

HISTORY OF WARFARE

General Editor

KELLY DEVRIES Loyola College

Founding Editors

THERESA VANN
PAUL CHEVEDDEN

VOLUME 31



HAFTED WEAPONS IN MEDIEVAL AND RENAISSANCE EUROPE

The Evolution of European Staff Weapons between 1200 and 1650

BY JOHN WALDMAN



On the cover. The Kornmarktbrunnen, a potable water fountain in Basel, Switzerland. Moved from its original place near the old marketplace to its present location, and commemorating a local Swiss captain active at the end of the 15th century. It dates from ca. 1525.

Brill Academic Publishers has done its best to establish rights to use of the materials printed herein. Should any other party feel that its rights have been infringed we would be glad to take up contact with them.

This book is printed on acid-free paper.

Library of Congress Cataloging-in-Publication Data

A C.I.P. record for this book is available from the Library of Congress.

ISSN 1385-7827 ISBN 90 04 14409 9

© Copyright 2005 by John Waldman.

All rights reserved. No part of this publication may be reproduced, translated, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission from the publisher.

Authorization to photocopy items for internal or personal use is granted by Koninklijke Brill provided that the appropriate fees are paid directly to The Copyright Clearance Center, 222 Rosewood Drive, Suite 910 Danvers MA 01923, USA.

Fees are subject to change.

PRINTED IN THE NETHERLANDS

CONTENTS

List of Illustrations	vii
Foreword	xxiii
by Walter J. Karcheski, Jr.	
Acknowledgements	XXV
Introduction	1
Chapter One General Background and Forerunners Iron	7 10
Chapter Two Halberds	17
Portage of Arms by the Untitled Swiss	20
Possible Early Halberd Forms	21
Chapter Three Extant Examples of Halberds	33
Halberds Elsewhere in Europe	63
"Oriental" Influences	78
Chapter Four Different Styles in Simultaneous Use	81
Chapter Five Fastenings, Poles, and Finishing Procedures	87
Chapter Six The Use of Halberds	99
Chapter Seven Halberds: Details of Rapid Identification	105
Thirteenth Century	105
Fourteenth Century	105
Fifteenth Century	105
Sixteenth Century	105
Seventeenth Century	106
Chapter Eight Glaives	107
Chapter Nine Bills	115
Chapter Ten Partizans	125
Chapter Eleven The Morgenstern Group	137
Chapter Twelve Ahlspiesse	151
Chapter Thirteen Axes and Axe Derivatives	155

vi CONTENTS

Chapter Fourteen The Guisarme and the Bardiche	165
Chapter Fifteen The Brandistocco, Corseke, and Related Weapons	177
Chapter Sixteen Vouge and Couteau de Brèche	183
Chapter Seventeen The Military Scythe	191
Chapter Eighteen The Jedburgh Staff and Lochaber Axe	195
Chapter Nineteen The Doloir	199
Chapter Twenty Conservation and Restoration of Polearms	203
Chapter Twenty-One The Marketplace	209
Postscript	211
List of Marks	213
Bibliography	215
Index	219

LIST OF ILLUSTRATIONS

- Cover: The "Kornmarktbrunnen", a potable water fountain in Basel, Switzerland; moved from its original place near the old marketplace to its present location, and commemorating a local Swiss captain active at the end of the 15th century. It dates from ca. 1525.
- Fig. 1. Winged spear or "Bohemian ear spoon", ca. 1500. Note that the wings arise from the socket (see chapter 12), as opposed to the wings of partizans, which issue from the bottom of the blades. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.460.
- Fig. 2. Stone age axe; the shaft and thongs are reconstructions. If used under wet conditions these thongs would tend to relax and loosen, allowing stress on the split upper shaft portion. Private collection.
- Fig. 3. The mass of this large axe found near London, and possibly of Viking origin, hinges on the relatively small "eye" over the shaft making this joint unstable in a heavy blow. Lengthening the blade vertically and bringing it closer to the shaft brought with it greater stability. The guisarme, with the added feature of having the lower portion of the blade attached to the shaft, was probably a later example of such a weapon. (See chapter 14.) Courtesy of the Museum of London, inv. no. 887.
- Fig. 4a. A pair of rare surviving ingots of Roman iron from Swiss mines in the Jura. They are locally called "masseln". Courtesy of the Cantonal Museum of Baselland.
- Fig. 4b. Ingots of raw iron, a ground find now in the Museum Ferdinandeum in Graz, 5th to 1st century B.C. Courtesy of the Museum Ferdinandeum.
- Fig. 5. Scavenging the battlefield for armor and weapons with infighting (lower right). From a panel painting of the victory of Louis the Great over the Serbs (? Turks), ca. 1430, by the Master of the Votive Panel of St. Lambert (Hans von Tübingen), Cloister of St. Lambert, now displayed in the Steiermarkisches Landesmuseum Joanneum, Alte Galerie, Graz. Note the sharpened extension of the pole above the upper eye of the halberd in the right foreground and compare with fig. 16. Courtesy of the Cloister and the Alte Galerie, Graz.
- Fig. 6. Page 172 of the "Waffenbuch" of Hans Döring, 1544–55. Note the chronological disparity between the arms and armor of the old man on the left and the soldiers on the right. Note also the leather wrapped shaft of the long spear, as well as the "capped" shaft of the halberd on the right. Private collection.
- Fig. 7. German Landsknechts and their captain, with chronologically homogeneous arms and armor, in the "Kriegsordnung" of 1545 by Hans Döring. Private collection.
- Fig. 8. A German Landsknecht (in the waning years of this profession) carrying a halberd, in the "Kriegsordnung" of 1545 by Hans Döring. Private collection.

- Fig. 9. Chinese dagger axe known as a "ji". Bronze Age, but designated "halberd" in modern times. Private collection.
- Fig. 10. A very early halberd closely related to a guisarme. Excavated in Alsace, near Basel, middle to second half of the 13th century. Note that the upper end of the blade is not yet particularly suited for thrusting, but a beak is already present, and welded to the upper eye. Courtesy of the Historical Museum of Bern, inv. no. 13741.
- Fig. 11. "Betrayal and Arrest of Christ", Psalter, Germany, early to mid-thirteenth century. MS. Lat. 17961, folio 113 verso. Note the "halberd" in the hands of the soldier on the left resembling the ones in Bern and Basel (figs. 10 and 25). Courtesy of the Bibliothèque Nationale, Paris.
- Fig. 12. Detail of a wall painting in the chapel of St. Nicklausen, Canton Obwald, Switzerland, ca. 1375. The halberd's shaft is "capped", that is, the superior eye is integral with the upper back portion of the blade and is closed on top.
- Fig. 13. "Betrayal and Arrest of Christ," Très Belles Heures de Notre Dame, 1380–1413, France. Note that the left halberd, although resembling the one in the St. Lambert panel (fig. 5), is more slender and has no sharpened and protruding wooden shaft at the upper end. These forms coexist with the more "developed" forms such as in fig. 14. Courtesy of the Bibliothèque Nationale, Paris, MS. Nouv. Acq. Lat 3093 folio 181 recto.
- Fig. 14. Reduced modern impression from the right hand wood block (one of the original three) called the Bois Protat, ca. 1370–80. The halberd is capped as in fig. 12 but appears to have a longer shaft. The original woodblock is in the Paper Museum of the city of Basel, Switzerland. Private collection.
- Fig. 15. Early halberd blade resembling that in the foreground of the St. Lambert Panel in Graz (fig. 5) and mounted on a new shaft. Note that the St. Lambert halberd's shaft extends above the upper eye and is sharpened to a point, that is, into a wooden spike. Private collection.
- Fig. 16. Swiss warrior carrying a halberd with a (presumably) sharpened extension of the shaft above the blade and resembling that of figs. 5 and 15. Mid 16th century Swiss chronicle of Johan Stumpf. It is probable that the woodcut itself is from a slightly earlier period, that is, early 16th century, but the halberd itself is of 15th century manufacture. Courtesy of Karl Mohler, Basel.
- Figs. 17a and b. Two representations from the Passion in Codex 339 "Mystisches Traktat zum Leiden Christi", Luzern, 1396, in the library of the Benedictine Cloister in Engelberg, Switzerland. The halberd in the doorway of the building in 17b is a pure "Sempach" form; the one in the right of 17a is described in the text as the "capped" form with the spike in line with the shaft. Courtesy of the library of the Cloister.
- Fig. 18. Partial view of the Swiss army in the large woodcut "Dorneck 1499". Note the profusion of "Sempach" type halberds with the spike point in front of the shaft axis. Courtesy of the Kupferstichkabinet, Basel.

- Fig. 19. Thrusting with the halberd spike of a weapon contemporary with the woodcut. "Dorneck 1499". Courtesy of the Kupferstichkabinett, Basel.
- Fig. 20. "Dorneck 1499". Thrusting with a halberd. Courtesy of the Kupferstichkabinett, Basel.
- Fig. 21. "Dorneck 1499". Overhead swing with a halberd. Courtesy of the Kupferstichkabinett, Basel.
- Fig. 22. "Dorneck 1499". Sideswing with a halberd and decapitation. Courtesy of the Kupferstichkabinett, Basel.
- Fig. 23. Martin Schongauer, "Christ Taken" from the engraved passion, ca. 1480. Note the non-contemporary halberd shafted by "eyes" and the slightly forward curved spike. Courtesy Vassar College.
- Fig. 24. Early halberds in the Landesmuseum, Zurich. From an illustration in the 1928 article by E.A. Gessler on the development of the halberd. The individual blades are discussed in the text, and numbered left to right.
- Fig. 25. This 13th century halberd in Basel (inv. no. 1873.24, neg. no. 12375) measures 47cm in length and has a greatest width of 6.5 cm. It is almost identical to the first halberd in fig. 24, including the triangular top eye. Courtesy of the Historisches Museum, Basel.
- Fig. 26. Halberd #2 in fig. 24, late 13th century, found near Rorbas, Canton Zurich. It measures 42 cm. in length and has a greatest width of 7 cm. The upper eye is almost completely broken off. Note that the blade back is now straight and useful for thrusting. Courtesy of the Landesmuseum, Zurich, inv. no. 4327.
- Fig. 27. Halberd #3 in fig. 24. It is the first to show a real indent between the blade and the spike. The length is 43 cm., the spike is 15 cm., and its weight is 960 g. It was found amongst the vine roots in Cormondrèche near Neuchâtel. Courtesy of the Landesmuseum, Zurich, inv. no. LM6345.
- Fig. 28. Halberd of about 1300–20, very similar to the one in fig. 27. Note that both edges of the spike are sharpened as well as the rear blade edge between the eyes. Courtesy of the Historisches Museum Bern, inv. no. 3463.
- Fig. 29. Halberd blade with a broken spike probably used at the battle of Morgarten in 1315 and excavated there in the 1860's. Note how compact and massive the weapon is. Courtesy of the Landesmuseum, Zurich, inv. no. 13153.
- Fig. 30. Reconstructed drawing of the halberd in fig. 29, Landesmuseum, Zurich, inv. no. 13153.
- Fig. 31. Halberd blade closely following the Morgarten blade of fig. 29 of ca. 1330,(?). Note the very long lower eye. Ex. collection Charles Boissonnas, found in the river Broye in the 19th century. Photo courtesy of Landesmuseum, Zurich.

- Fig. 32. Halberd blade on a new pole somewhat after the one in fig. 31 (ca. 1350?). It is larger and more slender. The blade is slightly drawn in at the base. Ex collection Charles Boissonnas. Found in the river Thièle in the 19th century. Photo courtesy of the Landesmuseum Zurich.
- Fig. 33. Halberd blade of the middle of the 14th century, found in 1985 in 5 meters (16 ft.) of water in the Greifensee (Switzerland) near the shore. Two small pieces of the staff were trapped in the eyes but were lost during the process of conservation. It measures 37 cm. in length; the spike is 14.2 cm. and its weight 578 g. Courtesy of the Landesmuseum, Zurich, inv. no. KZ 11476.
- Fig. 34. Halberd blade found in the excavation of the castle of Hünenberg, Canton Zug in 1945. Length 39.5 cm., weight 590 g. Second third of the 14th century. Displayed in the Landesmuseum, Zurich, inv. no. Dep. 3453. Courtesy of the Landesmuseum Zurich.
- Fig. 35. Halberd blade on a replacement staff and with a separate beak, the latter showing the weld mark. End of the 14th century. The thick curved dorsal langet appears at about this time (see also fig. 37), the anterior one is sometimes a later addition. What is novel in this weapon is that the spike point is in line with the shaft because of its slight backward lean. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.35.
- Fig. 36. Halberd blade on a new staff with distinct and partially dehiscent weld marks. A posterior rounded langet is present as well as a small beak as part of the upper eye. Note the slight forward curve of the beak edge of the flat spike (vaguely like fig. 23). This is one of the last halberds before the change in hafting from "eyes" to a socket. Courtesy of the Historisches Museum, Bern.
- Fig. 37. Halberd of ca. 1400 with a long narrow blade and an angled convexity leading to the spike which also leans backwards slightly so that the point as in fig. 35 is in line with the shaft. The spike tip is clearly reinforced and the last 3.5 cm. are quadrangular. The blade measures 43.8 cm. in length. Only a short rear langet is present. It has possibly the oldest surviving shaft, and one of the last of a round diameter, which measures 181 cm. in length and has a diameter of 3.8 cm. just below the langet. The shaft between the eyes measures 3.1 cm. in diameter and appears to be made of a soft wood such as pine. It is also among the last halberds before the appearance of sockets, but as shown throughout this book, such types were probably made and used until late in the 15th century and are shown in illustrations of ca. 1500 alongside later forms. Private collection.
- Fig. 38. Schematic diagram illustrating the method of creating the "eyes" on a 14th century halberd. A mandrel would have been inserted during the final bending of the eye and during the hammer welding process. The Morgarten blade in Zurich (fig. 29) was created in this way. Hardened steel might have subsequently been welded on the cutting edges of the blade, the spike point and the beak, if there was one.
- Fig. 39. Two photographs of the lower eye of the early Basel halberd in fig. 25. The retouched one shows that there is a single weld of a strap bent as in fig. 38. The upper (triangular) eye is welded on both sides.

- Fig. 40. Detail of the hammer weld of the left side of the upper eye of the Morgarten halberd in Zurich (fig. 29). The eye is not welded on the right side, indicating that it is a strap bent as in fig. 38.
- Fig. 41. Another view of a strap with a weld on the right side of the blade. It is similar in appearance to the one in fig. 39, but is of a later date.
- Fig. 42. Detail of the weld on the bottom eye of the halberd in fig. 37, which represents a fusion of the two blade halves (see the diagram in fig. 38).
- Fig. 43. A 14th century halberd with a lower eye welded on both sides, showing early dehiscence. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.35.
- Fig. 44. The two blade halves, welded together over the top eye. Halberd in fig. 37, ca. 1400. Private collection.
- Fig. 45. Schematic diagram of the construction of the halberd in fig. 37.
- Fig. 46. Weld seam of lower eye of right side of blade on the halberd in fig. 35, after the brazing repair to close it. The faint scratch marks on the blade and seam area are not old. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.35.
- Fig. 47. Corroded halberd found in 1908 on the shore of the Rhine near Rheinfelden, 1390–1400. The blade is double-leafed (see fig. 44); it has the earliest socket and flange. Courtesy of the Historisches Museum, Basel, inv. no. 1910.93. Negative no. 12373.
- Fig. 48. 15th century halberd (perhaps middle) showing the rather rare flat spike with the axis behind the shaft line. The mandrel used to form the socket was inserted fully to the top of the blade. The finished halberd shows therefore a small hole on the upper blade edge. Courtesy of the Metropolitan Museum of Art, inv. no. 52.208.8.
- Fig. 49. Halberd, probably from the third quarter of the 15th century, showing large proportions and mass. An identical one is present in the Museum Altes Zeughaus, Solothurn. Courtesy of the Metropolitan Museum of Art, inv. no. 42.50.17.
- Fig. 50. A mid-15th century halberd. Note the elongate blade approximately twice as high as wide. Courtesy of the Metropolitan Museum of Art, inv. no. 42.50.18.
- Fig. 51. On the left: detail of the top mandrel opening, in this case between the spike base and the top of the beak, as in fig. 52. Visible in the photo on the right are the top of the wooden shaft and the weld mark between the hardened point of the beak and the beak body. Private collection.
- Fig. 52. Halberd of last quarter of 15th century. Note the pronounced concavity of the upper and lower blade edges and the beginning slant of the cutting edge. This line of development eventually leads to the 16th century triangular forms. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.74.

- Fig. 53. Sketch of what is possibly the earliest halberd with a shaft socket (Historisches Museum, Basel, no. 1910.93). The dotted lines show the edges of the corroded right leaf of the blade as well as the welded joint line at the front edge of the spike.
- Fig. 54. Sketches of four halberd blades, displayed in the Landesmuseum, Zurich, showing from right to left, the transition from the eye-shafting method to the socket form. The blade on the left is roughly a decade later than the Basel halberd in fig. 47. (Drawings not to scale). Courtesy of the Landesmuseum, Zurich.
- Fig. 55. "Sturmhalbarte" from the arsenal of the city of Vienna. The spike of this massive weapon is hollow-ground. Its great weight required skill and strength to manipulate. Courtesy of the Museums of the City of Vienna, inv. no. 126011.
- Fig. 56. Late 15th—early 16th century halberd with a flat sword-like spike showing a strong central rib. This type, commonly depicted by Dürer in his woodcuts and engravings, may therefore be of German rather than Swiss design and manufacture. Courtesy of the Metropolitan Museum of Art, inv. no. 25.135.7.
- Fig. 57. Woodcut by Hans Wechtlin (1480–after 1526): "Christ Before Anna", from the series entitled "The Life of Jesus Christ", 1508. Note the halberd like those in figs. 50, 52, and 56, as well as the "Hängelaschen" (hanging plates) covering the shoulders and attached to the collar of the Maximilian-style helmet. (See page 147.) Private collection.
- Fig. 58. Albrecht Dürer: "The Crucifixion" from the engraved Passion of 1511. Note the halberd with a flat spike on the right which appears to be more popular in Germany than in Switzerland. Private collection.
- Fig. 59a. A halberd in the Altes Zeughaus in Solothurn showing signs of use and wear, and without 17th century marks, distinguished also by a different smithing technique, and consistent with a 15th century date. Halberds like this one may have served as a model for the 17th century types such as in fig. 59b. Courtesy of the Museum Altes Zeughaus, Solothurn.
- Fig. 59b. 17th century halberd by Lamprecht Koller of Würenlos, canton of Aargau, 1663–81, until fairly recently classified mistakenly as 15th century and called a "Sempach" halberd. The shafting nails are sunk in conical holes in the langets and ground flat. Private collection.
- Fig. 60. A halberd of ca. 1500 marked with a cross of St. Andrew on the right side of the blade, probably German or Flemish (Burgundian) and of the type shown in fig. 61. Private collection.
- Fig. 61. Woodcut by Wolf Huber for the Triumphal Arch of Maximilian, 1512–1515. The Swiss and Imperial forces meet during the Swabian war of 1499. Note the halberds and longspears on both sides, as well as the cross of St. Andrew and the Helvetian cross (St. George) marking clothing and flags. The "ready" position of the longspears in the foreground is also interesting. Private collection.

- Fig. 62. Large decorated Italian halberd, probably end of the first quarter of the 16th century and made for the bodyguard of the Emperor Charles V. (Several have survived) Courtesy of Galerie Fischer, Lucerne.
- Fig. 63. Italian halberd of about 1500. Both edges of the spike are sharpened down to the beak-spike. Note the scorpion mark. Private collection.
- Fig. 64. Italian "scorpion" of about 1530. Note that although the weapon is quite functional, there are already many small attempts at decoration. The weld mark of the mid back spike is shown in the detail photo of the scorpion mark. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.360.
- Fig. 65. Italian halberd ca. 1500 with punctuate decorations on both faces. This side shows a dog barking at a rabbit (the *right* world) as opposed to the other side, which shows a fox barking at a dog (the "world upside down"). The flat spike with the prominent rib is similar to the one in fig. 56. Courtesy of the Historiches Museum, Basel, inv. no. 1905.4142.
- Fig. 66. Halberd of ca. 1510–20 with a quadrangular thickening of the beak tip (similar to the spike tip). Courtesy of the Metropolitan Museum of Art, inv. no. 42.50.20.
- Fig 67a. Early 16th century halberd with a convex cutting edge. The mandrel opening is present between the base of the spike and the beak. Private collection.
- Fig 67b. Typical "triangular" bladed halberd of ca. 1520, with a sharply drawn in cutting edge. The spike is massive, as is the beak. Private collection.
- Fig. 68a. Halberd of ca. 1520 with a concave cutting edge and a broken superior tip as well as a weakened lower tip. The blade as usual is constructed of two leaves welded together. The langets measure 76 cm. in length. Private collection.
- Fig. 68b. Halberd of ca. 1520 with an unusual socket and central straight vertical rib above it that is entirely solid. Probably German. Private collection.
- Fig. 69a. Halberd of ca. 1530–40 showing "flame" shaped langets on an original ash shaft. Private collection.
- Fig. 69b. Detail of A. Dürer's "The Great Cannon" iron etching of 1518 M. 96. The halberd held by the Landsknecht leaning against the cannon, though slightly indistinct against the roof of the house, is typical during a relatively long span of time in the 16th century. Private collection.
- Fig. 70. Ash shaft of halberd showing a rough cut, as well as refined mark, "5". The upper figure is possibly the arsenal mark itself. Courtesy of the Metropolitan Museum of Art, inv. no. 42.50.20.
- Fig. 71. Saber-halberd, probably 19th century. The spike blade is too flexible for effective cutting and is not very useful for thrusting. The mass of the halberd head is not at the

end of the weapon, thus also reducing its impact. Although these weapons are well made, they are in all probability products of 19th century romanticism. Courtesy of the Metropolitan Museum of Art, inv. no. 25.188.2.

- Fig. 72a. Thrusting Styrian halberd of about 1575 by Peter Schreckeisen of Waldneukirchen; the beak is still functional appearing, the blade less so. Courtesy of the Landeszeughaus, Landesmuseum Joanneum, Graz.
- Fig. 72b. Etching by Jacques Callot of the Crucifixion scene, ca. 1640. Note the halberd as well as a morgenstern, roncone, and true pikes. Callot worked extensively in Italy, and at this time, Italian halberds resembled those from elsewhere. Private collection.
- Fig. 73. Detail of the bottom illustration of folio 28 recto by Dürer in the Emperor Maximilian I's "Book of Hours". This scene shows a remarkable mixture of staff weapons of differing epochs (see text). Courtesy of the Bayerische Staatsbibliothek, Munich, L impr. membr. 64.
- Fig. 74. Detail of the bottom illustration of folio 55 verso by Albrecht Dürer in the "Book of Hours" of the Emperor Maximilian I. The contrast of the armamentation of the combattants is striking. It speaks volumes on the reversal of roles and warfare in general. Courtesy of the Bayerische Staatsbibliothek, Munich, L impr. membr. 64.
- Fig. 75. Right hand page of "The Battle of Grandson 1476" from the Diebold Schilling Lucerne Chronicle of 1513, folio 100. As stated in the text, armamentation is with 15th and 16th century equipment though some of the halberds shown are even earlier. Courtesy of the Korporations Verwaltung der Stadt Luzern.
- Fig. 76. A rear langet of an early 16th century halberd, both in place and by itself. Note the small claw-like upper portion which anchors itself in the throat of the socket between the flange leaves (and the *blade* leaves in case of the front one). It also wedges itself between the cheeks of the socket, thus forming a rigid box and stabilizing the whole structure. Private collection.
- Fig. 77. A rapid and inexpensive method of stabilizing the union between the halberd head and the shaft. The lower part of the socket, consisting mostly of a broad langet, is hammered around the square shaft. Courtesy of the Metropolitan Museum of Art.
- Fig. 78a. Opposing nails driven straight through and in two instances emerging through the opposite hole and bent over, under the opposing nail head. Early 16th century halberd. Private collection.
- Fig. 78b. Nails driven against the opposing inner face of the langet and bent over for up to 1 cm. This radiograph is of a Lucern hammer. Private collection.
- Fig. 79a. A mid to late 16th century halberd fastened with hammer-driven screws. Private collection.

- Fig. 79b. A radiograph of the halberd in fig. 37. Note the long dorsal nail through the langet which has been driven into an ironed plate or an anvil applied to the front of the shaft so that the nail curves back on itself to lock into place. Private collection.
- Fig. 80a. A Lamprecht Koller halberd of the 17th century with peened over nail tips ground flush with the langet surface. Private collection.
- Fig. 80b. In this halberd the boltheads and the peened over points are not ground down. Private collection.
- Fig. 81. Halberd of ca. 1500, octagonal ash shaft with a shaft makers' (?) mark burned in at the base of the shaft. Private collection.
- Fig. 82. Halberd of ca. 1510 with two sets of opposing (three) marks burned into the top of the shaft sides. They appear to be a letter "M" with a bar across the top. Private collection.
- Fig. 83. A shaft maker of the Eschental turning an ash shaft in a metal cutting die. Slots are present either for various diameters or possibly to shape the sections of split ash sapplings gradually from square to round. From the "Swiss Chronicles" of Johan Stumpf, 1586, Book 9, p. 554. Courtesy of Karl Mohler, Basel.
- Fig. 84. Detail of an early 16th century halberd showing th original grinding (polishing) marks as well as the smith's mark, an 8-pointed star. Private collection.
- Fig. 85. Huge head wound on a fallen German (Imperial) soldier most likely caused by a halberd. From the woodcut "Dorneck 1499". Courtesy of the Kupferstichkabinett, Basel.
- Fig. 86. Another detail of the woodcut "Dorneck 1499" (during the battle) showing how quickly bodies were stripped, but with possible exaggeration of the number of injuries suffered (13). Courtesy of the Kupferstichkabinett, Basel.
- Fig. 87. Three skulls from the battle of Dorneck in 1499 recently studied and restored (stabilized). These fatal wounds were probably inflicted by halberds. Courtesy of the Museum Altes Zeughaus, Solothurn.
- Fig. 88. From folio 10 recto of the Maciejowski Bible. The soldier at the left border carries a relatively short-shafted "glaive". Courtesy of the Pierpont Morgan Library, M 638.
- Fig. 89. From folio 10 verso of the Maciejowski Bible. The mounted figure in the center foreground (Joshua) is using a short-shafted "glaive". Courtesy of the Pierpont Morgan Library, M 638.
- Fig. 90a. Sketches of two long-shafted glaives from an illustrated prayer book prayer book of ca. 1380. They are carried by footsoldiers in scenes from the Passion, along with a profusion of other staff weapons. Parma MS Pal. 56.

- Fig. 90b. An early Italian glaive, mid to late 15th century, the forerunner of the glaive pictured in fig. 92. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.259, gift of Wm. H. Riggs, 1913.
- Fig. 91. Two knights fighting at close quarters with a vouge Française and a glaive. Note the roundels at the blade bases for protecting the hands. From the Caesar Tapestry, ca. 1470, taken as booty from the Burgundian camp in 1476. Courtesy of the Historisches Museum, Bern, inv. no. 8.
- Fig. 92. The most widespread form of glaive—an Italian weapon of ca. 1500–20. Its overall length is 270 cm. (8 ft. 10 in.). It is possibly a guard weapon, but could clearly be used for thrusting and cutting in the field. Private collection.
- Fig. 93. Venetian glaive, end of 16th century. Although the weapon is somewhat similar to the one in fig. 92; it is longer, more elaborate and has non-functional additions which distinguish it from weapons of war. Its great length also makes it impractical to manipulate in a crowded field of battle. Courtesy of the Metropolitan Museum of Art, inv. no. 04.3.103.
- Fig. 94. This purely ceremonial glaive was meant mostly to *impress* and is also Venetian.It was a type used by palace guards of such important figures as the Doge, has lost its thrusting function and can merely cut. Courtesy of the Metropolitan Museum of Art, inv. no. 04.3.102.
- Fig. 95a. Roman securis or roncola, with a tang instead of the usual socket which was open on one side (see fig. 95b). Other forms had a small upward-facing rear hook. The shortest of these were purely tools and worn tucked into the belt. Private collection.
- Fig. 95b. A Roman *Securis* recently excavated near Jerusalem, from between the end of first to the fourth century A.D. The inside of the socket contains fragmentary remnants of the short wooden shaft and its securing nail. This grip was probably no longer than ca. 12 cm. (4.5") Private collection.
- Fig. 96. The Italian type of *Roncola arma* pictured here is also found in Merovingian graves in the North. The actual weapon shown here is probably much younger, by virtue of the marks. The original forms were made, more or less unchanged, until the 15th century. Private collection.
- Fig. 97. The *Ronca*, a much more refined weapon that the preceding *Roncola arma*, is fully capable of both cut and thrust action and is widespread throughout Europe. It still shows the presence of an open-throated socket for its shaft. Private collection.
- Fig. 98. A Welsh bill which is described as a weapon, but appears to be too delicate and frail to be successful as such. Its function is more likely to have been a symbol of authority in the hands of a constable or watchman. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.155.

Fig. 99a. A fully developed *Roncone* of early 16th century Italy, similar to the contemporary *Rossschinder* of the Germans. This Italian specimen has typical "eyelash" marks along the lower rear blade. Private collection.

Fig. 99b. Closeup of another roncone's "eyelash" marks. Private collection.

Fig. 100. An English bill of ca. 1500. Note the typically open socket which is a folded triangle, the weld marks of the beak joints, as well as the "grain" of the blade steel at the bifurcation of the spike and the bill hook. This last indicates that the smith split the blade down to the bifurcation to separate the hook and the spike. Courtesy of the Board of Trustees of the Royal Armouries, inv. no. VII-1493.

Fig. 101. Late 15th century spear with a heavy and elaborately worked head, resembling a partizan. Courtesy of the Museums of the City of Vienna, inv. no. 686, from the old city arsenal.

Fig. 102. 15th century Italian partizan stamped with a Gothic "4" and without langets. The base of the blade is drawn in towards the socket at approximately 90°. The blade is 55 cm. long and 10 cm. wide. Private collection.

Fig. 103. Early 16th century partizan with small side wings at the base of the blade and a strong central rib. The blade, without socket, is 78 cm. long; the width without the wings is 11 cm. Private collection.

Fig. 104. Partizan or *lingua di bue*, ca. 1500, probably Venetian. Two round brass inlays with seven perforations are present on the blade. The socket is hexagonal, and the tassels are probably a later addition. Courtesy of the Metropolitan Museum of Art, inv. no. 1425.119.

Fig. 105. *Spiedi da guerra*, probably Bolognese, end of 15th century. Courtesy of the Metropolitan Museum of Art, inv. no. 04.3.76.

Fig. 106. The emperor Maximilian I, asleep in his chamber, about to be attacked by soldiers bearing various staff weapons. In this largely fictionalized book, his life guards who were said to carry Austrian partizans, are not present. From the 5th edition of "Theuerdank", M. Schultes, 1679. Private collection.

Fig. 107. Austrian partizan, end of the 15th century, said to have been carried by the bodyguard of Maximilian I. Note the solid construction and the ogival arch-like upper end of the blade point, which it has in common with the Venetian types. This example has a simple socket in the manner of an early ronca, but others in this group have carefully constructed hexagonal sockets. None have langets. The shafts, which are not original, have a hexagonal shape. Courtesy of the Hofjagt- und Rüstkammer of the Historisches Museum, Vienna, inv. no. A117.

Fig. 108. Partizan of the second half of the 16th century, whose socket shows a "nodus" between it and the base of the blade. Private collection.

- Fig. 109. Partizan or "Langue de bœuf", 17th century, appearing to have been altered by drawing in the top of the blade (the slight asymmetry would suggest a post-manufacture alteration). The weapon has a width-to-length ratio of 1 to 5.5. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.90.
- Fig. 110. Sponton or "spontoon" from Brunswick, Germany, 17–18th century. The weapon is still clearly a short partizan with basal wings and added lower portions. Although its primary function is rank associated, it could still be used as a weapon. Private collection.
- Fig. 111. Sponton-halberd. This late weapon, a combination of a short partizan (sponton) and a small halberd, is highly decorated. Although it was either a parade weapon or associated with military rank, it could still have been used as a weapon. Courtesy of the Museums of the City of Vienna.
- Fig. 112a. Detail of the front carving on the Courtrai Chest showing the Flemish burgers carrying their staff weapons, *Godentacs* or *Plançons à Picot*, with which they defeated the French chivalry. Courtesy of the Warden and Scholars of New College, Oxford and Bridgeman Art Library International.
- Fig. 112b. *Morgenstern* from the arsenal of the City of Vienna, probably mid-16th century, now in the depot. Courtesy of the Museums of the City of Vienna, inv. no. 126.207.
- Fig. 113. This all-steel headed *Morgenstern* is from the arsenal of the City of Vienna. The craftsmanship is striking and the weapon is well balanced. Courtesy of the Museums of the City of Vienna.
- Fig. 114. Detail of the *Morgenstem* in fig. 113 showing the intricate smithwork used to produce a relatively light but stable and strong steel head.
- Fig. 115. An all-steel headed morgenstern in the hands of a fleeing soldier in Ariovistus's army (Julius Caesar is the mounted knight in the upper left corner, spearing an opponent). Detail from the Caesar Tapestries of Charles the Bold. Courtesy of the Historisches Museum Bern, inv. no. 8.
- Fig. 116. Holy-water sprinkler, probably English, early 16th century. This type of weapon was very popular in England and was certainly made by expert smiths, probably in large series. Courtesy of the Board of Trustees of the Royal Armouries, inv. no. VII-1642.
- Fig. 117. *Morgenstern*, 15th–16th century, probably Swiss. The shaft is pine. A weapon such as this could have been made by a blacksmith. Private collection.
- Fig. 118. A carefully constructed "kettenmorgenstern" probably 15th–16th century, German or Swiss. The pole, of ash, is worn between the top retaining band and the lower part of the langets, which is the area that can be touched by the spikes. Private collection.
- Fig. 119. A Kettenmorgenstern and a regular morgenstern, from a line drawing of a 15th century polyptych fragment, possibly Czech. Note the similarity of the kettenmorgenstern to the one in fig. 118.

- Fig. 120. The knight "Debile" in mortal combat with Philippe of Burgundy. Detail from an anonymous woodcut of about 1485 in the poem "Le Chevalier Délibéré" by Olivier de la Marche (Chiswick Press, 1898, London). Note that the knight has, slung over his left shoulder, two *Morgensterns*, one almost identical to the one in fig. 118 and the other like in fig. 119. Note also that he is about to strike with a dart. Private collection.
- Fig. 121. Detail of a woodcut out of the "Nuremberg Chronicle" of Hartman Schedel, 1493, German edition, showing the Pharaoh's army being covered by the Red Sea. Note, among the many and interesting staff weapons, the military flail. Private collection.
- Figs. 122a and b. Two *ahlspiesse*, probably Austrian, second half of the 15th century. Three marks are stamped into one flat at the base of the spike, which is the usual place for marks. The spike is usually longer than one meter and is stiff (rigid). The rounded contour langets are rough and unpolished. The presence of the roundel guard and its seating grooves distinguish the ahlspiess from the breach pike or "breschspiess" (see text). Fig. 122a. Courtesy the Metropolitan Museum of Art, inv. no. 14.25.396. Fig. 122b. Courtesy of the Hofjagd- und Rüstkammer, of the Historisches Museum, Vienna, inv. no. A85.
- Fig. 123. Detail of the roundel guard of an *Ahlspiess* set into the special grooves at the base of the spike. Courtesy of the Museums of the City of Vienna.
- Fig. 124. Top view of the roundel guard of an *Ahlspiess*. Courtesy of the Museums of the City of Vienna, one of a large unnumbered lot.
- Fig. 125. 15th century pollaxe with inlaid brass punched and chiseled decorations. The rear facing hammer head has a central steel quadrangular beak. The head is fastened to the staff by laterally screwed in side lugs. Courtesy of the Metropolitan Museum of Art, inv. no. 14.25.288.
- Fig. 126. Gilt and etched early 16th century pollaxe. The axe-hammer head is fastened underneath the carefully constructed langets with pyramidal side lugs. Courtesy of the Metropolitan Museum of Art, inv. no. 25.135.21.
- Fig. 127. Anonymous German woodcut of ca. 1460–70 showing a long shafted "mordaxt". A roundel guard is present a short distance below the blade. Private collection.
- Fig. 128. Detail of the Caesar Tapestry in the Historical Museum of Bern adjacent to the *morgenstern* in fig. 114. The knight swings a "mordaxt" bearing a roundel guard which does not appear to be steel (leather?). Courtesy of the Historisches Museum, Bern, inv. no. 8.
- Fig. 129. Detail of the woodcut "Dorneck 1499" showing a veteran Swiss soldier swinging a short version of a "fussstreitaxt". It cannot properly be called a "fussstreitaxt" even though it has a hammer in back of the blade, because of its length, which appears to be only a meter (39 in.) or so. Courtesy of the Kupferstichkabinett, Basel.
- Fig. 130. Late 16th century "fussstreitaxt" by the Swiss weaponsmith Lerchli. The weapon is part of a series delivered to the Zurich arsenal between 1585 and 1591. Note that the

- only difference between this axe and the one in fig. 127 is its length (ca. 1.5 m.) and the presence of langets. Courtesy of Landesmuseum, Zurich, inv. no. K2–1263.
- Fig. 131. A differently shaped "fussstreitaxt" also of the same time period as the previous one and in the Zurich arsenal. Courtesy of Landesmuseum, Zurich, inv. no. K2-601.
- Fig. 132. Bec-de-corbin or Lucerne hammer with a massive beak measuring 13 cm. in length. End of the 15th century or 1500. The shaft is oak and is an ovalized octagon. Private collection.
- Fig. 133. Italian "Martello d'arme" or "Fussstreitaxt" ca. 1500. Note the three-pronged hammer with the single prong on top. The solid langets fit over the central hammer and beak portion, which is slotted to receive them. Courtesy of Metropolitan Museum of Art, inv. no. 14.25.465.
- Fig. 134. The classic Lucerne hammer which persists without much change from the early 16th century into the 17th century. Note the "L" on its side on the base of the spike. Private collection.
- Fig. 135. A very large Russian guisarme of 1530, whose blade alone is more than a meter in length. It is fastened to the shaft by an elaborate system of nails which are themselves decorated. Courtesy of the Tøjhusmuseets, Copenhagen, inv. no. C50 (45).
- Fig. 136. A near Eastern or Russian guisarme with a thrusting point and geometric partially gilt decoration. Courtesy of Metropolitan Museum of Art, inv. no. 04.3.100.
- Fig. 137. A somewhat smaller but still massive guisarme on what is likely the original staff and showing a complex pattern of geometrically arranged marks (see text). The upper point of the blade is broken off. Courtesy of the Kung. Livrustkammeren, Stockholm, inv. no. 691020.
- Fig. 138. A guisarme, Swedish or Russian, 15th century or earlier. Weapons similar to this one are seen in illuminations as old as the 13th century. Courtesy of the Kung. Livrustkammeren, Stockholm, inv. no. LRK GN 2403.
- Fig. 139. Excavated guisarme blade with a variant of a rear-facing hammer and langets. The inferior blade point is broken off but appears to have reconnected with the shaft in the standard manner of a guisarme. Courtesy of the Danish National Museum, Copenhagen.
- Fig. 140. Variant of a guisarme-like weapon with a long flattened top spike. Courtesy of the Kung. Livrustkammeren, Stockholm, inv. no. LRK GN 06:12.
- Fig. 141. A Russian bardiche, possibly on the original staff and fastened to it by means of the front blade extension and leather thongs. Rear perforations, almost a hallmark of this weapon, are present. Courtesy of Metropolitan Museum of Art, inv. no. 14.25.463.
- Fig. 142a. A 15th century cut and thrust weapon without a name and appearing to be unique, it may or may not be related to the roncone, or an equally nameless weapon in