordinary axe, the so-called 'bearded axe' in his belt, and another is wearing Russian or Byzantine silk trousers, while the man in the bow of the ship has an Eastern European breast-plate.

## The Carolingians 732–987

**207–213.** Among the states that were created when the Germanic tribes moved into the Roman Empire, France became the biggest and strongest because it was a complete nation of farmers who took possession of the land in a large compact area. But it all took time. The sixth and seventh centuries were from the political point of view a period of conflict between the successors of Clovis, each of whom ruled over his own share of the country. But at the same time a strong cultural interaction took place between the Roman and the Frankish elements. Christianity was accepted by the pagan Germans and many churches and monasteries built, and some of the people were able to read and write. There was considerable interest in spiritual matters and the 'Roman' heritage. In the technological and economic field it came about that the wheeled plough was invented at the same time as a new harness for horses, the collar, while the cultivated area increased so much that it is estimated that the size of the population doubled in these so-called 'Dark Ages'.

The power around 700 lay not with the king but with the richest man among the nobles, the Mayor of the Palace, who had a retinue of warriors that far surpassed the king's. One of these Mayors, Charles Martel, introduced in 732 a new form of war service whereby he distributed land confiscated from the Church to his vassals in return for fully-equipped mounted men. And as long as they fulfilled this military duty the knight and his descendents could retain their fief. It was with this new army that Charles Martel halted the Arab invasion and later waged a long series of wars against the Frisians and Saxons. His son Pepin seized the royal title and became King of the Franks, and his grandson Charlemagne pushed the border with the Arabs down to the Ebro; in Germany it reached to the Elbe. He later advanced down into Italy and in 800 had himself crowned as 'Roman' emperor.

Although the armoured knights were now becoming most important,

the Carolingian army contained also a strong force of infantry, usually heavily armoured and of different types, for there was still a great deal of variation from province to province. The infantryman on the left (207) is almost Roman – possibly from Provence – with knee-breeches and scale armour. The close-fitting, reinforced leather helmet gave some protection, but the most important defence was the round shield which was easy to use in hand-to-hand fighting, but which does not suggest any drilled order of battle. The same applies to the infantryman in the middle (208) with his small helmet protecting only the crown of the head. His sword is long and pointed and of the type which – in spite of prohibition – was exported to such far-away places as Russia and Byzantium. The knight (209) demonstrates a new trend, not in his armour, helmet and shield, but in his horse's high saddle and stirrups. Stirrups may have been known in Europe a short while before, but it was Charles Martel's heavy cavalry used as a striking force that made practical use of this. A mounted man in a saddle with a high pommel and a cantle which stops him slipping backwards on to the horse's hindquarters, and who more or less stands up in his stirrups, can hold his lance under one arm and thus transfer all the horse's impetus to the thrust of his lance, and this produces an increased striking and penetrative power. There was indeed the risk that the lance might pierce too deeply and be impossible to dislodge, the rider thereby disarming himself. For this reason a cross-bar was fitted at the base of the blade. The lance pennant, which later became so common, served the same purpose.

The light infantry used the same kind of lance to meet an attacking rider or horse. The infantryman here (210) looks pretty Germanic, and we know from the illustrations in manuscripts that the light infantry had only a large shield to protect them when drawn up in close order. The armoured infantryman on the right (211) is from the Rhineland and may in fact have been a cavalryman. Neither his neck nor the lower part of his face is protected as is the knight's (209), but if he lowered his head behind the shield the combination of this and the helmet with the long neck-piece would give him sufficient cover. There is a manuscript from the monastery library of St. Gall from *c.* 900 with a standard such as the one the standard-bearer (212) is carrying. This may have been made of plaited straw like a fish trap or have been merely a bag. Flames or fire are clearly spewing forth from the animal's mouth, so it is more likely to have been a dragon than a fish. It is worth noting that the helmets are still fairly open, giving the wearer a chance to see and hear. The guards officer (213) looks very Roman, and this was a deliberate imitation, since the King of the Franks was now Roman emperor.





## Western Europe 1066

**214–221.** Already after about a century the French feudal system had degenerated in such a way that the most powerful vassals, dukes and counts, while still enjoying the benefits of their landed estates, did not always extend to the king the allegiance and military service due to him. Indeed, when the king was militarily and politically weak they behaved like independent rulers, raising their own armies and waging their own wars. One of the most powerful of the feudal princelings was the Duke of Normandy, a descendent of the Viking chieftain who in 911 had this province granted to him and his men.

Independence had reached such a point in 1066 that Duke William was able to equip a large fleet of transports and a mighty army, which consisted of knights from all over France, to cross the Channel and to land on the south coast of England, where he defeated the English army at the Battle of Hastings. The Anglo-Saxon guards, the 'housecarls', were heavily armoured and equipped with long axes (219) that were probably wielded with both hands. Nearly all the Anglo-Saxons fought on foot, and as long as they kept formation on their hill-top, every attack by the Norman cavalry failed. Only when the Norman archers began to shoot at a high angle so that the arrows fell almost vertically did the Anglo-Saxons suffer severe losses. A stratagem then persuaded them to move down from their strong position, and they became easy meat for the enemy cavalry.

We know the Normans' arms and equipment particularly well from the embroidered Bayeux Tapestry which was made in the 1070s and on which the whole battle and the events and preparations leading up to it are depicted in detail. According to the tapestry, cavalry and infantry wore the same sort of armour, but the men fighting on foot may have been horsemen who had dismounted to come to grips with the housecarls when the cavalry attack had proved abortive. The body armour is the same in every case: an overall of leather or some other material covered with iron plates. It is not clear whether these were sewn or riveted on, nor how the trouser-legs were armoured. The fact is that it would have been extremely uncomfortable and impractical to ride with metal pieces on the inside of the thighs. Some scholars believe that this was really a hauberk slit from crotch to knee, so that in effect what they wore was not trousers but just flaps. Another possibility is that there was no armour on the inside of the thighs, but whatever the case may have been, the warriors reproduced in this book are copied directly from the tapestry. The hauberk had three-quarter-length sleeves, and the warrior wore a coloured, patterned, long-sleeved garment underneath it (214), as well as pants or perhaps hose, i.e. cloth stockings, reaching to mid-thigh. The head was covered by a hood of

mail (216) and over this a conical helmet reinforced with crossed iron bands, while the large nasal two to three fingers wide gave the necessary protection to the face, covering it so much, in fact, that it must have been difficult to distinguish friend from foe. This may be why the large kite-shaped shields were painted with various figures (216, 217). When the rider was mounted on his horse the shield was carried on a strap around the neck (220).

The offensive weapon was the lance (214 and 220) with a pennant, the purpose of which was to prevent the lance penetrating too deeply and being difficult to withdraw. The standard-bearer (214) may be carrying a proper banner, however. Duke William's half-brother, Bishop Odo of Bayeux (215), is shown in the tapestry, armed with a knobbly wooden club, perhaps because as a dignitary of the Church he should not bear real arms. It is possible that his strangely-patterned kirtle is scale armour. The infantryman in the background (216) has an ordinary mace with an iron head. The stunning blow of a club was often more effective in cases where a sword could not make any impression, and to judge from the tapestry, clubs were also used as missiles. The swords were the long, sharply-pointed cavalry swords used all over Europe (217, 218). The Anglo-Saxons (219) shown on the tapestry are exactly like the Normans, and there is no reason to believe that the warlike and courageous English thanes were less well equipped than their opponents, and indeed their long axes proved in close combat to be more than a match for the enemy's arms. The knight's helmet (220) has copper mountings, possibly as decoration, and a small neck-piece like that of the infantryman on the left-hand page (217), but in other respects his equipment with the high saddle, stirrups and long lance are exactly the same as that of all European knights. Just as the long axe was typical for the Anglo-Saxons, so the longbow (221) was typical for the Normans, and the battle reached its first decisive phase when the English King Harold was killed by an arrow.

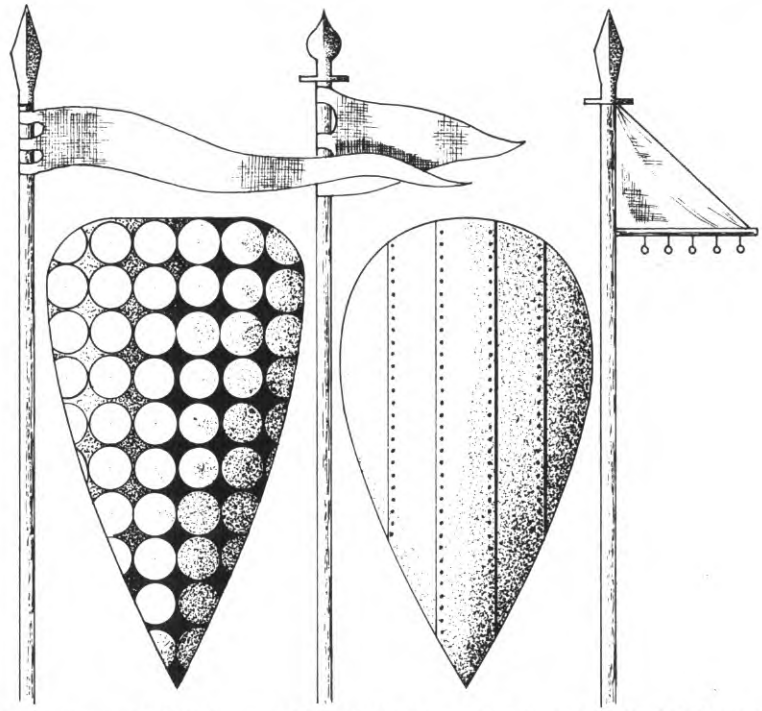
**Europe 1100–1200**

**222–225**. It was also the feudal lords and not the kings who took part in the first crusade in 1096–1099. There were William's son, Duke Robert of Normandy, with many English in his train, Gottfried of Bouillon, who was also Duke of Lorraine, the Counts of Champagne and Toulouse, and Prince Bohemund of Taranto in Italy. A little later some of the Scandinavian kings followed suit: Erik Ejegod of Denmark, who died on the way in 1103, and Sigurd Jorsalfar of Norway in 1109–1110. His men may well have looked like the Norse knight illustrated here (224).

There is still apparently very little difference between the crusaders of the 12th century and the Carolingian cavalry. Offensive weapons







**Pennants and Shields, *c.* 1100–1200.** *The spear-head on the left has no cross-bar, so perhaps the pennant served as a stop bar. The right-hand pennant held out by a crosspiece must have been a proper standard, as was the one in the middle. Although so dissimilar, they both originate from the same illustrated manuscript of about 1100. The shield on the left is reinforced with metal plates, while the one on the right is covered with strips of leather. Both shields come from a Danish mural of* c. *1200.*

were the same, as were defensive measures in general, but there were of course slight variations, e.g. in the shape of helmets. The Italian knight (222) has no protection for his face and neck, but this may be because he is copied from a statue of St. George. He is wearing a knee-length coat of scale armour, not trousers, and underneath an ankle-length garment and leather or cloth hose. The English knight (223) has reverted to mail, but it is now of a better quality. The West-

ern Europeans probably learnt improvement in forging and metal working from the Arabs in Spain and the Byzantines. The new art of forging – drawing iron wire – while making the hauberk more close-knit and therefore heavier, nevertheless made it more comfortable than the stiff scale armour, and the loose mail hauberk over a padded garment (*gambeson*) turned out to be both tough and proof against attack. The long slit coat of scale armour which the Norse knight is wearing (224) gave excellent protection for the rider's legs, but must have been somewhat impractical when he was dismounted. He is copied from a woven tapestry from *c.* 1175, and the figure on his shield is so evenly divided into sections that it is thought to be an actual coat of arms though it has not been possible to connect it with any specific family. The saddle has the stirrup-leathers placed well forward, and the knight rode with straight legs practically standing up in the stirrups. This increased the power of his attack but must have made it more difficult for him to control his horse.

The tactics employed in the first crusade we know from contemporary reports, but they may have been used earlier. The attack was made in three waves or encounters, but at times the first wave on its own could decide the battle. The fighting started with a close-order attack at the gallop with couched lances, but usually developed rapidly into close combat, when the grip on the lance was shortened and the rider stabbed at the infantry and unhorsed cavalry with downward thrusts in all directions. There was not always room or distance enough to employ the lance when confronted with mounted troops, and the sword was used in close-quarter fighting. If the first encounter did not break the enemy's ranks, the second wave was brought on. The last on the other hand was used more as reserve, to cover the retreat of the other two or to attack at the moment they were about to break through the battle-line.

Naturally the infantry could not follow the cavalry into the attack, but it played an important part in the whole tactical plan all the same, although not much recognition has been given to it. It was used to safeguard the camp, where it could form a last reserve in a retreat. On the battlefield it was employed on the wings to prevent encirclement, while in the attack itself it only took part in the third encounter. As it is not possible to make an assault on a fortress on horseback, the besieging and attacking of castles was normally the job of the infantry. The horn-blowing standard-bearer with the broad sword for close combat (225) is copied from a French manuscript from *c.* 1150, where he and an infantry unit are shown standing by to attack outside a castle.

**Byzantium and Eastern Europe 1000–1200**

**226–233.** The Byzantine Empire was still Europe's richest and best-





organised state, and Constantinople was by far its biggest city. In spite of military defeat on the borders with the Slav tribes and the Arabs, Byzantium was able to utilise to the full its unique position on the Bosphorus, where many trade routes ended or crossed. Trade was in grain, furs and slaves from Russia and the Black Sea area, metals from the Balkans and Asia Minor, and luxury goods and spices from the East. It was probably of great consequence that the Arabs' conquest had turned Persia, Syria and Egypt into one domain which could carry on a lively trade with the Christian countries of the Mediterranean and especially with Byzantium. The result was a very stable Byzantine economy. The gold coin (*aureus*, = golden) maintained its value for many centuries and was used as an international currency over such a wide area that as far away as Scandinavia the word is still to be found in the monetary unit *öre*.

This wealth was used among other things to maintain a large, well-equipped, well-trained and well-paid army which there was no difficulty in recruiting from the semi-barbarian warrior tribes that had been allowed to settle inside or along the frontiers of the Empire. In addition, at strategic points along the frontiers, fortresses had been built and provided with war-engines. The capital itself was regarded as impregnable. Although the troops came from many different nations their equipment showed little variation and had almost the character of a uniform, with a coat reaching to a little above the knee, trousers and – something very Byzantine – boots to just below the knee (226, 229 and 230). Because of this uniformity we cannot say for sure whether the infantryman on the left (226) is a Greek, a Macedonian, a Slav or from Thrace. Equipped with leather armour, round shield and Frankish sword he is just like all the rest. The helmet is not made of plates that have been riveted together and reinforced, as they were in the West, but is all of a piece, evidence of the advanced methods of forging in the East. The Phrygian archer (227) however is easily recognised by his special cap. These archers were élite troops greatly feared for their accuracy. They needed a shield for cover and a pike for defence when fighting at close quarters.

Although the Byzantines of this period were perfectly well acquainted with stirrups, they never developed a striking force of cavalry similar to that of the West. Their cavalry was used mainly for patrolling the old Roman military roads which were still in use and kept in repair. The cavalryman here (228) is wearing a helmet covered with felt or some such material. Each regiment had its own distinctive colour and this too was a kind of standardisation. He is not wearing scale armour but a leather jerkin with metal plates set edge-to-edge. This is also how the armour worn by the infantryman (229) was made. It

cannot be decided with accuracy whether he is an officer in the regiment that the infantryman on the left (226) belongs to, or if they belong to different regiments, e.g. 'The Greens' and 'The Purples'. As in the past (cf. 174 and 177) the Byzantines had an important industry making dyed textiles and silk, and the illustrations from manuscripts, which were the source for the warriors reproduced here, are brilliant in their strong colours.

A particularly famous corps was the Varangians, composed of Scandinavians, most of them probably Swedes. It was mostly chieftains and chieftains' sons who took service with the emperor in Mickelgarth, and in fact even the Norwegian King Harold Hardrada had been a Varangian when a young man. They were regarded as an aristocratic corps d'élite, and that is why the Varangian here (230) has been made so magnificent. It is from the Byzantine western sphere of influence that we know the Bosnian infantryman (231), copied from a sculpture in the cathedral of Trogir in Bosnia. He is wearing a mail coif covering head and shoulders, a helmet made of two plates – the chinstrap can be seen clearly on the sculpture – and a very primitive scale armour. The Russian infantryman (232) looks more Byzantine with his pointed helmet hammered out of one piece of metal and more elaborate scale armour. The long spear with the crossbar is intended as a weapon against cavalry (cf. 209, 210). The same goes for the spear the infantryman on the right is carrying (233). He is intended to be one of the Anglo-Saxons, such as the pretender Edward Atheling, who after the conquest of England took service with the emperor.

### Europe 1200–1300

**234–239.** In the 13th century the strong Western European states exerted a constant pressure on the countries bordering on their frontiers, often fighting people who were no match for the armoured cavalry which was now completely enveloped in mail, including the arms and legs. The Germans' expansion eastwards across the Elbe and along the Baltic coast, where they warred against the Slav Wends in competition with the Danes, is an example of this. In the west the English fought the Welsh and the Scots, while the Spaniards slowly but surely pushed the Arabs south.

The unusual mail hose which the two German knights on the left (234, 235) are wearing, and which were laced up at the back, must be regarded as a transition to the 'full' hose that Sir John de Plessis (236), the Spanish knight (237) and the German knight on the right (238) are wearing. The same can be said of the protection for the head: the mail coif could be pulled up and hooked to the nasal of the helmet, which itself was now set higher on the head, so that there was a space between the helmet and the mail hood; thus a sword-stroke would be





stopped mid-way. But it was still a problem to protect the head adequately, and soon the great barrel-shaped helm (236) became general all over Europe north of the Pyrenees. It covered the head and face completely but at the same time made it impossible to see who was who, so it was found necessary to adorn both helmet and shield with distinctive marks. These devices were passed on in the family – and to squires and vassals perhaps – and soon developed into a heraldic system. The badge on the helmet might be affixed to a pair of horns of wood or metal or else be like a little flag on the helmet (238), and later it increased in size to become a complete figure (252 and 254), and finally just a plume of a particular colour (349 and 356). Now that the helmet and full hauberk provided better protection, the shield was correspondingly smaller (236), and if need be one or two loose hanging plates were attached which, when the arm was raised to strike, dropped by their own weight and protected the armpit.

Spanish knights, as we know from frescoes of that time, were content with a round steel cap (237), and their coat of arms was painted on the shield, helmet and upper arm. Similarly it is a transitional form of helmet the German knight on the right (238) is wearing. It protects the crown of the head and the nose sufficiently but not the lower part of the face and the neck, so the knight still needs a large shield. Both he and the two German knights on the left (234, 235) date from about 1200–1225. We are not told much about the infantry, but we frequently see them in the illustrations of manuscripts, and it is from one of these that we reproduce the long spear held by the infantryman (239). The fairly heavy armour indicates that the infantry played a more important part in battle than we are led to believe from romances of chivalry and royal chronicles.

### Europe *c.* 1300

**240–244.** In the next period from about 1300 to about 1400 the states that were to become established kingdoms were already taking shape, but only in exceptional cases did the king represent a strong central authority. More often the power was in the hands of the great feudal lords, both spiritual and temporal, or of the richest cities. In Italy especially the cities were prosperous and independent – many indeed regarded themselves as small sovereign republics. Like the great Byzantine Empire before them, these cities used their wealth to build strong fortresses and maintain large armies.

The guardsman from Siena (240) is very heavily clad. The weight of the hauberk, helmet and greaves must have been 15–20 kg, so that his mobility on the battlefield was limited. But infantrymen were not used for their speed. Their tactical employment was still to secure the flanks, to form a reserve, to defend

army camps, to man the city walls and to maintain law and order in the cities. The guardsman's helmet has large side-pieces to protect the ears, and he wears gauntlets with leather cuffs and a leather jerkin over the hauberk, so an arrow – we have to imagine him on a city wall – now had to penetrate three layers of varying toughness and hardness. His greaves are a recent addition to his equipment, and the reason for this is his need for protection against an attacker coming up a scaling ladder from below or up the steps inside the castle. The short pike also shows that he is equipped for siege warfare whether of fortress or town. The same goes for the short dagger which was wielded with the left hand and really was only useful at close quarters.

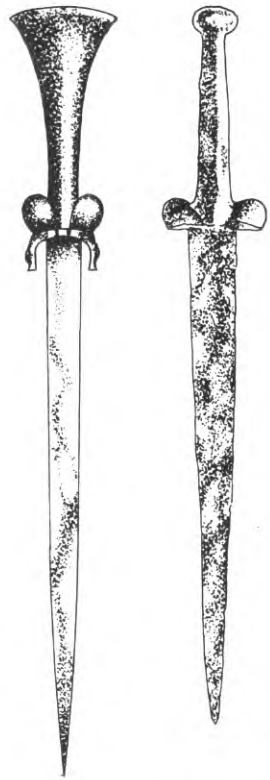
Cavalry on the other hand managed for a long time with the improved 'complete' suit of mail and the barrel helm. This is what Lord Basset (241) may otherwise have worn – with the device of a boar's head on the top – but as he is depicted he could in an emergency pull the coif up to cover the lower part of his face. The long surcoat and the shield with his device helped to make him more easily recognisable, and being loose-fitting the surcoat could also reduce the effects of sword cuts. Officially many of the wars that were waged were crusades against infidels and heretics, in which bishops could take part with a good conscience. And it was the bounden duty of bishops and abbots, who virtually owned many landed estates, to furnish a feudal levy of cavalry. These ecclesiastical magnates themselves belonged to the higher aristocracy and had much economic, political and military power, and we might well find them riding at the head of their retainers wearing, of course, the mitre as the device on their helmets (242). The knights were uniformly equipped throughout Northern and Western Europe, as we see from the many illustrated manuscripts, sepulchral monuments, sculptures on church portals and the seals of noblemen. The Danish knight belonging to the Saxtrup family (243), which died out about 1500, looks the same as any other knight. His horse is protected by a large trapper which bore the knight's colours and was often decorated with his coat of arms. This type of caparison is known as early as 1163 from the seal of a French prince.

In Paris there were often disturbances and fights between the various parties, and the large rectangular shield which the guardsman (244) is carrying must have been very suitable for street fighting, whether it was a matter of clearing streets, forming cordons or giving overhead protection.

### Europe *c.* 1350

**245–250.** In the course of the 14th century it happened several times that the attacking army of horsed troops was unsuccessful if the opposing infantry had had time to take up a strong battle position in a place with natural or artificial obstacles. In 1302 the French knights suffered a crushing defeat by the Flemish infantry who fought among the hedges and ditches at Courtrai, and in 1314 Robert the Bruce's Scottish infantry beat the English cavalry at Bannockburn. The Swiss peasants destroyed an Austrian army of knights at Morgarten in 1315, and in 1346 the English were able to celebrate a great victory over the French feudal army at Creçy. This last battle was decided partly by the rapid and accurate fire of the English longbowmen and partly because the knights dismounted and fought shoulder-to-shoulder with the ordinary infantry in the front rank when it came to close combat. These battle experiences led to an increase in the employment of heavy infantry – or dismounted cavalry – which was further accelerated by the fact that many of the wars during the period 1350–1450 were really only fought for the possession of fortresses.

In the battle of Creçy the French had the support of a large contingent of Genoese marksmen armed with the crossbow (245). This was an effective, long-range weapon with considerable penetrative power, but slow to prepare, and to span it the crossbowman had to stand upright. That is why the crossbowman here is so well protected and even wears a breast-plate. The French infantryman too (246) has a breast-plate under his laced-up surcoat on which



**Ballock Daggers, *c.* 1350–1425.** *A very elegant type of dagger with a blade some 20–25 cms long, the only decoration being two kidney-shaped quillons, from the end of the 14th century. To judge from paintings and illustrated manuscripts, these daggers were worn mainly with civilian clothing and were weapons for self-defence.*

hang chains for his sword and dagger. This feature indicates a violent form of close-quarter fighting with alternating cuts and parries which might strike the weapon from the hand of the soldier – so very different from the knights' sword versus shield. The large axe too is a weapon which by nature belongs to close combat in entrenchments or at the gates of castles.

There were of course many variations, depending upon geographical conditions, economic circumstances and tactical employment. The infantryman with old-fashioned helmet and shield but modern armour – with leather guards on his fore-arms and plate-armour, and jambs for the legs, as well as the typical slashing sword for close work (247) – is intended to be one of those German mercenaries in Hanseatic, Holstein or Mecklenburg service who played such an important part in the history of Scandinavia as marines or fortress garrisons. The Eastern European infantryman (248) with the very tall helmet, which was originally Byzantine (cf 232), is from the Grand Duchy of Novgorod, which was the centre for German trade with Russia. In Scandinavia the army's infantry often consisted of peasant levies (249) who mustered with pitifully old-fashioned equipment – like the helmet – or in insufficient armour – like the hauberk. This is in contrast to the equipment of the English Earl's squire (250), who is completely enveloped in mail with reinforcements on the knees and a modern helmet beaten out of one piece of metal, and – of course – is dressed in a surcoat in the family's colours and bearing its device.

**251–255.** In the course of the 14th century knights became far more heavily armoured than before. This may be due to the fact that they fought more on foot and then had to contend with heavy and vicious weapons used in close combat (246, 247), but it may also have been for purely technical reasons. The smiths had improved methods of tempering, and swords had become more dangerous.

To begin with, there was some reluctance to add more iron to the knight's protection, and cuir bouilli was used instead, leather boiled then compressed and made very hard and stiff. Lord Robert de Vere (251) is wearing a breast-plate of this material, while his cuffs and knee-pieces are of ordinary leather reinforced with iron plates. The three chains were for dagger, sword and great helm, while the round steel cap was merely a sort of helmet liner. The collar of the hauberk was fixed to this with a leather strap and rivets. The wide belt, worn low over the hips, is typical of the age and we see it depicted everywhere.

On the tomb of the Scala family in Verona is the figure of Mastino II della Scala (252) (died 1351), wearing the great helm which seems to be resting on his shoulders. On it is a crest which is repeated in the



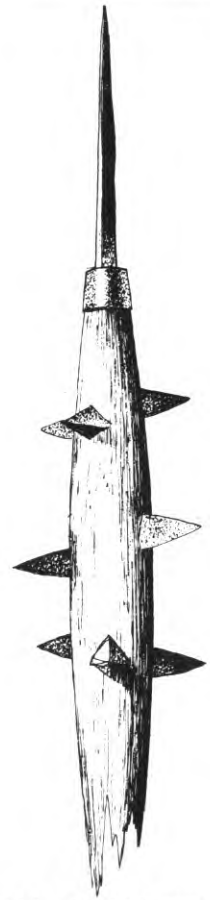


defence on the top of the horse's head. We do not know to what extent the small plate was able to protect the horse from cuts, or whether it was merely an ornament. This crest on the helmet is a dog's head, and the device on the shield is a ladder (or *scala*). The knight wore a breast-plate of iron or cuir bouilli; his legs were protected by iron plate and on his arms, which needed freedom of movement, he had to make do with mail.

The next three figures each represent a step in the development towards full plate armour.

Heinrich von Sauensheim (253), who died in 1360 and is buried in Würzburg, has a chain mail coif covering his head. The liner helmet itself, the bascinet, with its large cheek-pieces, provided good protection. The great helm is shown on his tombstone but there is nothing exceptional about it. His upper- and fore-arms were all covered with iron or leather reinforced with sheet iron. He is wearing a full back- and breast-plate, but the interlinked mail can be seen at his armpits, elbows and crotch, so it must be assumed that he wore a complete coat of mail under his plate armour. Naturally the arms and legs were always more lightly armoured than the chest, but we cannot judge how heavy his leg armour was.

Günther von Schwarzburg (254) – died 1349 and buried in Frankfurt am Main – is wearing a coif and the long point under his chin could be pulled up to the forehead and thus



**Mace, 14th and 15th century.** *The infantry close-quarter weapons, which often stem from peasant revolts, were usually rather primitive. This mace could hardly have been simpler, but that makes it no less unpleasant. The spikes are about 3 cms long, and the length of the whole weapon is some one-and-a-half metres.*

cover the face, so he really had no need of the great helm, which at this time may well have served merely as an ornament and for decorating seals and tombstones. The crest on his helmet was a lion's head matching the rampant lion shown on his shield and surcoat. In this case arms and legs are covered by cuir bouilli which had been grained and painted into the bargain. It is possible that the pattern was made with metal rivets that served as reinforcement. The elbows were protected by iron couters. The captain from the Tyrol (255) – who could as easily have been Southern German, French or Italian – is wearing the first form of helmet with a visor that could be raised and lowered, often called the pig-faced bascinet. It had been realised that the liner helmet could be used on its own, while the great helm was too cumbersome, and with the snouted helmet the face protection of the barrel helm was combined with the lighter weight of the other liner. This type of helmet was first used by the infantry in the years 1360–1370. They wore rerebraces on the upper arm and plate gauntlets over the knuckles, as well as a jerkin of felt or some thick cloth strengthened on the inside with small riveted plates, the heads of the rivets showing on the outside.

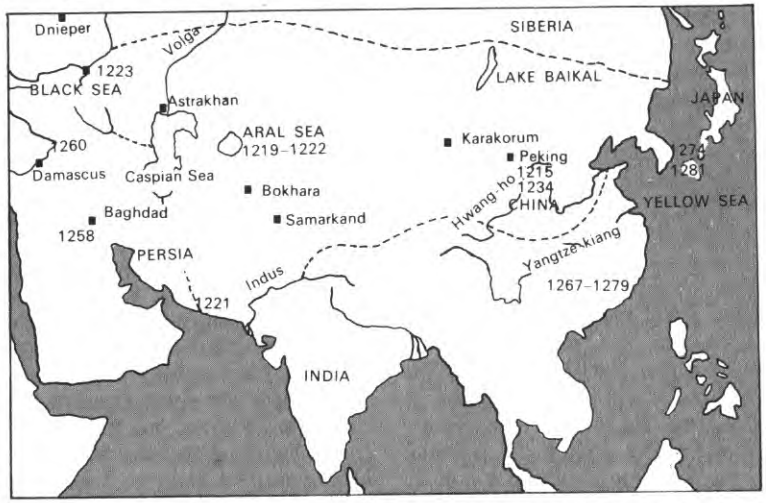
**The Mongols 1225–1400**

**256–258.** Like the Huns, the Mongols belonged to one of the many semi-barbarian tribes living in the desert-like steppes north and west of China. The various tribes and peoples were constantly at war with one another, although most of them were nominally vassal states under the Chinese Empire. When this latter was militarily and politically strong, the nomadic tribes were forced to keep the peace, but when Chinese influence waned, the Mongols and many others seized the opportunity to unite into larger alliances and states.

About 1200 such an alliance of tribes was made with the Mongol chieftain Temudjin as leader – better known by his later title Genghis Khan. His source of fighting men was the tough nomads taught from childhood to shoot with the bow from horseback, but it was he who transformed this rabble of steppe horsemen into a well-disciplined, highly-trained cavalry. The army was organised in units of 10, 100, 1000 and 10,000 men, the tactical unit being the regiment (*guran*) of 1000 men which attacked in a body and could be directed during the battle by flag signals from the supreme commander. By a mixture of diplomacy, war and threats of war Genghis Khan welded all the desert tribes into a mighty war-machine which he first launched to the east, against the northern part of China, where Peking the capital was taken in 1215. In the years 1219–1222 he attacked the rich and powerful state of Kharizm centred around Samarkand and Bokhara and devastated the country so thoroughly that large tracts have








**The Mongol Empire.** *The dotted line shows the extent of the empire at the death of Genghis Khan in 1227. The dates indicate campaigns and conquests. Under his successors Baghdad was taken in 1258 and Damascus in 1260, both cities being destroyed and about one million people massacred. Northern China was finally conquered in 1234 and Southern China in the 1270s. The two attacks on Japan in 1274 and 1281 failed, however.*

remained deserts up to fairly recent times. The campaign was continued by some forces down into India, while others reconnoitred in the direction of Europe, where the Russians were beaten at the battle of the Dnieper in 1223. At Genghis Khan's death in 1227 his empire stretched from the Black Sea to the Yellow Sea and from the Siberian taiga to the Himalayas and far down into Persia. The wars were continued by his sons. The whole of China was conquered. In 1238 the Mongols pushed their way westward across the Danube at Budapest, having reached the Baltic the year before, and in 1241 at the battle of Liegnitz they defeated a combined force of German and Polish knights. Only the death of the Great Khan Ogotai prevented them from continuing their advance. This powerful empire naturally could not be ruled as a unity from the capital Karakorum and was therefore divided up into Khanates which in due course became independent realms. Thus it was the Khanate of Astrakhan on the Volga, the so-called 'Golden Horde', which for some 200 years held the Russian principalities in thrall.

The Mongols' main strength lay in their light cavalry armed with bow and arrow (256, 257), lance and curved sabre. The horses were small and hardy. The saddle was low with short flaps and short stirrups. The man carried two quivers for bow and arrows and the horse had two similar but lidded quivers as reserves. The defensive equipment consisted of helmet, small round shield and many layers of silk on the body. If a man was wounded by an arrow, the idea was that the silk would cling to the point and its barbs, making it easy to withdraw the arrow by pulling the material away. Some regiments wore armour of leather, wood or lacquer. These armoured cavalrymen (258) were Genghis Khan's shock-troops who were employed for breaking through the enemy's battle line, and they therefore had large maces for close combat. The light regiments then followed up the attack and prevented the disorganised forces from reforming. The Mongols during their many wars had learnt a great deal from their adversaries and had adopted their armour. The helmets illustrated here come from China, but the shield (257) and the purple horse blanket (256) are Persian. A large park of siege engines had been captured from China, and the army included Chinese sappers for bridge building and siege works.

**Europe *c.* 1425**

**259–263.** The many wars between England and France in the 14th and 15th centuries, generally called the Hundred Years War, were mostly battles for towns and strongholds, and the most important development was in the infantry and in war engines.

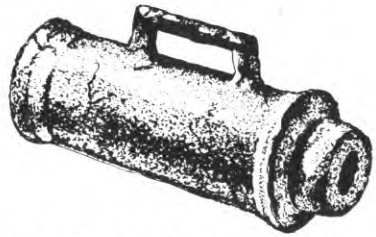
The equipment worn by the infantryman (259) is typical of the semi-armoured infantry, where a measure of protection was united with the required mobility. The helmet gave sufficient protection to the head without preventing him from seeing during the fighting or hearing any commands issued. He wore a breast-plate under the leather jerkin but was able to move his arms quite freely. It was most essential for the infantryman to have the lower part of the torso protected and this was provided by three curved metal plates, the fauld, that overlapped and which could move up and down when he needed to bend over. The type of armour used for the legs suggests defence of fortress walls, and here again flexibility was important, so the thigh-pieces were fixed at the top to a pair of straps hanging from the belt, and at the bottom slid up and down inside the extension to the poleyns covering the knees. As an Englishman he is wearing the Cross of St. George on his chest. The herald (260) has both the lions of England and the lilies of France on his tabard and trumpet-blazon. Officially the war was fought for the English king's right of inheritance to the French throne. The same tabard is to be found on the sarcophagus of the Black Prince in Canterbury Cathedral.





Peter von Stettenberg (261) (died 1441 and buried in Brombach in Hesse) is wearing almost full plate armour, only the underside of the upper arms being covered by mail and the armpits having the extra protection of two small rectangular plates. The head and neck must have been protected by a helmet no longer visible on the tombstone. The gauntlets are of leather with large iron plates guarding the backs of the hands and smaller ones the fingers. His heraldic devices have been engraved and gilded on the armour itself.

Ludwig von Hutten (262) (died 1414 and buried in Würzburg) is wearing armour of a somewhat older type: breast-plate of iron over a hauberk with a coif reaching down over the shoulders. Although this may not have afforded the same protection as the more modern plate armour, it was on the other hand lighter in weight and allowed greater mobility. It seems that the German knights for a long time preferred the lighter defensive equipment worn with the ordinary day-to-day clothing. The padded garment with the loose hanging sleeves, that both he and Philipp von Ingelheim (263) (died 1431 and buried in Ober-Ingelheim in the Rhenish Palatinate) are wearing, cannot have been very practical in battle. The little bells on von Hutten's was an item of the clothing of a nobleman in those days. The hilts of the swords had become a little longer, the reason being that the sword now had to be gripped with both hands for thrusting, a procedure which was the direct result of the increase in armour.



**Chamber for Breech-loading Cannon, 15th century.** *The chamber was charged with powder, wad and balls in advance. At the rear of the gun was a trough-shaped bed into which the chamber was firmly wedged, thus fitting tightly into the breech. The chamber, which was ignited by a slow match or red-hot wire, was made of malleable iron and strong enough to resist the force the powder produced. The thickness of the metal was 1½ times that of the calibre of the projectile. Since there were several chambers to each cannon, a fairly high rate of fire could be obtained, in the case of the lighter pieces one shot every 4–5 minutes.*

**Europe 1400–1475**

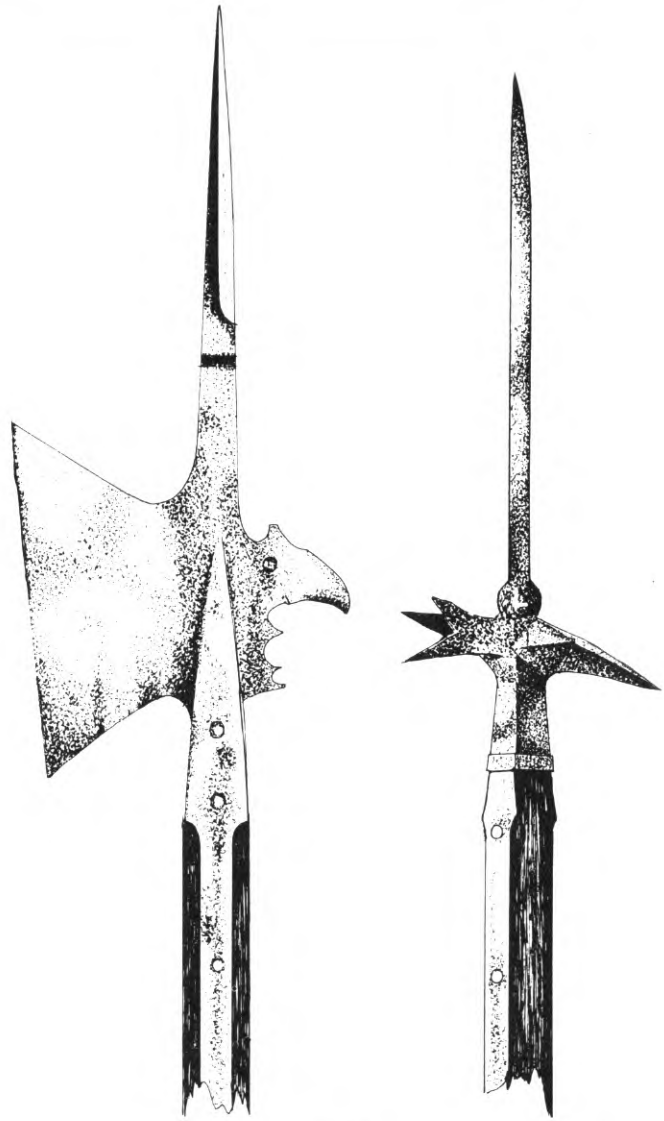
**264–267.** It is not known who invented gunpowder. The earliest instruction for making a big flash and a thundering noise was given by the English friar Roger Bacon in the 1240s, but it is not until 80 years later, in 1326, that cannon are mentioned, this time in Florence, from

where we know of a permission granted by the city council for a delivery of cannon balls and 'canones de metallo'. It is about the same time that mention is made of their use in the wars between England and France, first during the siege of cities and strongholds in the 1330s, later in the battle of Creçy in 1346. The oldest cannon still in existence is a little muzzle-loader found at Loshult in Sweden and probably cast in the period 1350–1375.

In the museums around Europe we find a number of cannon from the beginning of the 15th century, but these are breech-loaders. They are of malleable iron and constructed around 3–4 staves, like a barrel. Several layers of iron rings about the width of a hand are forged around the staves. On the cannon illustrated six inner and five outer rings are visible. The next-to-last ring at the rear had a trough-shaped bed for a cylindrical chamber with a carrying handle, shaped something like a drinking mug. This was filled with powder and balls before being placed in the breech, wedged in securely and ignited by a fuse or a red-hot iron wire. The rate of fire could be relatively rapid. If sufficient chambers had been charged beforehand, the rate could be 15 shots an hour with a range of about 300 m. The ammunition was balls of stone or iron. And if in the light of present day knowledge we are sceptical of the effectiveness of these weapons, we must remember that they fired with enough precision for the shots to hit the same spot in a wall again and again, and this against walls that had only been built to withstand the stone-throwing of the more inaccurate catapults. But it took time to finish the job. When the Turks bombarded the walls of Constantinople, impregnable up to then, with a battery of 13 huge cannon – the weight of the stone projectiles was 400 kg and the charge 150 kg gunpowder – the siege lasted from 1st April until 29th May 1453, and nearly 4000 shots were







**Halberd and Lucerne Hammer, 14th, 15th and 16th century.** *The Swiss infantry were the first to introduce the use of long shafted weapons as a defence against armies of mounted men. The two shown here are particularly typical for the Swiss and their later German imitators. They are characteristic for their rough, solid and strong forging; although the workmanship is not outstanding, they look very businesslike. The halberd's axe-blade is 20–22 cms long and it has a spear as well as a hook for unhorsing a rider. The hammer, which bears the stamp of the Lucerne arsenal, was effective for crushing and could penetrate most armour. Both weapons are fixed by long langets to a 4½ cm² pole 2 metres long. In the 17th and 18th centuries halberdiers in the royal guards carried these and other types of pole-arms, but they were light-weight parade arms.*

expended before the fortifications were reduced to rubble.

These terrifying 'engines' held a fascination for artists, as they did for the man who illustrated *Chronique d'Angleterre c.* 1450. Very likely the mounting of the bombard shown here is not quite authentic, but the cannon could certainly be locked at various elevations corresponding to the ranges. And it is clear that it could also be depressed and shoot from a fortress down at the besiegers. The French artilleryman (264) is lightly armoured, merely with a helmet and a coif coming down over his shoulders.

It was about 1400 that infantry fire-arms of small calibre – handguns – were adopted, which fired lead balls instead of stone ones. These short-barrelled muzzle-loaders, awkward weapons three-quarters of which were butt, were ignited by slow-match. These guns were slow and clumsy to use and had an effective range of 5–10 m, and were therefore only employed at close quarters, e.g. in the defence of fortresses and strongholds. The English hand-gunner (265) is wearing a light infantry helmet of a new type; it has a neck-piece providing good protection and a visor leaving the lower part of the face uncovered.

The little breech-loader is often seen in mediaeval illustrations, not being aimed at a besieged castle but positioned at the entrenchments out on the flanks, so we can assume that this relatively light gun was employed in defence against attacking cavalry or infantry, and was thus a sort of field gun. As in the case of the bombard it could be traversed by moving the mounting to one side or the other, while its elevation was effected by the use of chocks and wedges. There was little material to take the recoil, so that both these pieces must have reacted violently when fired. The culverin on the other hand was much more mobile, because it had a wheeled carriage and could therefore be adjusted more exactly. The barrel was clamped to the wooden bed with metal straps and the outer rings fitted into grooves in the wood. In this way some of the recoil was transferred to the wood and the rest was taken by the mounting, but the culverin must all the same have run back several metres at every shot. Its shield was meant to protect the gunner from enemy fire.

The German artilleryman (266) is wearing the normal infantry armour of the 15th century and a helmet that looks very Roman. Now that the infantry had increased in importance there was a deliberate move back to Roman patterns, mainly in the Italy of the Renaissance, of course, but also in France, especially in Burgundy, which was England's ally, and Germany. But the strange pointed shape of the French infantryman's visor (267) is probably the miniature-painter's own invention. At any rate it is very difficult to see any practical reason for it. He also wore

**Left-hand Daggers, *c.* 1475.** *While the long sword was wielded in the right hand, a dagger could be used in the left. Such daggers might have long quillons as shown here, and the guards were intended to break the opponent's blade. The dagger on the left looks like an ordinary dagger, but a spring could release the two auxiliary devices. If caught between the two prongs or between the teeth of the dagger on the right, the assailant's sword could be wrested from his hand or the blade broken. The daggers' blades are 25–27 cms long.*

a short hauberk under his long garment and on top armour composed of lames to protect his stomach and diaphragm. The long vouge was intended for both stabbing and slashing, and the circular vamplate could be used for parrying and clubbing.

**Europe *c.* 1450**

**268–274.** About 1400 there was a considerable growth of interest in

history at the various French courts, not so much at the royal courts as at those of the great dukes and counts. It was no longer the monks who sat in cloistered isolation recording annals and edifying stories of saints, but it was the cultured aristocracy, who themselves had participated in the events through having had personal contact with the princes, statesmen and generals concerned, who now took it upon themselves to write contemporary history. The main interest of these writers, the most important of whom was the Flemish Jean Froissart (1337–1410), was the lengthy wars between England and France. These chronicles when copied later in the century were illustrated throughout with painted miniatures, and it is from these that we have obtained much of our knowledge, not merely of weapons and armour but also of dress and colours.

The French archer in the background (268) is wearing the usual hauberk and a kettle hat like that of the Paris guard (244). The green jacket is a brigandine, i.e. a thick doublet lined with metal plates, with the rivets forming a pattern on the outside. Leg armour is limited to a pair of large poleyns for the knees. He is still armed with the ordinary one-handed sword which is of reasonable length, a fact which proves it was a vital personal weapon. The little dagger for close combat or *coup de grâce* – the despatch of a fallen and wounded foe, if there was no hope of ransom – is worn at the back inside the belt and fastened to it by two long cords. Both the French archers (268 and 269) are lightly equipped. The latter may have worn a breast-plate under his jerkin, but there is no certainty of this, since the French considered archers their most lightly equipped troops. Several contemporary pictures show that long hose were worn.

The English reckoned archers to be their main force (270). The longbow, which was drawn back to the ear, had proved to be tremendously effective with its range of 100–120 metres. It took many years of practice to become a good longbowman, and we know of ordinances decreeing that all able-bodied men were to train regularly once they had reached the age of 15 years. Archers were disposed tactically in full companies, and as the longbow required the archer to stand upright when shooting, these élite troops had to be well protected. The open-peaked helmet, which allowed for good vision, was ideal for the archer. The armour on arms and legs was of cuir bouilli reinforced with metal. The English standard-bearer (271) is also suitably armoured. He was to head the attack and must have been an outstanding target for the enemy. During this period swords changed to a type with a broad cross-guard, the ends of which turned in towards the blade (271–273) in order to make it easier to intercept a hostile sword stroke.

In the 15th century the infantry





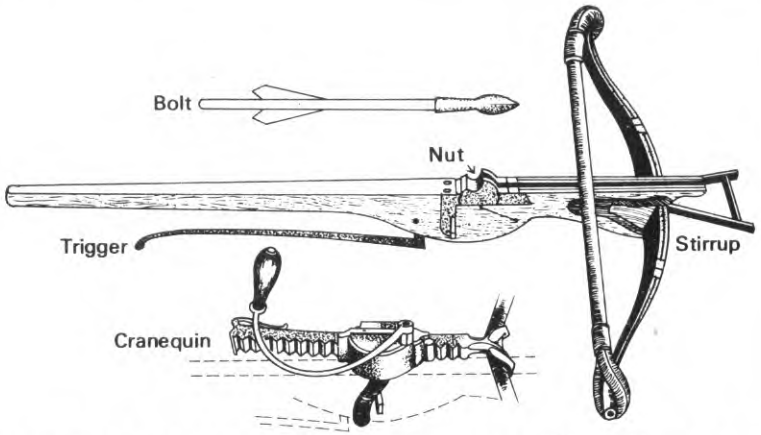
was provided with various long-shafted weapons. The pole-arm the French infantryman (272) is holding could be used both as a pike and as a club, while the German infantryman's (273) was only a lance. In open fighting the shield was rarely used, for the defensive armour was protection enough, but it was still carried when attacking cities, e.g. when ascending scaling ladders, so as to give cover from stones, etc. Both the German infantryman (273) and the crossbowman (274) wear armour which has developed from that of the French infantryman with the pike or vouge (267). It consists of a breast-plate which reaches down to just below the diaphragm and a plastron which at the top overlaps it to some extent. Mobility is achieved by these two pieces not being fixed together, but sliding freely one over the other. The crossbow is of a particularly heavy and stiff type which had to be spanned by a cranequin. This made it somewhat slow to prepare and dangerous for the crossbowman, for he had to stand upright while cranking it. On the other hand the crossbow had a good range and deep penetration, while it did not call for the long period of training that the longbow demanded.

### Europe 1450–1500

**275–279.** Plate armour had about 1450 reached the stage of development where mobility and protection were evenly matched.

The German Feldhauptmann's armour (279) – from the 1430s – must be regarded as a development of the armour worn by Peter von Stettenberg (261). The rigid breast armour has become box-like, and cuts and blows were meant to be deflected by the sloping sides of the box. The head is completely covered by a large helmet, formed as one unit with the neck-piece. The visor is rounded with large eye slits. The arms and legs are protected all round by plates and tubes of metal, and the vulnerable points such as elbows and knees are reinforced at the joints and have extra lateral defences. The bracket on the breast-plate is a lance rest. The knight has a special removable skirt of armour used when fighting on foot.

The German knight's armour (277), manufactured in Landshut in Bavaria in 1460, is of a very different type which was now becoming common. By the use of an articulated system of plates and lames great mobility was obtained without reducing protection. The helmet is a rounded pig-faced bascinet with slits for the eyes and ventilation holes. The defence for the neck takes the form of several rings, so that the knight could move his head fairly freely. The chest armour is similar to that of the German infantryman with the lance (273) and of the crossbowman (274), but the upper plate could now be much smaller because of the two large pauldrons. This was now the trend. These are attached by two straps or pins, thus ensuring full mobility of the shoulders while




**Crossbow, *c.* 1500.** *Tension was provided by a very stiff bow of horn, or – as here – of iron leaves, so strong that it could not be spanned by hand but only by a machine such as a windlass (274) or a cranequin. When the string was secured in the cut-away portion of the nut, the bolt was laid in the groove and could be fired by pressing the trigger, a simple lever connected to the nut. The stirrup was used for holding the weapon firmly with one foot while it was being spanned. The crossbow was easy to aim and its manipulation required little training. For this reason, and also because of the bolt's penetrative power, it was the favoured missile weapon on the Continent from* c. *1200 to* c. *1500. During later centuries it continued to be used for hunting because it was relatively silent.*

being big enough to cover both collar bone and armpit. There are also lames on the upper arm which, when the arm is raised, slide over one another and under the pauldron. The couters are made very strong, but also more roomy. The breech, or skirt, of mail, the fauld and the loosely hanging tassets all protected the lower part of the body. The foot defence, solerets, ended in long narrow points following the civilian fashion.

Archduke Sigismund's armour (276) was made by Lorenz Helmschmied in Augsburg in 1470. The neck, the lower part of the face and the collar bone are protected by a bevor, and above this the Archduke wears a very thick sallet helmet. As with all cavalry armour there is no plate on the inside of the thighs or on the seat, which was after all protected by the high saddle. He did not have tassets either, but in all other respects his armour is





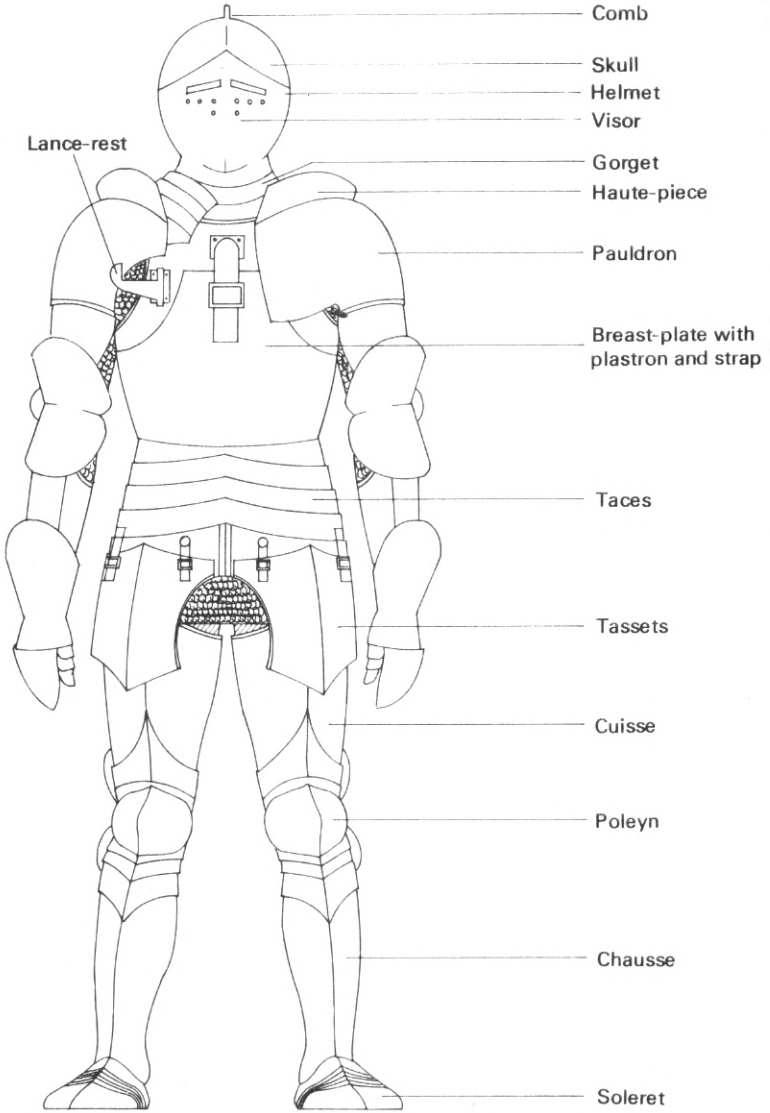
similar to that of the German knight (277), but more graceful and with many flutings and ridges to deflect the enemy's weapons.

The Spanish infantryman's armour is of the same Gothic type (278). The shape of the fauld is retained in the form of a pattern in order to provide glancing surfaces, but the centre ridge has become more prominent. Although the breast-plate is bigger and wider, we must not forget that the material for infantry armour was much less substantial than that for the cavalry. It is for reasons of weight too that the plates just cover the arms and legs, omitting the heavy overlapping used in other body armour. The bevor protected the neck and the lower part of the face well; the man could move his head, and his breathing was not restricted. The high-crowned ridged kettle hat was well adapted for resisting blows. His weapon, a pole-axe, a form of halberd, was pike, axe and war hammer all in one.

Claude de Vaudrey's armour for fighting on foot (275) was made by Damiano Missaglia in Milan *c.* 1490. It looks heavier and stronger than other suits of armour, perhaps because it was made for a stouter man. The rounded helmet with the very large perforated visor is a further development of the helmet worn by the German Feldhauptmann (279). The pauldrons consist of six lames, but of such a size as to allow the same mobility as the Spanish infantryman enjoyed (278), and they overlap and protect equally as well as Archduke Sigismund's (276) and the German knight's. In this armour and also in that of the German Feldhauptmann (279) it is only the skirt that is made of thinner material. The rest of the armour is of the usual thickness, so that the mobility of the knights in action must have been very limited. It is very possible that these very heavy and clumsy suits were only used for fighting in the ring on foot, in mock combat with opponents dressed in the same sort of armour.

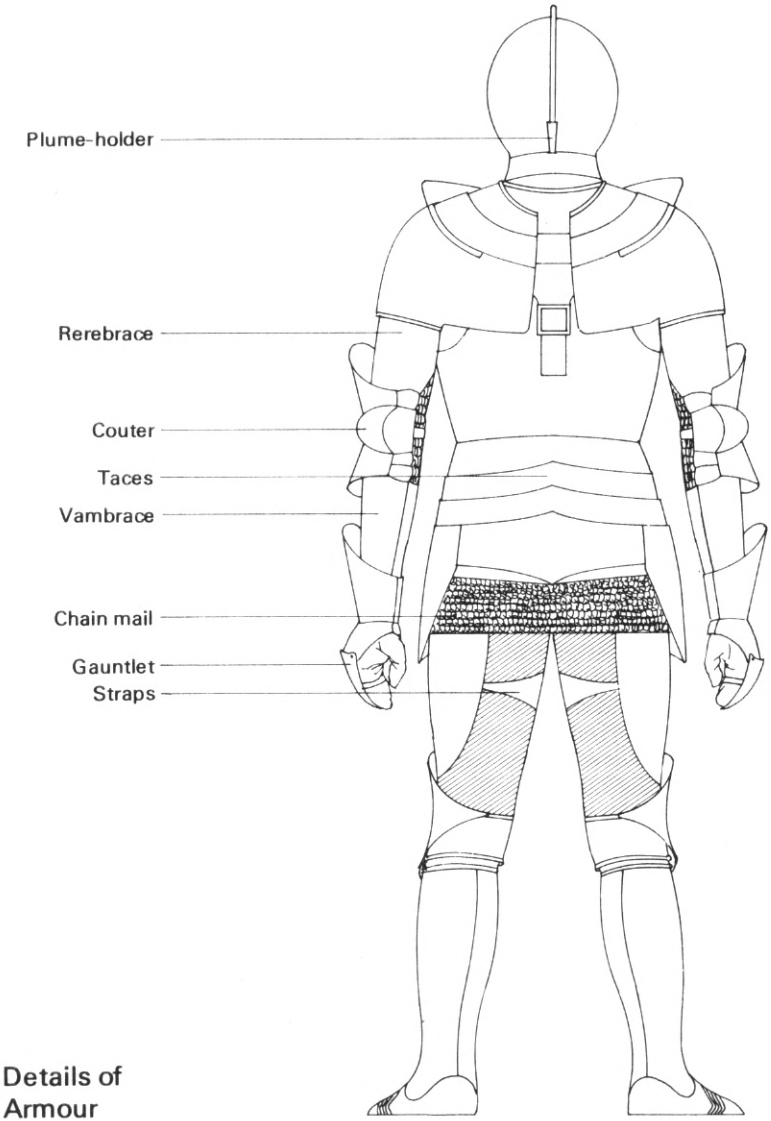
## Religious Orders of Knights 1125–1525

**280–283.** After the Crusaders had taken Jerusalem in 1099 the fight had to continue with the neighbouring Moslem leaders, and for this purpose special Orders of Knights were instituted: the Knights Templar and the Knights of St. John in about 1120 and the Teutonic Order in 1190. They were to take monastic vows, but instead of serving God by fasting and prayer the Knights were to fight for Him with sword in hand. These élite corps soon brought most of Palestine and Syria under Christian sway and safeguarded it with strong fortresses, the ruins of which are still to be found all the way from the Bay of Akaba right up into what is now Turkey. As they only recognised the sovereignty of the Pope, the Grand Masters of the various Orders must in fact be regarded as independent rulers. Gradually as the flow of








## Details of Armour

Crusaders from Europe abated, neither the Knights Templar nor the Christian lay princes could stem the tide of the Saracens. Castle after castle was lost, until the Mamalukes in 1291 overcame the last Christian stronghold, Acre. The Templars had for a long time been instrumental in supporting the Pope in French internal politics, so when King Philip the Fair in 1307 broke with the Pope, he also prohibited the Order of Templars, occupied their castles, confiscated their estates and persecuted their members. Some of their ceremonies are said to have been revived by the Freemasons. The Knights of St. John first took refuge in Cyprus and from there went to Rhodes. After they had been driven out of here by the Turks in 1522, they settled in Malta and continued their fight against the infidels for many years, but now as a maritime power. The present Order of Knights of Malta may be said to be a direct descendent of the Order of St. John. The Teutonic Order was very soon involved in the conquest and conversion of the regions east of the Elbe, and it extended its suzerainty along the Baltic until halted by the Grand Duke of Novgorod, Alexander Nevski, in a battle on the frozen Lake Peipus in 1242. But it remained master of Prussia and large areas of the Baltic States and in the following centuries played an important part in Baltic politics.

These religious Orders of Knights were very wealthy and their members belonged to the most aristocratic families of Europe, so it is natural that the Templar (280), the Teutonic Knight (281) and the Knight of St. John (282) should be dressed in the best possible equipment of the 1220s with a complete suit of mail, helmet, cloak, large shield and a costly Romanesque sword. The Templars wore as the habit of their Order a white surcoat with the special Cross of Jerusalem in red. The Teutonic Knights wore a cloak of a similar type, but with a black cross. A branch of the Teutonic Order, the Knights of the Order of the Sword, had as its insignia a little Maltese Cross above a red sword. The Knights of St. John had a large white cross on a red ground, both on the surcoat and on the banner. The Danish campaign against Estonia in 1219 was officially a crusade, and it may be that a contingent of Knights of St. John took part. It is therefore very possible that the Danish flag stems from their banner. The Knight of St. John on the right (283) is wearing these colours, but the plate armour, barret and broad-toed shoes date him to about 1530, the year Emperor Charles V handed over Malta to the Knights of St. John as their base.





**Russia 1350–1500**

**284–289.** The trading centres which the Swedish merchants had established along the Russian rivers soon developed into purely national principalities. The oldest of these were the two large cities on the route to Byzantium and the Black Sea, Novgorod, in the north, and Kiev, in the south, but gradually as the Byzantine Empire had to give way to the encroaching Osmanli Turks, the eastern route along the river Moskva and the Volga to Astrakhan, the Caspian Sea and Persia became important. This was the reason why the principality of Moscow became the centre of the new Russian empire, which in many ways continued the traditions of Byzantium. The country had been christianised from Constantinople and had accepted the Greek Orthodox form of worship. Although a special independent Russian art developed, many basic Byzantine elements can be found both in architecture and painting, particularly noticeable in ecclesiastical art.

When the Mongols pushed their way into Europe from the east in the 1240s, the Russian principalities became for many years vassal states and had to pay tribute to the 'Golden Horde' on the Volga. Because the Muscovites continued a war of independence against the Mongols, it was they who were the ones to create a politically united Russia. In 1380 Prince Dmitri Donskoi beat the Mongol Khan Mamai at Kulikovo, the 'Plain of the Curlews' on the Don, and about a century later Prince Ivan III Vasilievitch successfully resisted the demands of the Mongols for tribute.

In the north-west the Russians were in close contact with the Hanseatic League by the Baltic and with Poland, and the close-fitting mail which the horseman on the left (284) is wearing points clearly to the West, Poland in particular. The same is true of his mace, while the tall pointed helmet was based on a Byzantine pattern. The round pointed helmet is otherwise characteristic of the Russians in contemporary illustrations. People of high rank had the helmet edged with fur (285), following the civilian fashion (286); indeed, the shape was perpetuated in the crowns of the Russian princes and czars. Prince Dmitri (285) looks typically Russian with his helmet and fur cape, but the scale armour is very Byzantine, as the strips of metal that cover the lower part of his body make clear. Prince Vasili (286), who ruled in the middle of the 15th century, is depicted in ordinary civilian dress, a fashion that was then about two hundred years out of date in Western Europe. Only the cloak with the high collar is characteristically Eastern European. His sword is perhaps a little shorter in the hilt than the Western European and might be of Russian make, but it could as easily be from Solingen, produced there for export. There had been a lively trade in weapons along the Russian rivers ever since Viking times when the Frankish sword had been so much in favour, and the Russians started manufacturing their own as early as the 13th century.

The Russian armies were to a great extent composed of infantry, usually armed with a small, light

bow. The archer here (287) has a very Byzantine look with his hood of scale armour and the knee-length boots. A system like that which created the French feudal cavalry was never established in Russia, partly because the princes lacked wealth and power in the Middle Ages and also because with the great distances and in a totally different climate a very heavily armoured cavalry could not be effectively employed. One of the cavalrymen on the right (288) is wearing a breastplate, which with its large horizontal scales is truly Russian, as are the loose tunic and metal cuffs. The armour, rerebraces and shield of the other man (289) are Byzantine (cf. 229, 230 and 233).

### Europe *c.* 1525

**290–295.** The armies of the past did not consist entirely of front-line soldiers, for a large number of servants, drivers, grooms, traders and women and children followed in the train of the troops.

The heavy siege engines which had to be transported along badly made-up roads were drawn by eight or more horses. Fortification and siege work required many tools and a large quantity of timber which also had to be pulled to the front by teams of oxen or horses. The great many horses, both draught animals, saddle horses for the march and war horses, must have needed fodder wagons and farriers. It is not difficult to realise that the smiths must have played an important part in the maintenance of weapons, armour, horseshoes and wheel rims, with their portable smithies and field forges. The most remarkable thing used in the 'ordinance corps' was a portable powder mill which is depicted in the very informative painting of about 1500 entitled 'Maximilian's Triumphal Procession', and the section of a camp shown here is based on this.

Both princes and knights brought along with them not only large silk-lined tents but also complete silver services, private chapels with gilded altar pieces and silver chalices, and large quantities of elegant clothes and valuable jewellery as well. So there was much to gain from plundering an enemy camp. The greatest spoil taken in Europe was obtained by the Swiss when they captured Charles the Bold's camp after the battle of Nancy in 1477. A lot of this Burgundian booty can be seen in the historical museum in Bern.

Just as the aristocrats brought all their domestic requirements with them, so did the common soldiers, but on a smaller scale. The women of the camp – or of the army – did duty as sutlers and as housekeepers, probably for more than one man at a time, cooking their food, washing their clothes and so on. It is not very likely that this arrangement could be regarded as one of marriage, but nor was it prostitution or brothel keeping; it was more a kind of 'permanent relationship' with several men. They usually obtained provisions by plundering and extortion, but they had their own animals too. In the many paintings we have of military camps from 1475 to about 1660 a stock of cattle, pigs and poultry can often be seen. The children could make themselves useful by guarding the animals, and the boys from a very early age helped to look after the horses and polish the weapons.





All these non-combatants were under the control of the camp guard and the Hurenwebel (Hure = whore). The guard here (290) is armed with a spear and a short sword of the type that soldiers normally used in the 16th century on guard duties; royal halberdiers carried elegant gilded examples. The guard was responsible for the day-to-day running of the camp and carried a horn for signals, using it to call the people together or to sound such signals as 'lights out', which in those days meant 'extinguish your fire'. The Hurenwebel (291) was his superior. The job of controlling such a chance conglomeration of people was a demanding one, so the Hurenwebel is deliberately shown as a big, brutal man. He has the usual broadsword from about 1530 which could if necessary be used with both hands. His doublet with puffed sleeves and slashed on the chest, the codpiece and broad-toed shoes are a fashion that started in the 16th century, while his close-fitting hose date from the previous century. The standard-bearer too (292) with his knee-length, full tunic, his broad-toed shoes and barret shows the new fashion which perhaps originated in Italy. The banner is red and white, the colours of Austria, shown also on the hood of the waggon.

The drivers (293–295) are wearing ordinary clothes: loose tunic, hose and long riding boots. Reins were not used for driving the waggons, but the drivers rode on the horses, each man in charge of four animals. The driver on the left (293) is dressed in a sleeveless tunic, the driver in the middle (294) wears a hood, meant perhaps to keep off the dust from the road. All the drivers in the Maximilian painting have a small wallet on the left side, but its purpose is not known.

**296–300.** With their light infantry, who went into the attack in close echelons, the Swiss had won many victories over both Austria and Burgundy. This resulted in other countries being eager to have Swiss mercenaries and soon other mercenaries as well, armed in the same way as the Swiss and using the same tactics. So from about 1500 light infantry armed with pole-arms – halberd, pike and hammer – could be said to have superseded the heavy armoured cavalry as the main striking force.

Mercenaries or Landsknechts became professionals in this way of life, partly for the certainty of payment, but chiefly for the sake of the booty. There can be little doubt that this kind of professional military service had an extremely brutalising effect on the individual and that Landsknechts were devil-may-care

fellows who behaved as they pleased and wore what they liked. The Landsknechts here (296–298) with their gaudy colours, loose-fitting clothes and hats with nodding plume are typical of the fashion that prevailed in the period 1500–1530. They marched to fife and drum. The banner, as before, was either attached to a lance or a staff, sometimes quite short when it was used for signalling. The colours red and white, being Swiss, were chosen without reference to any particular canton. As well as the halberd or pike, the common soldier had a broadsword for close-in work, a 'Katzbalger' (298).

Whereas when knight fought knight it was regarded as ungentlemanly conduct to go for the horse, the infantry had no such compunctions. Horse armour (299) in its lighter form covered the head, neck and chest, with plates on the hindquarters. The rider's equipment (299) had become rather heavier: the breast-plate is now in one piece and the pauldrons lengthened with armguards of lames. Leg protection and shoes were so rigid that the knight needed very long spurs to touch the horse at all. At tournaments a long surcoat covered the dark armour (300). This surcoat could represent the 'team' colours or merely be decorated with fur and slashing to follow the contemporary fashion.

**301–306.** The nationality of the two German Landsknechts and the Italian one (301–303) is derived simply from the paintings from which they were copied: Landsknechts were mercenaries and as such were international. They took service under a colonel or captain who acted as the 'contractor', offering his regiment to whichever prince had a war on his hands. When the campaign was over, the regiment would then take service elsewhere or be disbanded, in which case the individual Landsknecht might look for another leader to serve under. The Swiss regiments, as we know, were in particular demand, but some German forces are also known, such as Junker Schlentz's 'Saxon Guards' who took part in the ill-fated expedition by the Danish King Hans to Ditmarschen in 1500, and von Frundsberg's 'Black Knechts' who were present when Rome was stormed and plundered in 1527 – in this case under the command of a French prince. Although some of these 'Guards' had national names attached to them, we know that adventurers from many different countries served with them.

A special characteristic of these Landsknechts was their outlandish apparel. From studying the pictures in this book you might well get the impression that the intention of these fellows was to compete with one another to see who could wear the biggest hat or the most fantastic doublet, but it should not be forgotten that inside the hat there was often a steel crown or a cross of iron





strips, just as there might be a hauberk or brigandine under the tunic. The extra long sword (301) had to be wielded with both hands. The double 'claws' of the cross-guard were intended to arrest the enemy's sword-blade or halberd and quite possibly the purpose of these swords was to sever the staff of the enemy's pole-arms. Only specially-trained men were armed with such monstrous swords. They received twice as much in pay, and both the soldiers and the sword were called 'Doppelsöldner' in German (double pay). The huge axe-blade (303) seems so unwieldy that it may only have been a ceremonial weapon for special guards. Had it been used in battle the weight of the large, sharp blade must have enabled it to strike clean through even the heavy armour of a knight. The spear-point was obviously for stabbing and the hook for pulling the rider off his horse.

The arquebus (304), which was fired by slow-match, was a big improvement on the hand gun (265). This was due to development not only in the technology of forging – the ability to produce a sufficiently strong tube – but also in the manufacture of gunpowder, where a more uniform and even pressure of gases had been achieved. And now at last a mechanism for the trigger had been invented, and the weapon could be fired more quickly and with more accuracy. The first time arquebusiers were used in large numbers was in the battle of Pavia in 1525, when the French knights and the Swiss infantry were made short work of by the Spanish arquebusiers. When fired, the gun was supported on a forked rest. Gunpowder was carried in a flask of wood or horn, and the balls in a little pouch. The Landsknecht's broadsword (298) had two cross-pieces, S-shaped quillons, instead of a cross-guard, and now a hand-guard, which took various shapes (304 and 306), was introduced to help protect the hand from cuts.

The arquebusier (304) is here shown as an Englishman with the Cross of St. George on his chest. England had nothing to do with the outlandish Landsknechts; on the contrary, the strong royal power in Henry VIII's hands built up an army of national soldiers, and it was in England that regular regiments were first put into some sort of uniform. The trousers are becoming shorter and not so flamboyant as was previously the fashion (296 and 303), and at the close of the century they are even shorter (335–342). The Beefeater (305) is wearing a uniform which in principle is much the same as the arquebusier's. To this day it is worn by this corps of guards which was raised in 1485, its present uniform having been introduced in 1520. As well as the spear-point, axe-blade and hook, the halberd has two parrying lugs on each side of the spearhead (307–309). The Swiss first became famous when the three cantons of Uri, Schwyz and Unterwalden, with the

later addition of Lucerne, formed an alliance and defeated several Austrian armies of knights at Morgarten in 1315 and at Sempach in 1386. Other cantons joined the confederation but throughout the 15th century they warred between themselves until the centre for political and military decisions was moved from the old forest cantons to the cities of Geneva and Bern. Some of these battles are depicted in the amply illustrated *Bern Chronicle* from the 1470s.

We notice the fact that the Swiss troops who fought in these civil wars were very simply and practically equipped (307) with armour which enabled the soldiers to see clearly and move freely, with special emphasis on the protection of chest and arms. This was very suitable for an infantryman who had to fight in open warfare, in contrast to the guardsman from Siena (240) and the English armoured infantryman (259), both of whom were garrison soldiers.

The German knight (308) belongs to a family from which the burgraves of Nuremberg originally came, and who about 1450 became margraves of Brandenburg and later electors and Prussian kings, finally to occupy the imperial throne of Germany. The horse's caparison bears the family arms, and the knight's skirt, the aurochs horns above his helmet, and his plume are in the Hohenzollern colours. His lance is of the slim type used in the field, the tournament lance (309) being more massive and as thick as a post. In contemporary pictures we notice that the knights often had another sword hanging at the saddle bow. This had a strengthened faceted blade with three or four cutting edges, designed for piercing armour. Both the horses shown are heavily armoured. The whole of the neck is protected by mail, the flanks by steel plates and even the root of the tail has its own little defensive armour. There is some horse armour in existence which has a large spike sticking up on the crupper to prevent an enemy jumping up behind the rider. The English knight's armour (309) is very fluted in order to make it more resistant and sturdier, but it is still of the same thickness and weight.

### South and Central America 1000–1500

**310–319.** When in 1519 the Spaniards landed on the American mainland, they found to their great amazement well-organised states that had a high level of civilisation. The culture of both the Aztecs in Central America and the Incas in Peru was however founded on thousands of years of development advanced by other peoples.

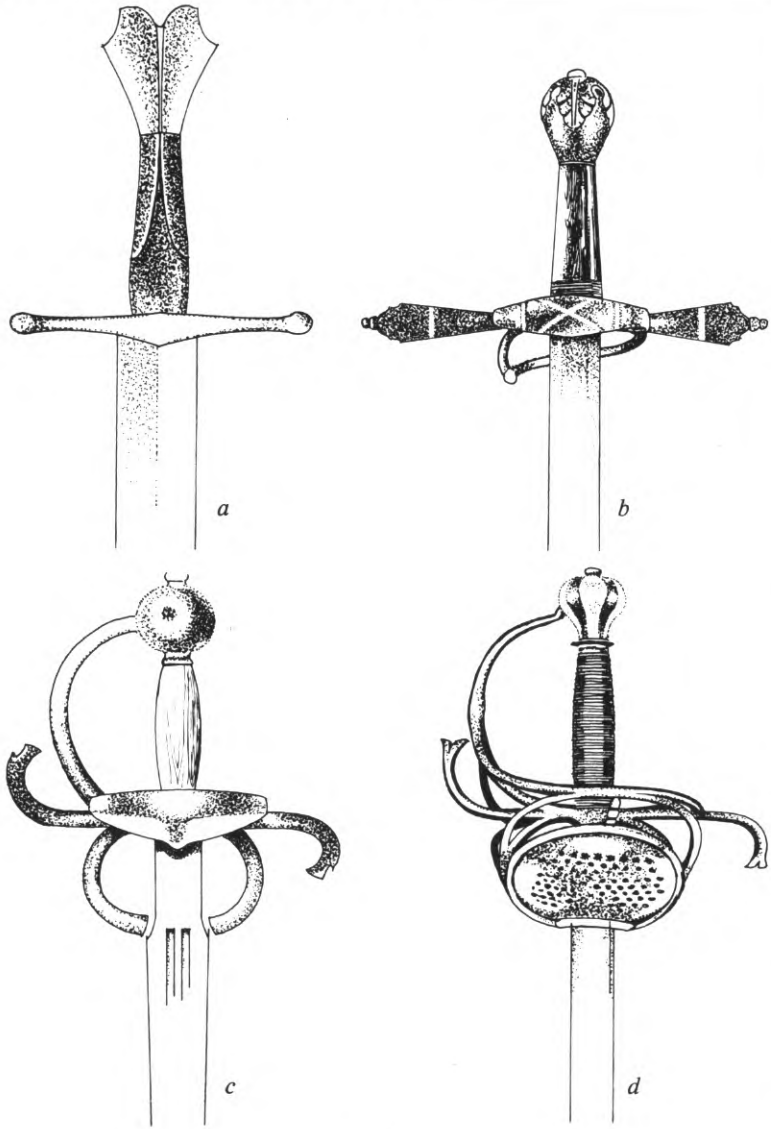
Like other great civilisations, the American were based on agriculture, mainly on maize and in Peru also on potatoes. A surplus was produced that could support a priesthood and a warrior caste. But the surprising thing about these cultures is the extremely primitive stage they





were at, technically speaking. The wheel was unknown to them, except as a toy for children, yet articles were transported for hundreds of kilometres. In Central America only such soft metals as gold and silver were worked, while the Incas were familiar with bronze. Iron was known only as a rare metal and considered useless, and it was therefore merely stored in the temple treasuries. All the tools were made of wood or stone. They were not acquainted with the potter's wheel, but outstanding ceramics were produced all the same. Nor were they conversant with the technique of constructing vaults with keystones, yet in Mexico enormous covered spaces have been discovered. Mortar was unknown as a binding agent, but the Mayas on the Yucatan peninsula and the Aztecs near Mexico City erected huge pyramids, and the Incas built roads through mountains and cliff fortifications of large blocks of stone cut so precisely that they fitted into one another with great exactness. The Mayas and Aztecs had an alphabet and a numerical system of pictographs and were able to undertake very accurate astronomical calculations, while the Incas did their sums by making knots in cords of various colours (*kipu*), but despite this they could carry out fantastic feats of engineering and keep consistent State accounts.

The Aztecs' capital was Tenochtitlan, the present-day Mexico City, a large, uniformly-built city surrounded by a fertile valley created by a sophisticated system of irrigation and canals which are still extant. By constant wars of conquest they extended their rule over several neighbouring peoples, until their empire was nearly as large as Mexico is now. The conquered peoples were largely permitted to retain their independence if they paid tribute, for the purpose of a military campaign was to obtain prisoners. These were not wanted as slaves, but were needed for the human sacrifices at the daily offering to the Sun God. The priests who performed the sacrifices and the warriors who obtained the victims were two closely connected castes who together controlled the whole empire, and the emperor was the head of both (311). His tunic is made of cotton – domestic animals were not kept, not even sheep, and wool was therefore unknown – but the decoration, the crest on his helmet, the ear ornaments and the cloak are made from feathers, thousands of them in all shapes and sizes sewn together. The helmet, the arm ring and the cuffs are of gold, while the 'sceptre' is a simple stone club. The ordinary warrior (315) is dressed in a similar fashion in linen and feathers. His breast-plate is gold or wood covered with gold leaf. All the shields are made of wood or wickerwork with patterns worked in feathers, but the lance is merely a Stone Age spear. The 'eagle warrior' (317) is reproduced from an illustration in an Indian manuscript, and








it is not quite certain whether his outfit was made from fur or feathers. His wooden sword was hardened by fire and a sharp edge made by polishing. The empire of the Aztecs was an alliance of three large tribes each living around its own city: Tenochtitlan, Tlacopan and Texcoco. King Nezahualcoyotl (319) is wearing a helmet and hauberk all in one made of woven feathers with cuffs and knee-guards of leather. His wooden sword has a sharp edge of obsidian, a vitreous volcanic rock. The shield has a fringe at the bottom like the Greek Hoplites' had (98). The ear-decorations on the helmet may be some form of insignia, and the golden piece of jewellery in the lower lip, which the emperor (311) also wears, is a military badge of rank.

The Mayas were a somewhat older nation than the Aztecs, but during their golden age from 1000 to 1300 they were greatly influenced by the Mexican peoples, and we find here the same close relationship between priest and warrior caste. The officer or priest (316) is wearing a jaguar skin, and this is repeated on his large wooden helmet or crown, looking like a bishop's mitre, and on his spear or sceptre. The green chest ornament is in the form of an animal, and in Indian manuscript illustrations, wall paintings and sculptures totem animals often appear as ornaments or headgear. His ear ornaments may be a sign of military rank or caste. The warrior on his right (318) is a common soldier. His tunic is nothing but a length of cotton material wrapped several times around his body. It could be that he had some sort of 'armour' such as the Egyptians wore (see p. 142), and we should not overlook the fact that the many articles of clothing made of woven feathers had a protective purpose. In the case of all these men illustrated here the clothing is held together without the use of buttons, *fibulae* (safety pins) or hooks.

**Sword and Rapier Hilts *c.* 1200–1625.** *In the Middle Ages and up to 1525 swords were in principle all alike: the hilt was gripped firmly and the hand protected – sword (a) – merely by a cross-guard and glove. In the course of the 16th century the art of fencing developed, and the sword became a rapier, a weapon for thrusting. In order to control the weapon in the thrust, the index finger was curled around the cross-guard and so had to be protected by a single loop of metal (b). Later two extra loops were fitted and the blade close to the hilt left unsharpened, a ricasso (c), which was held by two or three fingers. Not until 1625 did an arrangement of loops and perforated plates protect the whole hand (d). The S-shaped quillons of the two lower rapiers were also useful for trapping the opponent's blade and twisting the weapon from his hand.*

The Incas' capital Cuzco was the centre of an amazingly well organised empire. A strict military arrangement into units of 10,000, 1000, 500 and 100 was repeated in all matters pertaining to the community: in the deliveries of maize and potatoes to the state depots found in every district, in the distribution of llamas and sheep from the hunts which the State organised every five years, in grazing rights and then in the delivery and later distribution of the llamas' wool. Everything was controlled and rationed by the State, and the State of course meant the Incas, the children of the Sun God. The essence of this administration was the amazing network of roads that connected all parts of the empire, compassing steep cliff walls where the path was only a metre wide, over embankments across swamps, sometimes straight through mountains, or over suspension bridges across ravines. A posting system was arranged along these roads by relays of State runners covering 200 kilometres a day with their despatches.

The empire's military power consisted partly of the Incas' own regiments of 1000 men, partly of contingents of conquered peoples commanded by Inca officers. Equipment was light: a helmet of wood or leather with the regiment's insignia as crest. The warrior in the foreground (313) and the two officers (310 and 314) are so to speak a 'private', a 'lieutenant' and a 'colonel' respectively in the same regiment, while the warrior in the background (312) belongs to a contingent of one of the allies. The body was covered by several layers of material, either llama wool or cotton made into a tunic, and also by a wooden shield. The officer on the left (310) carries a little drum on his back for signalling, a device that is also known from Mexico. The weapons used were club, bow, spear with point of flint and – very rarely – bronze sword. A characteristic weapon was the bolas (310), a missile consisting of two balls of stone connected by a strong cord. The staff held by the officer on the right (314) is either a symbol of command or a standard.

## Europe 1500–1550

**320–326.** 'Maximilian's Triumphal Procession', the painting mentioned above (see p. 216), shows us knights, Landsknechts, citizens and peasants marching along with oxen, cannon and carts. What is really interesting in the present connection is the group of prisoners, guarded by soldiers, who are wearing what look like track suits or leotards. They are clearly knights who have been divested of their armour, and for once we have an opportunity to see what they wore under all that iron.

These suits (320–323) seem to have been made of a fairly thick yet soft material – rather like velvetine – the blouse being loose-fitting, while the pants were tight with straps under the instep (320 and 322) and garters below the knee (322) preventing them from riding up. The knight in the blue underclothes is wearing hose, that is two separate trouser legs fastened by a belt at the waist. In this case we are shown that other underwear was used as well, or it may only have been a long shirt, probably of linen. He also has a felt cap that might have been a helmet liner.

The great two-handed sword that the 'Doppelsöldner' used (301) developed in the course of the century to such a size that it could not possibly have had any practical purpose. But we know that swords such as these were borne ceremonially by a colour party, or preceded the colonel of the regiment when he was going to hold a court martial, and that bailiffs carried them in the burghermaster's procession. It is in town halls especially that most of these swords are now kept. The enormous sword seen here (320) is in the Tøjhus Museum in Copenhagen. Among the many weapons used in close combat, with which both princes and common soldiers were armed, is the almost triangular sword or dagger seen in 321. Because of the wide channelled blade it has been given the name 'ox-tongue' or *cinquedea*; the latter name comes from the Italian words cinque (= five) and dea (= finger). The sword that the knight in the yellow underclothing is holding (323) is a new type with extra guards to protect the fingers.

Armours became steadily heavier in the material used for chest and head protection, but joints and shoulder-pieces all had more lames and plates added. This required more labour and increased the weight, but at the same time improved freedom of movement, particularly at the shoulders where the plates were made to fit in a special way (325). Henry VIII's armour (324) was made specially for tournaments, as can be seen from the large stiff gauntlet cuffs with the forearm and wrist-pieces locked in a certain position that would enable him to hold the bridle. For practical reasons there was a limit to how thick and heavy face protection could be made – the danger of breaking your neck by falling from the horse had to be taken into account – and an attempt was made to solve the problem by giving the visor various pointed or fluted forms and to project it forward to allow a space of up to two inches in front of the face (325). Even when the armour was at its heaviest and weighed 35–40 kilos there is no contemporary evidence of the rider being hoisted into his saddle. Henry VIII (324) and the German knight (326) appear not to have had any defence for the groin, but here the high saddle with the bow of iron must have protected them. Both Archduke Maximilian's armour (325), produced by Matthäus Frauenpreis in Augsburg in 1549–1550, and the armour from the 1540s, that the German knight (326) is wearing, made by an unknown German smith, have breast-

plates with a high central ridge, the peascod, in contrast to Henry VIII's (324) – made at the royal workshops in Greenwich in 1540 and now in the Tower of London – which is of an earlier fashion.

### The Ottoman Turks 1453–1683

**327–334.** The long struggle between the Moslems and the Byzantine Empire changed character in the 14th century, when the Turkish tribes were united under the leadership of several very able princes and commanders of the Osman family. They called themselves Osmanlis after this dynasty, or the Ottoman Empire. In 1355 Osman's son Orkhan gained possession of the Dardanelles, and in the 1370s first Adrianople and later Macedonia and the northern part of Greece were taken. This encirclement of Constantinople ended in the spring of 1453 when Sultan Mohammed II stormed and took the city after a bombardment which lasted a whole month. For the next 200 years and more the Osmanlis had to be included in all military and political matters pertaining to the European states.

Their power was gradually extended up through the Balkans and Hungary until Sultan Suleiman II in 1529 was able to attack Vienna with an army of 250,000 men, supported by excellent artillery and sappers who had experience from the many successful sieges of fortresses. But this was the end of the road for the Turks for all time. After three days of violent fighting the attack was abandoned and the troops withdrew, but most of Hungary and Rumania and the whole of the Balkans remained under Turkish rule. During the next hundred years the Austrians slowly drove the Osmanlis back, but in the 1670s there was a new upsurge. Under the Grand Vizir Kara Mustapha they again took the offensive and in 1683 attacked Vienna for the second time, only to be beaten once again, this time by a Polish relief force. Most of the rich spoils taken by the Europeans in this battle are still to be seen in museums in Vienna and Karlsruhe.

One reason for the Turks' success was their principle of tolerance towards the Christians, and the tax extracted from the non-Moslems was generally much smaller than that demanded by the Emperor. Another was their political ability to make Christian alliances. There were many princes in the Balkans and Transylvania, as well as in the rest of Europe, who regarded the Habsburg Emperor in Vienna as a greater danger than the Sultan in Constantinople. Individuals were similarly recruited, but on the understanding that they accepted the Islamic religion. Thus Urban, an expert in bronze casting, who in 1453 made the large siege guns, was originally a Christian, although his nationality is not known.

But the Osmanlis' outstanding military organisation resulted in persecution of the Christians in one





respect. One special corps, the Janissaries (327), was made up of the strongest and healthiest boys of the Christian population and selected while still very small. They were given an exclusively military and very strict Moslem education and were quickly turned into an élite corps of shock troops. They were recognisable by their distinctive cap and were armed with lance and curved sabre, and this latter soon set the fashion all over Eastern Europe, in the main as a cavalry sabre, although the Janissaries were infantry. They marched and attacked to the sound of drums, cymbals and other percussion instruments, and the German word for a modern percussion player is still *Janitschar*.

In dress the guard (328) preserved a characteristic Mongol or Central Asiatic style and continued the old Turkish practice of using the bow as the main weapon; a tall pointed helmet was still worn. Among the many corps of mercenaries was one composed of Hungarians or Magyars (329), who emphasised their savagery and toughness by shaving their heads all over and sticking eagle feathers into the skin of the scalp. The sabre was curved and without guard and similar to the one the Cossacks of later times used. The Spahis (330) was a corps of cavalry, originally raised among the Turks themselves as a standing army of cavalry and paid at a very high rate. As a true Turk the Spahi here is wearing a turban with a red cap and blue pantaloons – as was the fashion then – and yellow riding boots, the same uniform as worn by the modern French Spahi regiment. He is also armed with a lance and carries a brace of pistols. This is the first time that cavalry was so armed. The lancer (331) is more traditional; only the bracers on his arms and the wide trousers distinguish him to any great degree from the Arab armoured cavalryman of earlier times (182).

A characteristic of the Ottoman Sultans and their nobles was the huge turban with a feather on top which was just as tall as the turban itself. Sultan Suleiman II (332), as far as clothing, saddle and caparison are concerned, has been copied from the objects still to be found in the Museum of Art in Istanbul.

The Ottoman Empire however was not concerned only with wars of conquest. The peoples of the Mediterranean coast, whether Asiatic or African, obeyed, officially anyhow, 'the Sublime Porte' at Istanbul, and within this area brisk trading took place, organised as had always been the case by Levantine merchants. Now it also included Marseilles, Genoa, Venice and Ragusa, the present Dubrovnik, and the proceeds from this trade, together with taxes, tribute and booty, were all collected in the city of Istanbul. There were many differences between the various inhabitants of this great empire. We find in Tunis, for example, that the Berbers

were armed more like the Western Europeans of the time. The Tunisian infantrymen (333, 334) provide a good example of the primitive and warlike mountain people whom the Emperor Charles V had to fight on his Tunisian campaign in 1535.

### Europe 1525–1575

**335–342.** Apart from the Swiss massed ranks, it was the Spanish 'brigada' which dominated the battlefields of Europe around the middle of the 16th century. This was the period of Spanish–Austrian greatness. The German Emperor Charles V (1519–1556) had inherited the Austrian throne and the Netherlands, and he was also king of Spain and lord of all the Spanish dominions in America. Part of the influx of precious metals from Mexico and Peru was invested in a strong military force. Spain had a time-honoured tradition of manufacturing weapons, e.g. Toledo blades, which had to some extent been inherited from the Moors, and similar industries had been established in Austria and the Netherlands. Troops could always be raised from among the poor and hardy peasants of Castile and the Alpine districts.

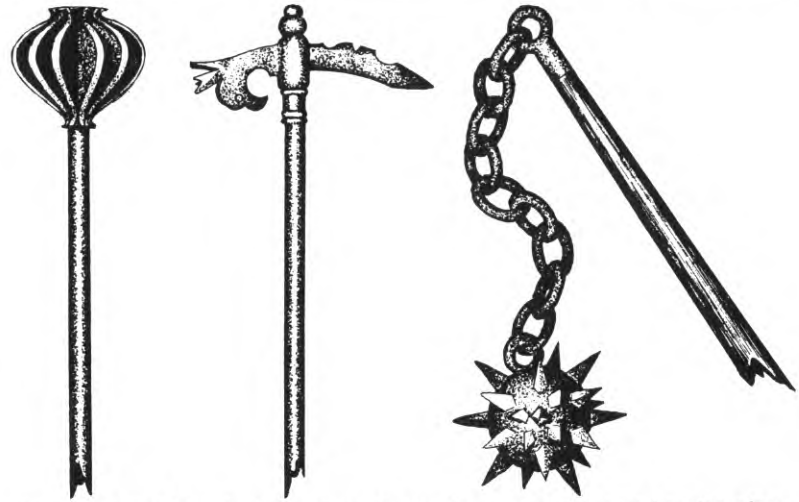
The principal weapon was the spear or pike, 4–5 metres long (336), which about three-quarters of the troops carried. The other quarter were armed with arquebuses (337). The pikemen moved forward in tight squares, 'brigades', the front ranks with pikes at the ready, a wall bristling with points which no infantry could stand up to and no cavalry attack. Between these squares were the arquebusiers who opened fire at a range of about 100 metres. These were the Spanish marksmen who at the battle of Pavia in 1525 shattered the Swiss massed ranks by a rain of musket balls, long before the Swiss could get close enough to use their halberds.

The massed attack and the rain of bullets resulted in more importance being attached to speed and to making the infantry lighter than it had been previously. A helmet and shield were now often the only defensive equipment. The Spanish infantryman on the left (335) is wearing a tall wide-brimmed helmet with a sharp comb, a morion, which remained in use for the next hundred years (cf. 405, 406 and 409). His waistcoat has the sleeves set in with the characteristic puffed and padded shoulders. These may have been meant to resist a sword-slash to some extent, but they were worn by everyone at that time, by men as well as by women. The breeches are now much shorter, but still fairly wide and full of colour. The soldier is carrying a short sword for close work which has an S-shaped cross-guard, one side to catch the enemy's blade, the other turned to protect the hand. The pikeman's long sword (336) has a similar cross-guard. The thrusting swords of the musketeer and the standard-bearer (337, 338) are the type with loops to protect the fingers, while the French halberdier's hand (340) is covered by a large basket or shell-like guard. The very large flag on the short staff was not merely carried at the head of the troops, but was also used to wave circles and figures of eight, in fact putting into effect that part of the oath where the standard-bearer promises to 'keep the colours flying'. The standard-bearer (338), like the pikeman (336), is wearing a little beret-like cap and a ruff as a lining to his neck-band. All pictures from this period show either this form of neck-band or a turned-down collar.

The two French halberdiers (339, 340) are of higher rank than the ordinary soldiers. The cut of







**Short-handled Cavalry Weapons.** *As cavalry armour became heavier, close combat weapons came into use, some of which, while not able to penetrate, could at least dent the armour and thus reduce mobility or cause internal injuries such as broken collar-bones by the transmission of the blow. The mace with six to ten flanges was already used in the 11th century (216). The one shown here is from about 1600. The war hammer – from about 1550 – has an armour-piercing spike as well as the usual head. The war flail – also used by infantry in a larger size – required special skill. Apart from the normal force, care had to be taken to swing the ball by its chain in a specific arc. Thus if the handle was checked by a shield, the ball could carry on and hit the opponent's neck or back. The flail was used principally from 1200 to 1400 when mail was worn.*

their doublets is better, and these have been quilted to make them look like the peascod breast-plate (325). They were life-guard units and were usually recruited from the lesser nobility. Their clothes were so similar as almost to amount to a uniform, and the same goes for their arms. One unit might be armed with the glaive (339), a long broadsword with a parrying hook affixed to its back, others with the halberd (340) or some other form of pole-arm. The halberd pictured here has an extra spike with turned points for parrying.

The two Italian soldiers (341, 342) are both taken from a painting by Vasari of about 1560. It is possible that the Roman appearance of one of the helmets is the result of the artist's Classical education, but a number of Florentine helmets that have been preserved are of this particular 'Roman' form. The plume was a common distinguishing mark to separate friend from foe. The musketeer (341) has his sword hanging from a sword-belt or baldric, and his dagger tucked into his belt; the cords are for powder flask and bullet pouch. The painting shows clearly how the shield was employed in assaults using scaling ladders and in defence of city gates and walls.

### Europe *c.* 1575

**343–350.** Many attempts were of course made to develop an armour which was impervious to the new fire-arms, but this required such a thick and heavy breast-plate – about eight kilos – that it became necessary to lighten the weight of the other parts or do without them altogether. This development was further encouraged by the fact that the officers of noble rank themselves now took part in the fighting on foot, and also that many battles were fought at sea, which ended in the enemy ship being boarded and the deck cleared as if in a land encounter.

There is a catalogue from the royal workshops at Greenwich which shows more than 32 parade armours (343). They were made to measure and had etched and gilded patterns worked on them, with tassets bulging out to allow for the padded breeches. Such armours were used only for tournaments and parades, and although the large spiked 'Morgenstern' seemed a terrible weapon, we frequently see such pole-arms and maces, war hammers, etc., used as staffs of office. The Spanish knight (344), on the other hand, is wearing half armour, typical of the cavalryman who has dispensed with the lance and the heavy leg-guards and taken up shield and sword to take part in the assault on a town or the boarding of a ship.

The German Landsknecht (345) too has a heavier armour. Although his trousers are still baggy and colourful, they are now merely the prevailing fashion, which the Landsknechts themselves had earlier helped to create. The French musketeer (346) is protected by a heavy peascod breast-plate, held up no doubt by crossed straps at the back. A new fashion has emerged in the form of loose decorative sleeves, preferably matching the pattern of the open waistcoat and the puffed shoulders (cf. 350).



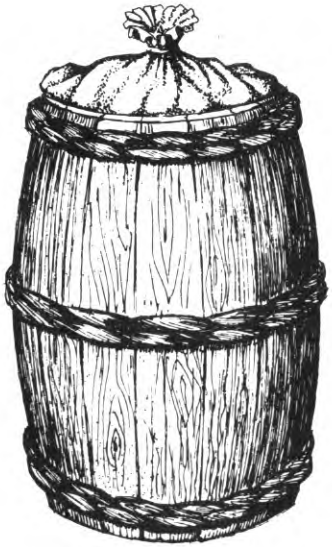


The German knight's armour (347) is known as Maximilian armour, and was produced from the beginning of the 16th century, but certainly used for a long time after. It is distinguished by the many flutings, which had the practical purpose of deflecting a weapon, but may equally well have been a fashionable caprice. This type of armour was only used for tournaments or special occasions, one such being Emperor 'Matthias' coronation in 1612, when twelve suits were ordered by wealthy burghers in Nuremberg. The Swiss halberdier (348) is less a combatant than a police constable, sufficiently protected from blows and stones, but surely too heavily dressed for the battlefield. The strangely shaped axe-blade on his halberd was sharpened on all edges, a really nasty weapon for street fighting. His clothing dates from the 1530s; it is characteristic for a corps of halberdiers to be dressed in an old-fashioned manner.

King Frederick II of Denmark (349) is wearing an up-to-date armour with a very heavy breast-plate, and only the pauldrons and the tassets are laminated. The armour is now in the Waffensammlung in Vienna and the sword is at Rosenborg Castle in Copenhagen. His plume and sash are in the colours of the Danish royal house – the House of Oldenburg. It is obvious from the English officer (350) and from the picture of the king how similar the civilian and military fashions were. His breast-plate and taces decorated with gold inlay might just as well have been a velvet doublet with gold and pearl embroidery. He would then have worn a tall hat with a rounded crown instead of a helmet. Discounting the riding boots and spurs, he could well have been one of Sir Francis Drake's officers from 1588, when the English destroyed the Spanish Armada.

### Artillery *c.* 1600

**351–354.** The earliest cannon were breech-loaders (see p. 203), but as powder gradually improved and was able to generate greater pressure, such a construction was obviously no longer sound or strong enough. This was of course of most immediate importance in the case of heavy siege guns, which for this reason were founded as muzzle-loaders, with a small touch-hole at the breech. The first large cannon were cast in bronze, because this metal has a lower melting point than iron and does not have the tendency to form air bubbles during the casting process, so that although bronze was much more expensive than iron, it was technically easier to use. The largest bronze cannon we know of



are the Dardanelles cannon, now in the Tower of London, produced for the Turks in the 1490s. In the middle of the 16th century an improved method of iron founding was invented in England, and this soon spread to the Continent, although there are still many handsome bronze cannon in Europe's museums which date from both the 17th and 18th century.

The gunpowder was poured into a measuring ladle or was in ready-weighed cartridges. A wad of paper, tow or turf was pushed down on top of the powder with a ramrod, and the ball followed. Finely ground, easily combustible, mealed gunpowder was then poured into the touch-hole and ignited with a linstock. It is obvious that after every shot the barrel had to be cleaned thoroughly of sparks, so that water bucket,

**Artillery Equipment, *c.* 1600–1850.** *The poor combustible quality of impure black powder resulted in a great deal of residue, and it was a constant problem to keep cannon clean, especially of burnt-on, still glowing encrustation. A reamer, as shown here, was used to remove this. For practical reasons the powder had to be kept close to the gun, and to protect it from chance sparks the powder barrel had a leather lining which was gathered and tied at the neck. This bag and the swab shown in the gun position illustrated in colour (351 ff) remained unchanged as long as muzzle-loading guns were used with black powder.*

**Chain Shot, *c.* 1500–1800.** *Almost anything can be used as ammunition for a smooth-bored muzzle-loader. These two hemispheres were pushed down the barrel as a complete sphere, with the chain towards the muzzle. When the shot was fired and the missile had been projected a short way from the muzzle, the two halves separated and the clumsy projectile went whirling through the air, completely destroying everything in its path, whether enemy troops or the rigging of a warship. This and various other types of ammunition were employed as long as smooth bored muzzle-loaders were used, i.e. until about the middle of the 19th century.*

swabs and cleaning rod were part of the artillery equipment, as they are in the case of heavy guns to this very day. The rate of fire cannot have been very considerable, in the case of these heavy pieces only about one shot an hour. The gun positions were protected by large wicker baskets filled with earth (*fascines*). The weaving was done on the spot with the help of a big wooden ring. This fascine ring is still shown on nearly all engineer badges.

Artillerymen were to begin with not soldiers as such, but were organised as guilds with masters (352) and gunners (351) and of course apprentices and gun-servers (353, 354). The prince who took a master-gunner into his service provided the cannon, but all the professional accessories, such as quadrants, levels and gauges, were brought by the skilled workmen. Right from the 1580s we have detailed manuals and instructional drawings for gunnery, and the Italians made the first attempts to work out range tables and mathematical calculations.

Like all mercenaries the gunners were of an international character. The gun position illustrated here is taken from a French artillery manual of 1613. All the details of clothing, etc., are taken from this source, as are the black flags with crosses flying on the tent. Perhaps they indicate an ammunition depot, just as any vehicle carrying ammunition nowadays must carry a large red flag.

**Europe *c.* 1600**

**355–360.** The history of the 16th century is dominated by the Re-

formation and the great reformers: Luther in Germany and Calvin in Switzerland. The political consequences which this religious schism brought about resulted in the wars between the Emperor and the princes in Germany, the civil wars in France, the confiscation of church possessions by the English crown and the Netherlands fight for freedom. There were of course other motives, but it was religion that was the *leitmotif* and which produced the battle cries.

The most significant event was the revolt of the Netherlands against Spain. The wealthy Dutch cities could afford to enlist many troops; the religious war instilled into the population the necessary morale and a spirit of self-sacrifice. The young prince Maurice of Orange was found to be a first-class organiser and bore the magnificent title of Captain General and Admiral General. He studied the art of war very thoroughly, especially the Roman, and created a system much on the lines of the organisation of the Roman legions. The pikemen were put into smaller formations, half-brigades, in which there were as many musketeers as pikemen. At the same time the use of pike, sword and musket was laid down in a detailed manual of arms which was written by de Gheyn in the form of an illustrated book, *The Art of Infantry Warfare*, published in 1607. In 1616 Wallhausen of Danzig brought out a similar manual for the cavalry. Regulations for general tactics, employment of artillery and engineers were also made, and it is no exaggeration to say that all strategy up to the time of Frederick the Great of Prussia in the 18th century was based on Prince Maurice's innovations.

The pikeman (355) is wearing a plume and sash in the colours of the House of Orange. The helmet is as simple as it could be, given that the head must be protected and the soldier hear the words of command. The armour is quite light, and with its tassets it weighs no more than the dismounted cavalryman's breastplate (357). It was of course an important feature of Prince Maurice's reorganisation that the troops should wear uniform, but in practice this was not carried into effect.

The light cavalryman (356) is really a mounted carabineer. With the invention of the wheel-lock in the middle of the 16th century it became possible to arm cavalry with fire-arms: a carbine and pistols that were kept in two saddle holsters. Charges were preferably made at the trot, and the pistols were fired from a distance of one to two horse lengths, so aiming was not a problem. The carbine could if necessary be fired from the saddle, but was really meant for use once the rider was dismounted. These mounted troops were used as patrols and advance guards. The helmet with the rounded crown and the plume in the Oldenburg colours was relatively thin, but had a thick underpadding of felt and leather.





With the cuirassiers things were different (357, 358). They are wearing a heavy breast-plate, which the armourer tested or proved by shooting a pistol at one horse length. Such proving marks were in themselves a sort of guarantee and can be seen on many of the cuirasses preserved. The crown of the helmet was also of solid material, while the rest was lighter, intended to withstand cuts from a heavy cavalry broadsword. The whole of the cuirassier's armour might weigh as much as 40 kilos. The mounted cuirassier (358) carries both lance and pistols. One pistol was fired just before the charge, and the cavalryman then went into the attack with his lance couched, the other pistol being kept for subsequent close combat. It is often noticeable in contemporary pictures that the pistol in the left holster has the trigger guard and butt uppermost to make it easy to draw with the right hand. A little powder flask is attached to the holster. The dismounted cuirassier's tassets (357) reach down below the knees, but the lower legs are only protected by the high top boots which here are shown turned down. The problem was still how to make the horseman effective and mobile, even after being unhorsed or after the horse had been killed, as de Gheyn points out in his manual of instruction. His sword with cross-guard, finger-guard and hand-guard is like the pikeman's (355), for at close quarters the five-metre-long pike was of little use, and the infantryman and the grounded cavalryman met on equal footing.

At the battle of Ivry in 1590 Henry of Navarre, later King Henry IV of France (359), ordered his troops to follow 'the white plume', white being the colour worn in his hat, sash and clothing. He is wearing a heavy breast-plate lined with velvet to prevent the doublet becoming frayed. He may also have had a steel cap inside the crown of his hat. The musketeer with the top boots (360) was probably a horseman. Although his helmet has a slightly different shape, in principle it is similar to that of the pikeman (355). The clothing is now doublet with sleeves, worn under a leather jerkin with the breast-plate on top of that. All these layers provided a satisfactory and tough protection, suitable for a cavalryman – or mounted carabineer – but not for a foot-slogging infantryman. The two leather straps are a baldric for the sword and a cross-belt for the powderhorn. The sash is in King Henry's colours.

### Eastern Europe 1500–1650

**361–366.** Plate armour never caught on in Eastern Europe, and for this reason the medium-heavy, mail-clad cavalry was used here much longer than anywhere else. The Kingdom of Poland, which had been united with Lithuania for a long time, was in the 16th and 17th century a great power which in the north had destroyed the Teutonic Knights' influence and to the east was pretty well constantly at war

with the Muscovites, while further to the south attempts were made to bring the Ukraine and its population under Polish suzerainty. In the south Poland had made a strong alliance with Hungary against the Turks, and it was a relief column under the Polish King Jan Sobieski that raised the siege of Vienna in 1683.

The Poles' main fighting force consisted of the strong and courageous aristocratic cavalry (361, 362), armed with sabre, armour-piercing sword, bow and lance. The usual protection was the hauberk with a leather jerkin, big cape and top boots. The mounted lancer (362) is wearing a 'lobster-tail pot', originally Hungarian but a type which became the norm all over Europe in the 17th century (cf. 416 and 419). The face is merely protected by a nasal and the wide peak. The crown is either of plates or beaten out in one piece, but the special feature is the long lobster-tail guard which effectively covered the back of the head and neck, without inhibiting the movement of the head.

The Strelitz guards (363), a heavily-armoured infantry corps, were specially recruited from noble families and were the Czar's personal guard in Moscow. The hauberk, with its characteristic mask hiding the upper part of the face, is reinforced with metal plates – possibly of gilded bronze – and may have been copied from the Mongols (cf. 367, 369, 371 and 373). The battle-axe (*bardische*) is a typical Russian infantry weapon. The long cutting edge of the axe blade must have been equally effective whether used in a slash downward at a horseman or in a diagonal or horizontal direction at an infantryman, and the hammer head could crush what the sharp edges had been unable to cut.

The Polish cavalryman (364) has an extra protection – not unlike a boiled shirt-front – on top of the bolero-type mail jacket. His rather haphazard equipment suggests a reason why this light, almost irregular cavalry must at times have been difficult to distinguish from a band of brigands. His sabre with the broad curved blade and the large cross-guard is typically Polish.

In the Ukrainian steppes lived a number of communities, half peasant, half nomad, known as the Cossacks (365, 366). These were constantly at war with the Mongol hordes of Astrakhan and played the role of a kind of frontier corps between Europe and Asia. Although from time to time the Russian Czar or the Polish kings tried to assert their supremacy, these Cossacks were in fact independent under their own hetmans and atamans, and there were never-ending political machinations to determine which of the princes in the surrounding country could obtain the support of these savage horsemen. Since they belonged to the Greek Orthodox Church they finally joined the Russians in about 1700, and up to the Second World War they formed



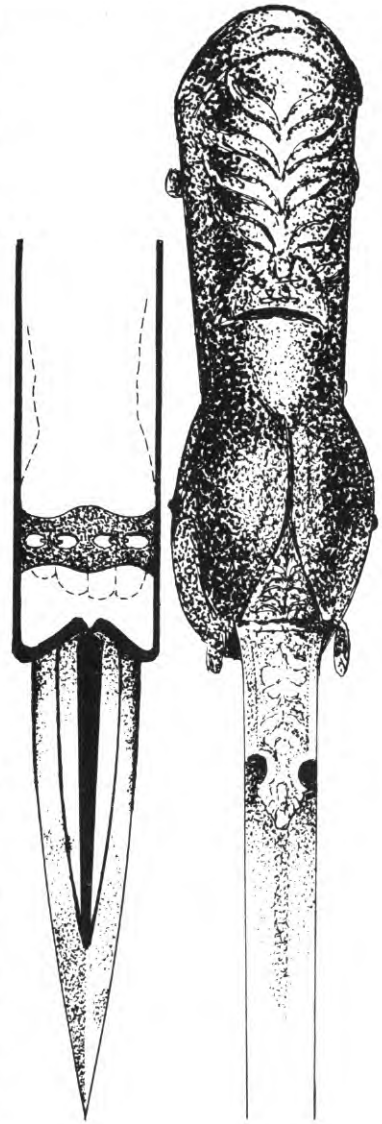


the core of the cavalry. They were armed with lance, sabre, mace or hammer. Their clothing – like their present-day dress uniform – consisted of caftan and a long coat with the characteristic fur hat. They rode with very short stirrups and without spurs.

**Persia and India 1500–1600**

**367–373.** After the Mongol invasion in the 13th century the Uzbek and Persian countries were ruled by the Mongols of Samarkand, while Afghanistan and India were divided up into a number of khanates and sultanates, where at least the sovereigns were Moslems.

Around 1400 a Mongol bandit leader, Tamerlane, collected together a number of bands which he soon trained to be an efficient army on Mongol lines. With this he penetrated deep into India and plundered Delhi. Some years later he took Baghdad and finally he attacked the Osmanli Turks, who also suc-



**Indian Weapons, 18th and 19th century.** *This special poniard, or* katar, *is held by the cross piece so that the two arm guards lie along the forearm. An underarm stab or a 'right hook' with this weapon had a tremendous penetrative power. The 'gauntlet sword' on the right is constructed on the same principle. Used by princes and noble warriors, it was often richly chased. The generous protection for the hand made it a useful weapon when hunting beasts of prey.*

cumbed. Tamerlane's campaigns were nothing but brigandage with booty and slaves as the only aim, and the things that could not be carried away were burnt or destroyed.

About a century later a religious revival took place in Persia, and under Shah Ismail I a Moslem sect, the Shiahs, gained the ascendancy. This secession from the Mongol rule resulted in a tremendous advance, both economically and culturally, and Persian literature, architecture and art spread far to the north and east from the capital Isfahan. It was at this time that one of Tamerlane's successors, Baybar (371), began a campaign against India, not to plunder but with the intention of a permanent conquest. Delhi was taken, and after a series of battles against various rajahs the empire of the Great Moguls stretched from Afghanistan to Bengal and from the Himalayas to the tableland of the Deccan. Sultan Baybar was a true believer of Islam, a full-blooded Mongol general, and the way he conducted his life and household was much influenced by the new Persian culture. This was continued at the court of the Great Moguls in Delhi during the following generations. Several 16th century miniatures from Delhi and Persia have been used as models for the warriors depicted here. Many of these miniatures are supposed to represent Tamerlane's wars, but we can only use them to illustrate the period in which they were produced.

The Persians of this period had armoured archers. The cavalryman here (367) is wearing a shirt of mail and over it plate armour of bronze or cuir bouilli with greaves of the same material. His head, as was the fashion, is protected by a high pointed helmet with large cheek-pieces and a curtain of mail to protect the back of the neck. The horse was also armoured. Apart from the bow, their equipment consisted of dagger, long curved sword and small circular shield.

The Indian troops were often lightly equipped, the only protection being several layers of cotton material. In comparison with the lancer (368) the Moguls (369–373) seem heavily armoured. The officer (369), the lancer (370), the Sultan (371) and the trumpeter (373) all have their torsos and arms protected by a close-fitting armour of lames, the cuffs of which gave added protection to the underpart of the forearms. The tunic or jerkin, open at the chest to leave room for the large plate, is characteristic. Leg defences (370–372) were of cuir bouilli with metal reinforcement. The very long, almost straight sword with the heavy hilt is typically Indian. The short dagger is carried by all, the Sultan, the officer and the common soldier. The long horn (373), the kettle-drum and the fife were the musical instruments used.





**China 1–1700**

**374–380.** China had for many centuries been divided into at least two realms, one around the Yellow River, Hwang-ho, the other stretching from the Yangtsekiang and south to Canton. The country's chief problems were the strife between the two empires, which often led to bloody wars, and the threat from the barbarian tribes from the deserts to the west. Under the dynamic younger Han dynasty, which ruled in the first centuries A.D., the empires were united and the Great Wall on the northern frontier was improved and lengthened. The next ruling house to have political power was the Tang, *c.* 600–900, who were descended from Mongol mercenaries. The empires, which in the meanwhile had been divided again, were re-united, the barbarians thrown back and the western frontier pushed right out to the Pamirs, and the previous efficient administration was re-established. In a subsequent period of weakness at the beginning of the 13th century, when the empire was again divided, the whole country fell into the hands of Ghengis Khan and his sons, who founded the Yuan dynasty and ruled until 1380. A native-born dynasty, the Ming, followed and lasted up to 1644, when it was superseded by the Mongol Manchus, who reigned until 1912.

The Chinese infantry seem always to have been lightly equipped. They wore a helmet, of course, of metal and leather, but otherwise they were only protected by a number of layers of silk or other material. The infantryman here (374), who is the earliest of the Chinese soldiers depicted, is armed with a vouge (this about 1300 years before pole-arms were used in Europe), a long straight sword and a shield bent into an unusual shape which was perhaps an appropriate defence against mounted men. The cavalry on the other hand were very heavily armoured. The horseman on the left (375) has the whole front of his body covered by a stiff armour of metal plates, cuir bouilli or perhaps thick felt or padding. He is taken from an equestrian statue in Peking and his horse has a similar defensive armour that covers it completely. The heavy cavalry or mounted guards were armoured to an even greater degree. The cavalrymen here (377 and 379) wear on their heads helmets of relatively thin metal but with a thickly padded leather lining, and on their bodies a leather or felt armour closely covered with metal plates. On the shoulder-plates and belt buckles are large masks of beasts of prey or dragons. The horseman in the middle (377) has extra protection at forearms and groin, and this might be an indication that he could fight on when unseated. His sword is like the infantryman's (374) and the more lightly armoured trooper's (375), while the matchet-like sword (379) is a weapon particular to the Chinese. Both men have strong felt boots reinforced with iron bands.

Many of the Chinese troops were Mongolian mercenaries, and the large Mongolian bow was used by

all, both cavalry and infantry, throughout the period, without any great alteration in either shape or spring. The archer here (376), who looks very Mongolian, is copied from a painting of about 700.

The horseman with the standard (378) is clad in many layers of silk, and the shoulder-pieces may have been made of leather. He can be seen in a painting of a cavalry encounter dating from about 720, and there is little doubt that the strange ensign on the staff is indeed a standard that was carried at the head of the cavalry.

The mounted archer (380) has been taken from a painting of the Imperial mounted household troops from the 1780s. Here all the soldiers are depicted in such a similar fashion that they were probably wearing some sort of uniform, which is not all that remarkable at this late date, yet all the Chinese cavalrymen were equipped exactly the same as this archer during the long period dealt with here.

**Japan 1150–1550**

**381–387.** The Japanese islands were around 1200 united into an empire where the real power was in the hands of the overlord, the Shogun. The country was administered on military lines and its mainstay were the Samurai, who had a kind of feudal relationship, not with the emperor, but with a noble, who again was responsible to the Shogun. The great feudal lords, the Daimyo, built up their own parties and armies, and the country's history in this period is rent by one long series of violent civil wars. The military power justified its existence when in 1274 and 1281 the Chinese under the Mongolian Emperor Kublai-Khan attempted to invade the islands. They did not succeed, but all the same Japanese culture received many impulses from the mainland.

The archer (381) is taken from a contemporary painting in which the troops can be seen marching out to face the Chinese. The lamellar armour was made up of many scales and plates of lacquered wood, and on the chest lacquer reinforced with metal. The guiding principle was to combine protection with mobility. The Samurai were in the beginning simply conscripted peasants, but as they gradually became a purely warrior caste they were released from doing agricultural labour and, as it were, 'beat their ploughshares into swords', assuming the right and duty to wear two swords. These very typical swords were wielded with two hands and swung downwards in a diagonal cut. Apart from these the main weapon was a very large bow with metre-long arrows, (381, 382 and 387).

The Samurai varied in economic and social standards, all depending on the Daimyo they served. The mounted archer (382) is wearing lacquered wooden armour like the rest, metal bracers to protect him from the sting of the bow-string and an iron helmet with a very wide





neck-guard. The decoration on the front of the helmet may originally have been buck's horns. It seems as if the equipment was meant to frighten as much as to protect. The leg-guards are of wood and the stirrups are large, like open wooden clogs, and should perhaps be described as footboards. The horse is caparisoned in fabric with two metal plates to protect its flanks.

As well as sword and bow the infantry carried spears (383). The spearman's armour is made entirely of felt or some other heavy material and protects the arms and legs too. The white sash is in his lord's colours and the standard-bearer (384) may have belonged to the same faction.

In the illustration of the Samurai with the outstretched arms (385) we see how efficiently the armour is constructed, and that the metal plate remains in the place where protection is most necessary. The vicious grimaces were something which was part of the drill before an attack began. The Samurai swords are the world's best examples of the forging skills of the Japanese craftsmen. The blade was made red-hot, beaten and tempered thousands of times, with the result that a blade can still be as sharp as a razor after 800 years, showing no trace of rust. Apart from the ordinary swords there were also very large 'temple swords', which could only be wielded with two hands, shorter swords for close work and small daggers or knives, all of the same outstanding quality. The hilts were decorated with small talismans and the oval guard with gold inlay. The Samurai on the right (386) shows the way a breast-plate was fastened over and behind the shoulders, for a professional warrior caste is never so well protected at the back as in front. The long scythe-like weapon was used by the ordinary infantryman and the firmly-laced sandals show that he was ready to do battle on foot.

The equipment of the Samurai is known from a number of very fine drawings and paintings of this period.

When the Shoguns in the 1180s took the power away from the Mikado, it was the Minamoto family that held the office for several hundred years. Obviously such a powerful family had its own bodyguard (387), in this case distinguished by a special headgear.

**The Netherlands 1615**

**388–394.** When the Netherlands revolted against Spain in the 1580s, it was for many towns a question not just of politics, but also of faith. This religious disunity was indeed present within the Netherlands provinces, and considerable rivalry existed between the northern cities, Amsterdam and Rotterdam, and the cities to the south, Antwerp and Brussels. After wars lasting a whole generation Spain managed to maintain its suzerainty over the southern provinces, which by and large corresponded to present-day Belgium, but

at the expense of their economic progress. During this war of liberation the Dutch had succeeded in barring the entrance to Antwerp, and in all international treaties and agreements during the next two hundred years the demand was upheld for the Scheldt to remain closed. This did not prevent Belgian towns too from being among Europe's richest for many years to come, but there was no question of their having the same sort of political and military independence as the Dutch towns. All the same they had their own armed units. In an age when armies consisted of mercenaries, who were not always paid on time and who might take it into their heads to supplement their pay by a little private plundering, towns had to be able to bar their gates and if necessary defend themselves. The citizen militia no doubt met in an atmosphere of conviviality, as some of Rembrandt's paintings suggest.

The Dutch soldiers shown here are copied from a painting of the annual parade of the civic guards in Brussels, 'Het Ommegang', of 1615. At the head march the worthies of the city council followed by the companies with flags flying to the music of fife and drum, while musketeers fire off blanks into the air along the streets, with the population cheering from the balconies. The Burghermaster with the gold-knobbed stick (388) has a high-crowned hat with a wide brim and is wearing a large ruff similar to that worn by Lutheran clergymen today. Under his short cloak he has a velvet doublet and high-waisted puffed breeches fastened below the knee, a style we recognise in Velasquez' paintings of the Spanish court some years later.

Of the two pikemen the officer (389) as the professional wears trunks (cf. 355, 359 and 360), while the private (390) has put on a leather jerkin and breast-plate over his everyday clothing. The plume and the sash are in the company colours. The musketeer to the left (391) has no armour at all and is wearing a bandolier hung with small wooden tubes, each containing a charge of powder, weighed out beforehand. In this way he could cut down on the number of movements and thus fire more rapidly. The cross-guards on his light sword or rapier have now become a basket hilt, and the musketeer on the right (393) has one like it.

The swashbuckling standard-bearer (392), who with his red cape is one of the most magnificent figures in the parade, is waving a flag on which we can just see the cross raguly of Burgundy. The Netherlands provinces had formerly owed allegiance to the Dukes of Burgundy and through them had been inherited first by Austria and then by Spain. The infantryman (394) is carrying a special spear with two large parrying blades, a corseque. The staff is covered with velvet and studded with nails to give a better grip. At his left hip he wears a rapier, i.e. a light sword with a





wide cross-guard, a bar to protect the hand and a shell-guard to protect the fingers. Such a rapier was for thrusting not for cutting.

**The Thirty Years War 1618–1648**

**395–403.** In 1618 a rebellion in Bohemia triggered off the Thirty Years War, which was to devastate large areas of Germany. It began as a religious war, but there were so many other factors involved that the war gradually spread over the whole of the German empire. The rulers of the neighbouring countries joined in, first Christian IV of Denmark, then Gustavus II Adolphus of Sweden, and from 1635 France under the government of Cardinal Richelieu. The very Catholic France was then in alliance with Protestant Sweden, so that from then on the religious character of the war disappeared completely.

The war was waged by mercenaries of all nationalities, and as the number of belligerent nations increased and as expenditure emptied the treasuries of the countries involved, the troops plundered for their pay, so that the country became increasingly exhausted in its resources, the population was murdered or fled, the fields lay uncultivated and domestic animals died – altogether an economic disaster which in the central areas of Germany took several generations to repair. Grimmelshausen's great work *Simplizissimus* tells us a lot about the conditions during the Thirty Years War, and so do many paintings which illustrate famous battles, camp life, skirmishes, assaults on towns and scenes of plundering. These miserable conditions forced even more men to enlist or take to brigandage. Plundering had in fact become a normal way of life, not for money or valuables – they had been buried or stolen by others – but for the everyday necessities. The two marauders (395 and 397) are such brigands who have plundered a farm for whatever was edible. The word marauder was originally the name for a deserter or non-combatant who followed the army for what he could get by plundering, a thief or robber who preferred to operate among the casualties and the dead on the battlefield after the fighting. These two are wearing the sort of clothing we have seen before, but are clearly on the bottom rung of the social ladder.

One of the famous cavalry generals of the Imperial – that is to say Catholic – army was von Pappenheim. A special hilt with a complicated arrangement of loops is named after him (396 and 398). His jacket is much like the jacket of today, if somewhat looser (396). The troopers often wore no armour or had their breast-plate under their jerkin. The mercenary in the background on the left (398) has been called Flemish, but this is only true of the painting from which he has been copied; judging from his weapon, his clothing and the type of person he is, he could as well be a German, or from the Netherlands or

Scandinavia. Similarly it is not his clothing that makes the musketeer Danish (399) but his weapon. This is a ten-shot fire-arm with magazines for powder in the butt and bullets in the fore-end. It was made by Matthias Kalthoff in the 1620s, and a number were used to equip the Danish Royal Guard. The shape of his sword too is specifically Danish.

The German mercenary (400) is wearing the professional soldier's unpretentious equipment: heavy breast-plate fastened over the shoulders by a pair of wide straps, a leather waistcoat to prevent the breast-plate from fraying his clothing, and serviceable gauntlets. He is armed with a long rapier which provides efficient protection for his hand. His hat has a wide brim and its crown is lined with iron, and he is wearing high top boots.

The Swedish cavalryman (401) is dressed just as distinctively, except that the breast-plate is worn under his elk-skin coat. When King Gustavus II Adolphus entered the war in 1629, his main force consisted of Swedish troops under the command of Swedish officers. They were obviously of a higher quality than the flotsam who only fought for pay under the Imperial General Wallenstein. What is now a uniform of yellow leather coat and blue sash emphasises his Swedish nationality. The Swedish cavalry were armed with pistols and a very heavy and hefty slashing sword with a large shell-guard that completely covered the hand.

The mercenary in the background on the right (402) is only Danish in so far as he is wearing a red and yellow plume. His rapier has a wide cross-guard and a cup-like plate to catch the thrust of the opponent's weapon. This cup was the obvious defence when parrying the long sword or rapier whose shell-shaped basket served the same purpose (cf. 394 and 405). The French, like the Swedes, had more national regiments than the other states. It can be seen from the pikeman (403) – and the same is true of his slightly later compatriot (404) – that the powerful French state had the financial means to equip even the infantry properly. Such a heavily armoured man may not have been able to move very fast on the battlefield, but the more the advance of the infantry was controlled by a series of strict drill movements, the slower it became when soldiers marched forward with pikes, four to five metres long, at the ready in ranks of 50 or 100 men. In this way the foot soldier was protected from pistol shots fired by the cavalry. The hilt of his sword with the quillon curving towards the blade could parry a cut just as well as a thrust.

**Europe 1618–1648**

**404–411.** In the course of the 17th century the rulers of most of the European countries became more confident of their influential positions, a development which was summed up in Louis XIV's famous words 'L'Etat, c'est moi'. The style





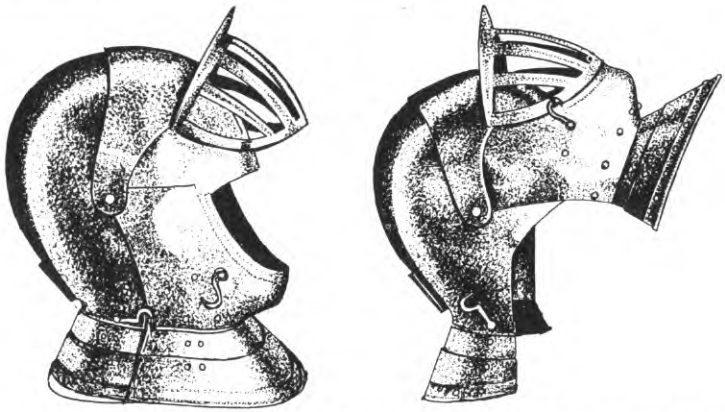
of the royal household troops began to affect other regiments, so that clothes became more or less identical, although it is as yet too soon to speak of real uniforms. It is however noticeable how frequently the colours red and yellow were favoured.

The French pikeman (404) with his baggy trousers and large ruff is slightly more 'modern' than his predecessor (403). The gold braid on his breeches and the yellow garters were the regimental colours. His light-weight open shoes are also characteristic. The paintings of the time show us clearly how badly equipped even the 'regular' infantry were with regard to marching footwear.

The Spanish musketeer (405) has a thin breast-plate with no central ridge, a bandolier, powder flask and rapier. His red and yellow striped pantaloons and puffed shoulders are an exact copy of the uniform of the Spanish royal corps of gentlemen-at-arms from 1646, and these two colours are still contained in the Spanish flag. From his boots it looks as if he was one of those carabineers who formed small patrols which could get to trouble spots quickly and then dismount and continue the fight on foot. The Netherlands pikeman (406) is taken directly from de Gheyn's manual of arms and shows how the infantryman holds his pike at the ready against cavalry attacks, steadying it with the right foot, while grasping the hilt of his sword in preparation for close combat. It is in fact a difficult position to take up, and this explains why the drill was so necessary and also why the pikeman had such a long baldric.

The two Netherlands lancers (407 and 410) are taken from the Velasquez painting of the surrender of Breda, the Dutch fortress, to the Spaniards in 1625. They are each wearing a variation of the same fashion, the full buff leather coat with and without sleeves. The pikeman on the left (407) is an infantryman; he has no armour and his weapon is a short pike, a half-pike, used for fighting in trenches or for attacking strongholds. The figure on the right (410) is a cavalryman, and because of the length of his weapon we must assume it to be a lance. He is also armed with a pistol, and the red sash to hold it gives his clothing a new image.

The marksmen of the infantry were armed with heavy matchlocks or muskets that weighed about 10 kilos, and the musketeer usually had to support the gun on a forked stand. He had to clean the barrel of fouling and sparks after every shot and blow the vent and pan clear of unburnt powder. Then the charge of powder, the wad and the ball had to be inserted down the barrel and rammed into place with the ramrod, which was kept in a long casing under the barrel, to which it had to be returned before fresh powder could be poured into the pan. The slow-match was blown until glowing and was then made fast to the cock.



**Cuirassier's Helmet (Burgonet), *c.* 1625.** *The bevor and barred visor of this burgonet can be raised separately, but both are fastened by a hook on the right cheek piece. When removing or donning the helmet it is opened or closed by means of another hook on the neck-guard, so that visor, bevor and front neck-guard can be raised all together. The individual parts are so well adjusted that they slide easily over the crown along the comb. Other types had a system of spring-catches or press-studs. A socket for the plume can be seen at the back of the neck.*

Only then could the musket be laid on the stand and the gun fired. All sorts of things could go wrong while this was happening, so it is no wonder that de Gheyn gives 34 drill movements for these manoeuvres. The German musketeer (408) looks more like a highwayman than the others. He is taken from a painting by Peter Snayers which shows a forest skirmish, while the Netherlands musketeer (411) is copied directly from de Gheyn's manual of infantry warfare. The helmets that we know from the middle of the 16th century and which can also be found in de Gheyn (346, 355, 360, 411) are still in use a century later, and this helmet from about 1650 (405) must therefore have been both practical and effective for the infantry.

The mounted carabineer (409) could obviously not carry such a heavy and complicated weapon as the matchlock. The wheel-lock used for pistols, carbines and all lighter weapons was ignited by sparks from a steel wheel rubbing against a piece of iron pyrites. The construction of the weapon permitted everything to be prepared in advance: the gun was at full cock and the priming powder ready in the pan, enabling the cavalryman or musketeer to





fire at short notice when a target suddenly appeared. The wheel-lock was lighter than the musket and was not fired from the shoulder but with the butt against the breast-bone.

**Europe 1625–1660**

**412–419.** The great victories of Gustavus II Adolphus and – after his death in 1632 – of the other Swedish generals in the Thirty Years War were due to the tactics put into effect by Prince Maurice of Orange, but were a further development of these. The greatest importance was attached to the cavalry, who no longer attacked at the trot amid a steady fusillade of pistol fire. Now one salvo of shots was fired, and the troops then attacked at the gallop with drawn swords. This is the reason why Swedish cavalry swords were longer and heavier than those of other armies (cf. 401 and 414). The infantry consisted of equal numbers of pikemen and musketeers in a more open and fluid formation, supported by artillery. The cannon had a fairly short range and were therefore placed well forward, sometimes even in front of the main body or the wings, but they were so heavy that they could not be moved during battle. Gustavus Adolphus introduced light field guns on a regimental basis which could be pulled by two horses or three men, and they took up a position in the front rank between infantry units, from whence they could be moved forward as the attack developed. He also experimented with an even lighter type – the leather-covered field-piece – but this turned out to be a failure.

The order to attack was given by trumpet call, just as several other commands were given by trumpet and passed on from unit to unit. This often resulted in cavalry trumpeters being used for other orderly duties. That is why the trumpeter here (412) is so lightly clad without encumbering equipment. Flags frequently bore an admonitory motto. The English cavalry standard from the time of King Charles I (1625–1649) bears a laurel wreath, the symbol of honour and victory, and a skull with the text 'One of theese'. Because of the increased importance of the cavalry the staffs for the standards had again grown longer, returning to the old form of a lance with a flag.

The King (414) has a yellow elk-skin coat, blue sash and blue plume, lace on his collar and at the top of his boots, long formidable sword and pistols in the saddle holsters. It says much for the uniform character of the Swedish army that the King is equipped in the same way as the young trumpeter (412), with certain obvious differences. After landing at Stralsund in 1629 Gustavus Adolphus won a series of victories in North Germany before defeating Tilly, the Emperor's best general, at Breitenfeld in 1631 and then Wallenstein at Lützen in 1632. The King himself fell in this last battle. His buff coat, holed by his death wounds, can be seen at

Livrustkammaren in Stockholm with some of his other personal effects.

The German cuirassier (415) stands holding a long cavalry sword with knuckle-bows, a large cross-guard and cup with leather lining. This type of sword is too heavy to be called a rapier, but has no special name. During the English Civil War, the struggle between the king's Cavaliers and the parliamentary Roundheads, the core of the parliamentary army was formed by the heavy élite cavalry, the Ironsides (416). This was a well-disciplined and well-trained body of cuirassiers who wore lobster-tailed helmets, in which the face was protected against cuts with three bars which allowed full vision, a heavy breast-plate on top of a buff coat, and high boots. They were very ably led by Oliver Cromwell, later 'Lord Protector', and just as their equipment resembled the Swedish cavalry's, so the troops were deployed according to Gustavus Adolphus' tactics.

The troopers did not always follow the rule-book in their equipment. Some still used the lance (417), especially in skirmishes and patrols, but the trooper here has of course both breast-plate and iron lining to his hat, like the German cuirassier (415) and the Swedish guardsman (418). The Swedish household guards were equipped both on active service and on the battlefield with the heavy cuirassier's armour, but when serving in camp and on castle garrison duty these guards were armed with special pole-arms. That is why we find a fully-armoured cavalryman holding a halberd (418).

## Europe 1650–1700

**419–422.** During the fifty years following the Thirty Years War the bias towards uniformity started by the Swedes was continued in the French regiments and under Cromwell. In some countries such as France, Saxony, Denmark–Norway and Brandenburg, where the ruler was an absolute monarch, there were perhaps some political reasons for this regimentation, but the adoption of uniforms had the practical advantage of the rulers' now being able to decide for themselves how their armies were to be armed and equipped.

The cuirassier (419) from 1660, who belonged to the Saxon regiment 'Graf von Promnitz', could, apart from certain details, equally well have been Swedish (414) or English (416). This is how the heavy cavalry continued to look until about 1750–1760, when fire-arms had become so powerful that breast-plates could no longer be made bullet-proof. The brass breast-plates which were common in the 19th century and which are still included in the uniform of some horse-guards are purely for decorative purposes.

The grenadier (420) of 1688 – an English mounted Grenadier Guard – is armed with carbine and bayonet. Although he is a trooper he, like the French musketeers (360 and 409), the Danish–Norwegian cavalryman (356), and the Spanish musketeer (405), had to be prepared to fight on foot. Once he had used up the shot for his carbine, he could if necessary jam the plug bayonet into the barrel and use it as a 'spear'. At the back of his wide bandolier he had a knapsack for his hand-grenades, and his charges of powder were kept in the small pouch at the front of his belt.

The French grenadier (421) of 1697 is also from a regiment of guards, the 'Gardes Françaises'. He is wearing a uniform in the colours of the royal livery, blue, white and red. He is armed with a carbine, a slim rapier and hand-grenades. The hand-grenade was then a hollow iron ball filled with powder which was ignited by a slow-match. The grenadiers were specially-trained men who together with the advance units penetrated the enemy defences with the first wave and cleared embrasures, pockets of resistance and trenches.

The Brandenburger (422) of 1700 – from the 'von Schlabrendorff' regiment – is typical of the infantry for the next 50–60 years: tricorne, pigtail, neck-band, long-skirted coat and matching waistcoat, lots of buttons and braid, knee-breeches and long stockings or gaiters. The colours of these items of clothing could be permutated so that each regiment had its own special uniform. The soldier is armed with flintlock and a hanger with a brass hilt.

# Museums and Galleries

Illustrated books and publications from so many museums and scientific institutions have been drawn on in the preparation of the colour plates that a full list of references would be over-comprehensive and of little practical use.

The museums holding some of the most important world collections are listed below, but of course it is possible to see examples in museums and galleries almost everywhere.

The Danish National Museum, Copenhagen
The Ny Carlsberg Glyptotek, Copenhagen
The Tøjhus Museum, Copenhagen
The Tower of London
The British Museum, London
The Victoria and Albert Museum, London
The Wallace Collection, London
The National Museum of Antiquities of Scotland, Edinburgh
The Metropolitan Museum, New York
The Royal Arsenal, Stockholm
The Baden-Württemberg Landesmuseum, Karlsruhe
The German National Museum, Nürnberg
The Kunstsammlung, Coburg
The Schleswig-Holstein Landesmuseum, Schleswig
The Waffensammlung, Vienna
The Heeresgeschichtliches Museum, Vienna
The Kunsthistorisches Museum, Vienna
The Weltliche Schatzkammer, Vienna
The Landeszeughaus, Graz
The Arsenal, The Kremlin, Moscow
The Hermitage, Leningrad
The San Angelo Castle, Rome
The Museo delle Terme, Rome
The Vatican Collections, Rome
The National Museum (Bargello), Florence
The Uffici Gallery, Florence
San Marciano, Turin
The Historisches Museum, Bern
The Topkapi-Serail Museum, Istanbul

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