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Knightly Arms — Plebeian Arms

The science dealing with the arms of the past — *Waffenkunde*, hopology — developed during the second half of the nineteenth century and was continued in assorted environments in the course of the following century. This was by no means an academic science, and did not form part of university curricula. Its institutional basis was composed primarily of museums displaying arms, specialised scientific societies or associations of lovers of old arms, whose members included collectors and amateurs. This state of things is retained up to this day. Ultimately, there came into being two schools of historical studies concerning arms: German-language, concentrating German and Austrian experts, chiefly in Berlin, Dresden, Munich and Vienna, and English-language, i. e. British and American, especially in London and New York. Less significant centres are located in France (the Parisian Musée de l'Armée), Sweden, Denmark, the Netherlands, Italy, Spain, and Central and Eastern Europe: Poland, the Czech Republic, Hungary and Russia.

Systematic research was initiated by work on “great inventories” of preserved collections of arms from past epochs: antiquity, the Middle Ages and the modern era, shifting the term “old arms” in time. In the first place, the investigations dealt with typology and terminology, leading to the appearance of lexicons, a field in which pride of place went, once again, to the Germans and the English¹. Bashford Dean, an outstanding American expert on arms, and a naturalist by training, was convinced that types of arms evolve, similarly to plants or animals, and could be arranged in genetical sequences; consequently, he constructed typological tables². This system corresponded to museum interpretations: arms were put in order, described and shown usually according to uniform types and chronological criteria. A readily applied method was to distinguish between defensive and offensive arms, firearms and cold steel, and ceremonial and hunting varieties. In the distinction of arms a fundamental role was played by actual items, sometimes obtained *via* archaeological excavations, but also by their depictions in the plastic arts or descriptions found in literature. Attention was paid to the production of arms and their practical function; less concern was devoted to their social determinants and ideological role in culture. In the latter range, the greatest

¹ With certain exceptions, old encyclopaedic publications continue to be valuable: A. Demmin, *Die Kriegswaffen in ihren geschichtlichen Entwicklungen von den ältesten Zeiten bis auf Gegenwart, eine Encyclopädie der Waffenkunde*, Leipzig 1869; 4th ed. 1893, 2 supplementary volumes: Wiesbaden 1893, 1896; W. Boheim, *Handbuch der Waffenkunde*, Leipzig 1890, and G. C. Stone, *A Glossary of the Construction, Decoration and Use of Arms and Armor in All Countries and at All Times*, Portland (Maine), phototype re-edition New York 1961.

² B. Dean, *Handbook of Arms and Armor, European and Oriental*, New York 1930; cf. also M. Davenport, *The Book of Costume*, New York 1956, pp. 153–158.

number of theoretical studies and museum displays pertained to ceremonial and tournament arms³. Many years ago, the author of this text studied the significance of armour as a symbolic form, an approach which met with interest both at home and abroad⁴. The intention of this particular article is wider-ranging, namely, to find an answer to a question concerning the essential role of knightly arms in the military sense and in comparison with arms used during the Middle Ages by non-knightly battle formations. Those issues have been examined upon numerous occasions, but the problem consists in the fact that the historians and the sociologists dealing with them were not experts on arms⁵, while the latter, submerged in typology, are usually distant from purely ideological nuances⁶. Indubitably, in the course of the Middle Ages, knights lost their battle merits and were defeated frequently by soldiers who had at their disposal plebeian arms that functioned much better on the battlefield.

After the Second World War, Polish mediaeval studies concerned with arms were pursued successfully in Łódź, chiefly thanks to the archaeologist Andrzej Nadolski. In 1967, he founded a department of old arms in the Polish Academy of Sciences, and assembled a group of young scholars. In accordance with the method accepted in archaeology, their attention focused primarily on an analysis of objects obtained in the course of intense excavations, i. a. on the battle field of Grunwald (1410), and examined remnants of knightly castle-towns and castles. The outcome of this research expanded considerably our knowledge as regards the typology of various types of arms, especially the sword and crushing arms⁷, reconstructed the appearance of members of the Teutonic Order and Polish knights⁸, and produced a valuable monographic publication about arms in mediaeval Poland⁹.

³ *Das ritterliche Turnier im Mittelalter*, Göttingen 1985; S. K. Kuczyński, *Turnieje rycerskie w średniowiecznej Polsce* (Knightly tournaments in mediaeval Poland) (in:) *Biedni i bogaci: studia z dziejów społeczeństwa i kultury ofiarowane Bronisławowi Geremekowi w 60. rocznicę urodzin* (The Poor and the Rich: Studies from the History of Society and Culture Offered to Bronisław Geremek on His Sixtieth Birthday), Warszawa 1992, pp. 295–305.

⁴ Z. Żygulski Jr., *Średniowieczna zbroja szydercza* (Mediaeval derisive armour) (in:) *Sztuka i ideologia XV w.* (Art and Ideology in the Fifteenth Century), ed. P. Skubiszewski, Warszawa 1978, pp. 587–608, and idem, *Armour as a Symbolic Form*, "Waffen — und Kostümkunde", München-Berlin 1984, fasc. 2, pp. 77–96.

⁵ M. Ossowska, *Ethos rycerski i jego odmiany* (Chivalric Ethos and its Varieties), Warszawa 1973.

⁶ An exceptional study combining both aspects is: D. Piwowarczyk, *Obyczaj rycerski w Polsce późnośredniowiecznej (XIV–XV wiek)* (Knightly Customs in Late Mediaeval Poland /Fourteenth–Fifteenth Century/), Warszawa 1998.

⁷ M. Glosek and A. Nadolski, *Miecze średniowieczne z ziem polskich* (Mediaeval Swords from Polish Lands), Łódź 1970; M. Glosek, *Znaki i napisy na mieczach średniowiecznych w Polsce* (Marks and Inscriptions on Mediaeval Swords in Poland), Wrocław-Warszawa-Kraków-Gdańsk 1973; idem, *Miecze środkowoeuropejskie z X–XV w.* (Central European Swords from the Tenth–Fifteenth Century), Warszawa 1984, and idem, *Późnośredniowieczna broń obuchowa w zbiorach polskich* (Late Mediaeval Crushing Arms in Polish Collections), Warszawa-Łódź 1996.

⁸ A. Nowakowski, *Uzbrojenie wojsk krzyżackich w Prusach w XIV i w pocz. XV w.* (Arms of Teutonic armies in Prussia during the fourteenth century and at the beginning of the fifteenth century), "Acta Archaeologica Lodziensia", no. 29, Łódź 1980; A. Nadolski, *Grunwald 1410*, Warszawa 1993 and idem, *Broń i strój rycerstwa polskiego w średniowieczu* (The Arms and Costume of Polish Knights during the Middle Ages), Warszawa 1979
⁹ *Uzbrojenie w Polsce średniowiecznej 1350–1450* (Arms in Mediaeval Poland, 1350–1450), ed. A. Nadolski, Łódź 1990 and *Uzbrojenie w Polsce średniowiecznej 1450–1500* (Arms in Mediaeval Poland, 1450–1500), ed. A. Nowakowski, Toruń 1998.

Knights were the outcome of the mediaeval culture of the West, emerging in a lengthy, several centuries-long historical process, and were subject to incessant transformations. They were by no means an exclusively European phenomenon — their counterparts can be encountered in other distant cultural formations in the Near East, India, China, Japan and Mexico. Everywhere, we come across similar physical and spiritual features: strength, adroitness, resilience, valour, honour, loyalty, righteousness, and the retention of tradition.

In the domain of arms, the West European knight was the heir of two great ancient cultures — the Graeco-Roman world and that of the Near East, whose essential impact grew more intense during the Crusades. We must take into consideration also the military achievements of various peoples, especially German, from the era of the great migrations. Nevertheless, almost all types of arms in mediaeval Europe had their counterparts in antiquity¹⁰. The knights chose the helmet and armour, originally mail and plate, and then plate armour, and as their basic offensive arms — the sword and the spear, subsequently changed into a lance. In reality, the ancient Greeks and Romans preferred foot formations — the hoplites and legionnaires, armed with shields, spears and swords; auxiliary formations were composed of lightly armed men, equipped with slings, bows and spears. Another auxiliary formation was the cavalry which, in the case of the Romans, was, as a rule, borrowed from the allies. The best cavalry came always from the Orient, for example the Medes, the Persians, the Parthians and the Sassanids. While reforming the Greek-Macedonian army, Alexander the Great created strong cavalry detachments, which made a considerable contribution to his brilliant victories. The classical heavily armed *kataphrakti* and *clibanarii* were undoubtedly the predecessors of the European knights¹¹. The ultimate shaping of the latter was influenced by a single, at first glance slight element: the stirrup, invented in China, borrowed from the Oriental nomads, without which the battle tactic, and even horseback riding, would have been probably impossible.

Knightly armour developed in the course of several hundred years; its prime task was to create a hero, resilient to all blows, and totally enclosed in steel shielding. The result was a statuary creation, a hollow sculpture, and all efforts were concentrated on guaranteeing the carrier of the armour the opportunity of seeing, breathing, hearing, and, predominantly, of moving and fighting. This feat produced difficulties, today barely imaginable. Finally, it became apparent that it was simply impossible to make armour totally blow-resistant. This can be seen already in the depiction of the Battle of Hastings (1066), shown in the Bayeux Tapestry¹², as well as in the magnificent miniatures (first half of the thirteenth century) in the Maciejowski Bible (fig. 1)¹³. Helmets were split by

¹⁰ Z. Żygulski Jr., *Broń starożytna. Grecja. Rzym. Galia. Germania* (Ancient Arms, Greece. Rome. Gaul. Germany), Warszawa 1998.

¹¹ O. Gamber, *Kataphrakten, Clibanarier, Normannenreiter*, "Jahrbuch der Kunsthistorischen Sammlungen in Wien" 64(1968), pp. 7–44.

¹² J. G. Mann, *La Tapisserie de Bayeux*, Paris 1957; *The Battle of Hastings. Sources and Interpretations*, publ. S. Morillo, Woodbridge 1995; S. Bertrand and S. Lemagnen, *The Bayeux Tapestry*, Rennes 1996.

¹³ S. C. Cockerell, M. R. James and C. J. Foulkes, *A Book of Old Testament Illustrations of the Middle of the Thirteenth Century sent by Cardinal Bernard Maciejowski to Shah Abbas the Great, King of Persia, now in the Pierpont Morgan Library at New York*, Cambridge 1927.

the blows of swords and battle axes, and armour was pierced by lances with increasingly powerful shafts. The military weakness of the European knights became obvious during the first Crusades. Despite the capture of Jerusalem, the knights suffered defeat in a confrontation with the Oriental light cavalry, armed with bows and lances. The Crusaders were compelled to seize or defend fortified towns and castles, a task for which they were unprepared, and in which their horses, frantic charges and bold duels proved to be totally useless¹⁴. *Outremer*, the knights encountered climatic and geographic conditions different from those in Europe — deserts, scorching sunshine and a lack of water, together with unfamiliar war tactics, the elusive nature of the cavalry, sophisticated battle devices, inherited from antiquity and improved by the Moslems, as well as fire missiles and Greek fire. Individual courage, strength and physical prowess lost their importance, and the significance of armour, the sword and the lance — diminished.

A consecutive discredit of the knights, this time French, took place during the Hundred Years' War, in a confrontation with plebeian English archers¹⁵. This situation recurred in two extremities of the knightly culture of the West — in 1385, at Aljubarrota, when, while defending the independence of Portugal, the Grand Master of the Avis Order won a victory over the Castilian army with the assistance of archers brought over from England. Somewhat later, in 1410, knights of the Teutonic Order were defeated in a battle waged against an allied Polish–Lithuanian army, which applied the static knightly tactic and the Oriental mobile manoeuvre, indubitably with the participation of foot detachments¹⁶.

In time, knightly arms, having failed in wartime conditions, succumbed to a *sui generis* transformation, and increasingly distinctly assumed ideological importance by becoming the apparel and outfitting of Christian holy knights, especially St. George and even the Archangel Michael. The Archangel portrayed in the Last Judgment triptych, the Gdańsk altar painting executed by Hans Memling, wears luminous armour of the sort produced at the end of the fifteenth century by the most outstanding armourers of Milan. St. Michael is a foot knight, but he battles against Satan by brandishing the cross, which in this case fulfils the function of a lance. The latter remains an almost sacral weapon in the hands of St. George in innumerable scenes of defeating the dragon–Satan. This fact is associated closely with the holy lance, the *lancea sacra*, which is part of the imperial insignia, the lance–reliquary (fig. 2), concealing a nail from the Holy Cross, whose rather faithful copy, fortunately preserved in the treasury of the Cracow cathedral, was presented to the Polish Duke Bolesław by Emperor Otto III, on a pilgrimage to the tomb of St. Wojciech (Adalbert) in Gniezno. The lance, conceived as the weapon which pierced the side of Jesus, dying on the Cross, was subjected to unquestioned sacralisation.

¹⁴ A. A. Settia, *L'Europeo aggressore: tecniche militari in Occidente alla vigilia della prima crociata*, "Studii Storici. Rivista trimestrale dell'Istituto Gramsci", April–June 1997, pp. 309–322; D. Nicolle, *Knight of Outremer 1187–1344*, Osprey Military Warrior Series 18, London 1996; C. Caier, *La valeur militaire des armées de la première Croisade*, review of the exhibition: *Le temps des Croisades*, Huy 1996, Bruxelles 1997; cf. also bibliographic remarks: C. Gaier, *De quelques tendances actuelles de l'historiographie militaire medievale*, "Le Moyen Age — Revue d'histoire et de philologie", no. 2, Bruxelles 1998.

¹⁵ M. Howard, *Wojna w dziejach Europy* (War in European History), Wrocław–Warszawa–Kraków 1990, *passim*; C. Rothero, *The Armies of Agincourt*, Osprey Military, Men-at-Arms Series 113, London 1981.

¹⁶ A. Nadolski expressed the opinion that this was a battle waged exclusively by mounted knights, *Grunwald 1410*.

Armour, together with the helmet and the shield, was granted new life as the ideal costume of the knight in painted and sculpted likenesses, especially in tombstone art and heraldry (fig. 3). At times, the knight himself was transformed into a heraldic form, and became a coat of arms (fig. 4). As a rule, the armorial field was the old, thirteenth-century triangular shield, crowned with a heraldic coat of arms with mantling.

The most suitable field for the realisation of the chivalric ethos was the tournament, creating conditions in which the knight could display his strength, skill and valour in front of the gathered observers and witnesses, and, in particular, the ladies. Jousts contain the motif of eternal male rivalry for the favours of the female, and thus not only sublimated the desire to fight for life and death, but reproduced phenomena occurring, *horribile dictu*, among animals and birds. Tournaments were held in accordance with established rules, and in a strictly limited environment, isolated from the common people. This was a hermetically closed circle, in which the knight did not face unchivalrous surprises, with which he was always threatened in conditions of war against “barbarians” and plebeians who applied treacherous arms, striking from afar, sometimes concealed and without forewarning. Originally, the tournaments were held in battle armour, but the development of knightly customs rendered such armour increasingly distant from its battle progenitor. It became heavier, more complicated as regards function and construction, and, finally, outfitted with special, spring-operated devices reacting to suitable blows of the lance. Today, the great number of ensuing tournament games is well recognised in numerous source publications and museum presentations¹⁷.

Knightly arms became subjected to negative ideological transformation in artistic works illustrating the passion of Jesus, whose oppressors are dressed in deformed, “horrible” armour and helmets (fig. 5)¹⁸. This phenomenon occurred also in actual objects — the pillory helmets, the wearing of which constituted one of the most severe penalties (fig. 6)¹⁹. An actual “anti-knight” was the *Raubritter*, who used his strength and arms for the purposes of robbery and acts of violence, known particularly in the German lands. Not without reason did Albrecht Dürer portray him in the company of Death and the Devil. This category of degenerate forms included knights who took part in jousts professionally, and whose sole target was winning the prize, especially the precious armour of the defeated opponent. Such a wandering knight, albeit by no means a treasure hunter, was the Silesian Niclas von Poplau, born in Wrocław, who wielded an enormous lance, the object of admiration and cause of astonishment, and whose invaluable travel diary has been published recently, together with an excellent commentary²⁰. Only a single step led to the adventures of Don Quixote, neurasthenic and mythomania, with which Cervantes sealed the fate of European knighthood.

¹⁷ *Riddartek och Tornerspel. Tournament and the Dream of Chivalry*, ed. L. Rangström, Stockholm 1992.

¹⁸ Z. Żygulski Jr., *Armour as a Symbolic Form*, p. 93.

¹⁹ *Ibidem*, p. 94.

²⁰ *Opisanie podróży Mikołaja von Popplau rycerza rodem z Wrocławia* (A Description of a Journey by Niclas von Popplau, a Knight of Wrocław), prep. by P. Radzikowski, Kraków 1996; German edition: *Reisebeschreibung Niclas von Popplau, Ritters bürtig von Breslau*, Kraków 1998.

Nonetheless, the helmet and armour survived the demise of the chivalric epoch. During the Renaissance, they assumed a ceremonial or grotesque shape, in imitated *alla romana* forms patterned on the naked male torso, and helmets resembling lion heads, griffins or chimeras (fig. 7). Armour and the helmet survived in assorted battle formations up to the twentieth century. The steel or synthetic helmet and the bullet-proof vest underneath camouflage fabric mould the figure and protect the present-day soldier, who from the knightly ethos has borrowed only strength, prowess and courage.

Similarly as in the case of armour, ideological transformation affected the knightly sword, the main offensive weapon, and a prolongation of the knight's arm. Inherited from antiquity and altered upon numerous occasions. For a long time it remained essentially unchanged, and composed of a simple double-edged blade and a handle with a guard and a pommel, carried in a sheath and suspended on a belt. The sword served in direct confrontation, which applied the sweeping blow; thus, the decisive factor was not solely the art of swordsmanship, but predominantly the strength of the user. The battle sword could display production marks and inscriptions, more rarely coats of arms and devotional emblems; devoid of lavish decoration, it was always the object a cult, surrounded by legend or mystique, and given names, similarly to a person or a deity. Associated with King Arthur and the Knights of the Round Table, or with Charlemagne and his barons, presented by mysterious hands reaching out from a lake or drawn from a rock, in the mediaeval myth it was ultimately sacralised as a symbol of supreme divine, imperial and regal authority (fig. 8, and 9). Used for coronation and knighting ceremonies, it was simultaneously the symbol of highest judgement, appearing in the hands of kings, but also held by popes and bishops. For many centuries, the popes blessed swords which, together with hats, were sent to deserving monarchs — defenders of the faith²¹. In other cultures too the sword was a holy object, as witnessed by the double-edged sword of Zulfikar, the sword of Mohammed and Ali, the symbol of warring Islam²². At the same time, the sword was an instrument of punishment, and, wielded by the henchman, it became desacralised, giving rise to terror and repulsion (fig. 10).

An alternative weapon for meting punishment was the battle-axe, an object of ancient genealogy, which ultimately, in a diminished form, appeared in the hands of knights. Basically, it points towards plebeian arms, derived from a wedge-shaped instrument used by carpenters and woodcutters or simply by peasants for farm work. It seems worth recalling that already Roman lictors beheaded their victims by means of small axes carried within a bunch of reed-like *fascēs*, which were first used for scourging the condemned.

Periodically, in early epochs, for example, in the Minoan culture, the double-edged axe — *labrys* — was a royal symbol, and appeared on palace walls, giving rise to the term: labyrinth. This form of the ceremonial axe was revived in Turkey as the weapon of the guards of the Sultan²³. A true career was made by the axe in the northern, German

²¹ Z. Żygulski Jr., *Miecz i kapelusz poświęcany króla Jana III Sobieskiego* (The blessed sword and hat of King Jan III Sobieski), "Studia do dziejów Wawelu", vol. 4, Kraków 1978, pp. 333–360.

²² Z. Żygulski Jr., *Ottoman Art in the Service of the Empire*, New York–London 1992, pp. 46–50.

²³ Z. Żygulski Jr., *Broń wschodnia. Turcja. Persja. Indie. Japonia* (Oriental Arms. Turkey. Persia. India, Japan), Warszawa 1983, p. 42.

parts of pre-Christian Europe. The *Mjelnir*, a hammer resembling an axe, conceived as a weapon against demons, became the attribute of the god of storms, the powerful red-bearded Thor, simultaneously the protector of fields, herds, the homestead, marriage and the family²⁴. A favourite German weapon was a small axe used for hurling, the *franciska*, while the Danes produced a powerful battle-axe, held on a long handle, a terrifying weapon of the foot soldiers, used also in battles against mounted opponents. Its faithful depiction is found in the aforementioned Bayeux tapestry, where it is shown held by the celebrated *housecarls*, the guardsmen of Harold of England²⁵.

The axe became the origin of the most effective plebeian weapon of the Middle Ages, next to the long lance, namely the halberd, particularly developed by the Swiss — a combination of the axe, the lance and the hook (fig. 11). It was the Swiss blacksmiths who devised a technique of forging the point of the halberd with a core made of soft iron and a steel point, preventing the crumbling of the weapon even during the most powerful blow. Plebeian hafted weapons appeared in assorted varieties, such as the berdish, glaive, gisarme, runka, lance or simply a fork or a scythe blade mounted on a shaft, used almost up to the twentieth century (fig. 12). Obviously, peasant arms originated from tools found on the farm, or were the products of village blacksmiths.

A separate group was composed of plebeian long-range weapons: the sling, the bow and the crossbow, defined also as propellant weapons.

The sling was an ancient manual weapon, probably of Eastern origin, rendered famous by the victory won by David over Goliath, and used in the West up to the fifteenth century, sporadically even longer²⁶. The ordinary sling was composed of two sections of medium-wide rope, joined with a leather or fibre tab, which supported a stone or a metal, usually leaden missile. Holding both ends of the rope in the hand, the sling was set into circular motion, gaining a considerable cumulation of energy; at a suitable moment, one of the ends of the rope was let loose, in this way projecting the missile by means of centrifugal force. The other variety was the shaft sling of greater range owing to a longer arm of the force, achieved by attaching one of the ropes to a short shaft. In practice, the sling missiles reached a distance of up to 100 metres, but using this weapon demanded enormous expertise.

The bow, composed of a bow-stave and string projecting the arrow, the point of which was fitted onto a shaft with feather flights, can be found already in Neolithic cliff paintings²⁷. The renaissance of this favourite Asian weapon, less popular in Europe during the great migrations, dates back to the tenth century. The bow commonly used in the West was the straight bow, of African lineage, with simple wooden stave. The Asian bow appeared sporadically in Europe under the impact of Oriental nomads, the Huns, the Avars and the Magyars; it differed from its predecessors owing to its complicated construction of the stave, which was glued out of wood, sinews and horn

²⁴ Z. Żygulski Jr., *Broń starożytna*, p. 175.

²⁵ S. Bertrand, S. Lemagnen, *The Bayeux Tapestry*, scene 51.

²⁶ M. Gradowski, Z. Żygulski Jr., *Słownik uzbrojenia historycznego* (Dictionary of Old Arms), Warszawa 1998, s. v. *Sling*.

²⁷ J. Werner, *Polska broń. Łuk i kusza* (Polish Arms. Bow and Crossbow), Wrocław-Warszawa-Kraków-Gdańsk 1974.

plates, obtaining the desired shape thanks to a press. The aerodynamic lift and puncture force of this bow consisted of the fact that in order to place the string it was necessary to bend the stave in a direction opposite to the permanent curve. In this manner, considerable potential energy became concealed in the stave itself, already before the placing of the arrow and the drawing of the bow. In the East, the stringing of the bow was attained by the application of a thumb ring²⁸.

During the eleventh and the twelfth century, the West European bow (about 100 cms. long) was used by foot soldiers. Sometimes, it was employed by running men, who drew the bow keeping the right hand at the level of the chest, while the additional arrows were held, together with the stave, in the left hand. The arrows were stored in an elongated, cylindrical or flat quiver made of leather, hung across the left shoulder or suspended on a belt, and carried on the right hip.

In the course of the thirteenth century, considerable progress in constructing the simple bow was accomplished by the English, who produced the so-called long bow, obviously intended for the plebeian foot soldiers. A stave made of yew, ash, elm or hazel reached a length of 180 cms. The string was composed of twisted flax or hemp. The pine or ash arrows had lancet-shaped heads, sometimes with barbs. The feathers of the arrows were goose or swan, or even made of brightly painted parchment. The long bow was the product of high-level technology, invented and perfected in specialised, town guild workshops. The bows were employed for shooting in salvos, by drawing the string at eye level. This weapon made a significant contribution to the victories won by the English armies in battles against the French cavalry during the Hundred Years' War. Our familiarity with this type of arms is due to the fact that fortunately several examples have been preserved in England²⁹.

From the eleventh century, an increasingly large role in Europe was played by the crossbow, a weapon known already in antiquity — in Greece as the *gastrophetes* and in Rome as the *ballista* — more rarely in hand-held size and usually in the form of an enormous battle device³⁰. Incredible excavations initiated in China in 1974 in the Yellow River valley, in the province of Shensi, close to Mt. Li, revealed a necropolis of Emperor Shi Huang Ti, founder of the T'si dynasty, who in 221 B. C. united China and inaugurated the construction of the Great Wall, showing that in this distant epoch the Chinese were well acquainted with the crossbow³¹.

The mediaeval crossbow was composed of a hard, springy stave, originally made of wood, then of glued layers of wood, sinews, and horn, similarly as in the bow, and, finally, of steel with a thick string, made of strongly twisted hemp, which required the use of special equipment. The bow was attached to a base, known as a column, which contained a groove for the arrow, with a massive iron bolt on a shaft with wooden feathers. It also included a trigger lever for loosening the string, set into motion by the

²⁸ W. Reid, *The Bowman's Thumb-Ring. Tool of Asia's Warriors and Hunters*, "Materiały Muzeum Wnętrz Zabytkowych w Pszczynie", vol. 7, Pszczyna 1992, pp. 248–262.

²⁹ J. G. Mann, *Armes et Armures* (in: *La Tapisserie de Bayeux*, p. 67; W. Reid, *The Lore of Arms*, London 1976, p. 129).

³⁰ Z. Żygulski Jr., *Broń starożytna*, p. 97, fig. 94.

³¹ A. Topping, *The First Emperor's Army. China's Incredible Find*, "National Geographic", 1978, no. 4.

pressure of a finger. This purpose was served by a revolving cylinder made of bone or horn, the so-called nut, with two incisions. One was intended for the string, and the other supported the end of the metal lever. This ingenious mechanism, a combination of simplicity and great effectiveness, was later utilised partly in the construction of firearms. The distinguishing feature of the crossbow was its special accuracy and force of puncture, but its fault were its slowness of firing compared with the long bow, it was not so easy to draw the bow. This operation involved the use of a metal hook and, subsequently, a mechanical crank or lever, known as the goat's foot. In order to render this activity easier, the end of the column contained a stirrup affixed for supporting the foot. During the Middle Ages, this was a truly wondrous weapon, but it comprised a total negation of chivalric ethics. The boldest knight could easily perish from a missile hurled by the crossbow and aimed from behind trees, a wall or a wagon. Soon, the crossbow was recognised to be an ignoble and wicked weapon. The Church tried to prohibit its usage already at the Second Lateran Council of 1139, albeit only against Christians; it was considered permissible to use it to kill "pagans". This decree was repeated in a special bull issued by Innocent II at the end of the twelfth century, but in vain. In accordance with the principle of war, the striving at overcoming the enemy ignored ethical and religious admonitions. From the thirteenth century, detachments of foot soldiers of plebeian origin, usually mercenary, and then mounted crossbowmen, were regarded as decisive for the outcome of battles and sieges. Particular renown was enjoyed by the crossbowmen of Genoa.

The military deeds of knights, based on the use of the lance and the sword, broke down ultimately due to the invention of firearms, which appeared in the hands of fourteenth-century foot soldiers. Constantly improved and disseminated, especially in the form of the artillery, they became the prime destructive force in capturing forts and fortified towns, in defence, or in battles waged in the open. In the course of more than 600 years, it was precisely such arms which dominated in war, and their principle, namely, the effect of the impact exerted by explosive substance burnt in the barrel and ejecting the missile, remains unchanged. The effects of firearms were so astounding and shattering that even knights, in a rather senseless manner, tried to adapt them in the form of a curious metal pipe attached to the breastplate³².

A decisive issue in the construction of firearms was the discovery of the properties of gunpowder, a mixture of saltpetre, sulphur and charcoal. The earliest history of such arms remains encased in mystery³³. Most recent studies show that a certain type of gunpowder was used by the Chinese for pyrotechnical purposes already in the first half of the eleventh century, although it is impossible to omit the invention of "Greek fire", a mixture of saltpetre, sulphur and tar, set afire and hurled at a certain distance from metal pipes and siphons or with the aid of ceramic grenades³⁴. Presumably, the recipe

³² A. V. B. Norman, D. Pottinger, *English Weapons and Warfare 449-1660*, Englewood Cliffs, N. J. 1979, pp. 97-100.

³³ C. Blair, *Early firearms* (in:) *Pollard's History of Firearms*, Feltham (Middlesex) 1984, pp. 25-32.

³⁴ Z. Żygulski Jr., *Oriental and Levantine firearms* (in:) *Pollard's History*, pp. 425-428.

for gunpowder made its way to Europe *via* Spain, through the intermediary of the Arabs and their alchemical treatises, in the first half of the thirteenth century. Formulas found in the works by Roger Bacon, and in particular in *Epistolae de secretis operibus artis et naturae et de nullitate magiae*, written probably after 1257, but no later than 1265, albeit in a complex anagram, can be deciphered as "Take 7 parts of saltpetre, 5 of young hazlewood (charcoal) and 5 of sulphur, and you shall make thunder and lightning, if you know the trick"³⁵. Thirteenth-century recipes for the production of gunpowder are contained in *Marcus Graecus Liber Ignium* and *De Mirabilis Mundi*, a work by Albert Magnus (d. 1280)³⁶. Arabian sources mention firearms, known as *madfa*. The existence of the earliest canons is confirmed by a certain document from 1326, preserved in Florence, and by an English document, kept in Oxford, by Walter de Milemete (1326–1327): *De Nobilitatibus, Sapientis et Prudentis Regum*, illustrated with a miniature showing a soldier firing a cannon in the form of a vase, emitting an arrow³⁷.

Mediaeval plebeian arms achieved their apogee in the first decades of the fifteenth century among the Bohemian Hussites–Taborites. The latter perfected a system, known already in antiquity, of an arrangement of the battle wagons (*tabor*) which always accompanied campaigns and contained supplies, tents and a great number of other objects indispensable in war. The Hussites outfitted their great wagons with wooden shields (ambrasures), and provided them with men equipped with shafted and projectile weapons as well as firearms. They learnt how to manoeuvre the *tabor* and wage battles while in motion. The Hussite *tabor* wagon was the progenitor of the present-day armoured vehicle or tank, and, at the same time, comprised an element of a mobile fortress³⁸. The imperial armies found it extremely difficult to overcome their Hussite opponents, while the latter, in turn, exerted a strong impact on tactics applied during sixteenth- and seventeenth-century battles. This holds true particularly for Poland, where campaigns were conducted by referring to Hussite experiences and, as a rule, upon the basis of the *tabor*³⁹.

The above outlined problems lead to a conclusion about two contrary styles and systems of mediaeval arms: knightly and plebeian, with the second prevailing and initiating a new epoch of wars. In reality, people who met on the battlefield observed each other closely and drew conclusions from their experiences, at times extremely unpleasant. The knights were frequently compelled to dismount, abandon their traditional tactic, reach for curved-blade and hafted arms, conducted tournaments on foot, wielding halberds or axes, and resort to firearms, rather unfortunately, as has been mentioned. At the same time, foot soldiers used helmets, as a rule open, and half-armor, especially in lancer formations, fought with two-handed "Swiss" swords, and sought refuge behind circular or rectangular shields (fig. 13). There were no formal or ideological restrictions since greatest importance was attached to the battle effectiveness of the arms.

³⁵ C. Blair, *Early firearms*, p. 25.

³⁶ *Ibidem*, p. 26.

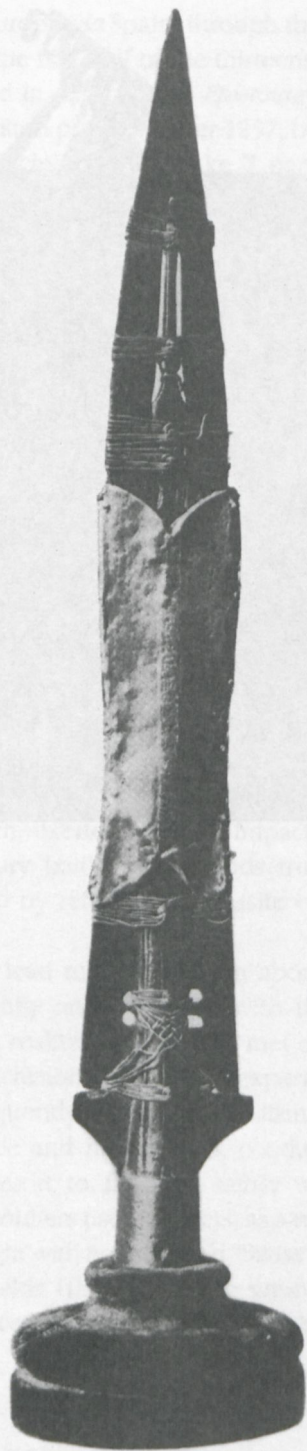
³⁷ *Ibidem*, p. 28, also: A. V. B. Norman, D. Pottinger, *English Weapons, op. cit.*, p. 98.

³⁸ Z. Żygulski Jr., *The Wagon Laager*, "Fasciculi Archaeologiae Historicae", vol. 7.

³⁹ Z. Żygulski Jr., *Sławne bitwy w sztuce* (Famous Battles in Art), Warszawa 1996, p. 78 and 90.



1. Biblical scene — in reality, a battle waged by Crusaders at the walls of a Moorish town. Miniature in the Maciejowski Bible, France, about 1250, New York, Pierpont-Morgan Library



2. The Holy Lance (*lancea sacra*), Vienna, Imperial Treasury



3. Tombstone likeness of Duke Henryk IV Probus, about 1300,
Wrocław, National Museum



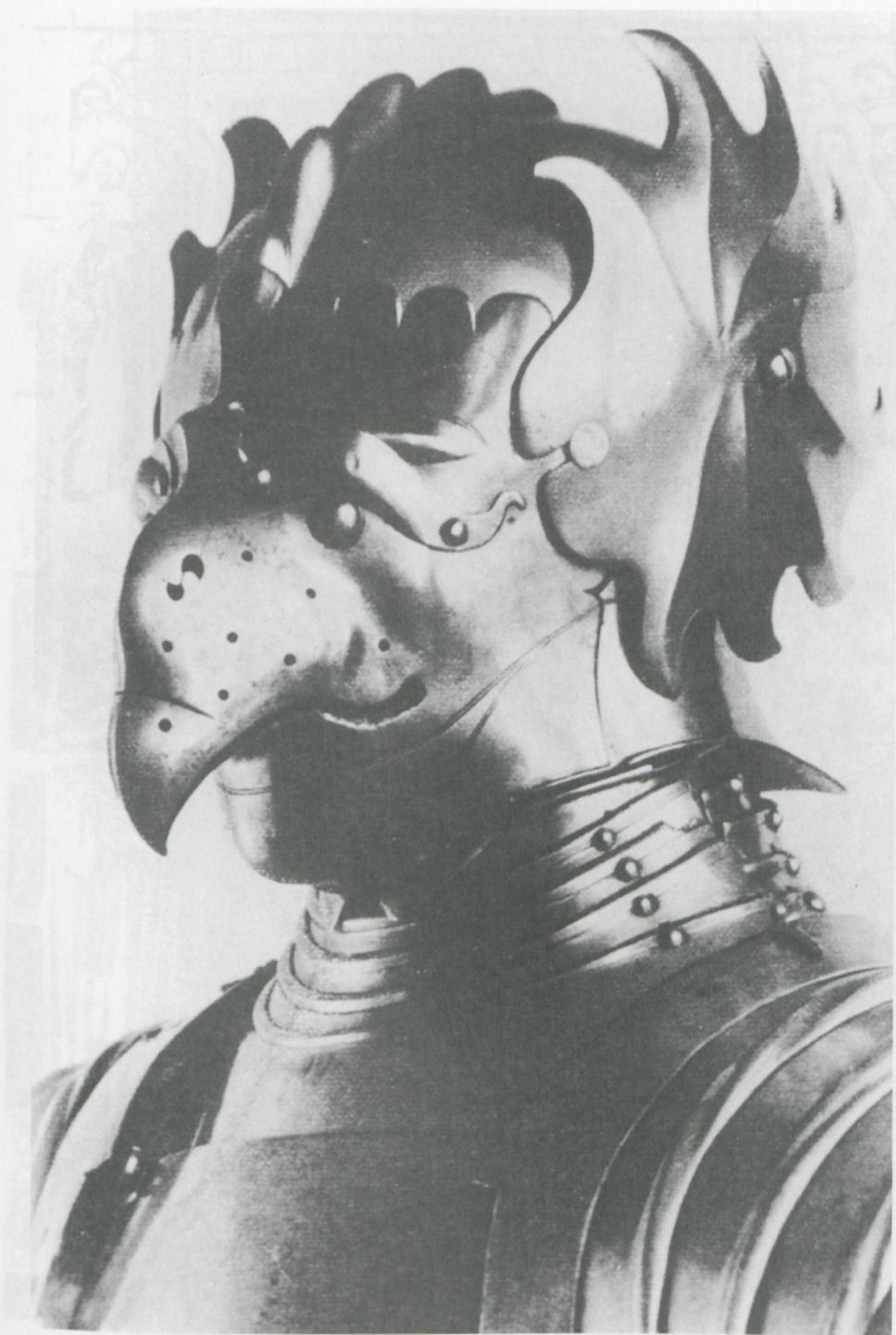
4. The King of Poland in ceremonial tournament dress, miniature from the "Golden Fleece" armorial, about 1434–1435, Cracow, the Czartoryski Museum, a copy of the 19th century



5. "Anti-knight" in "derisive" armour, in the scene of the Seizure of Christ in the Our Lady altar by Veit Stoss, Cracow



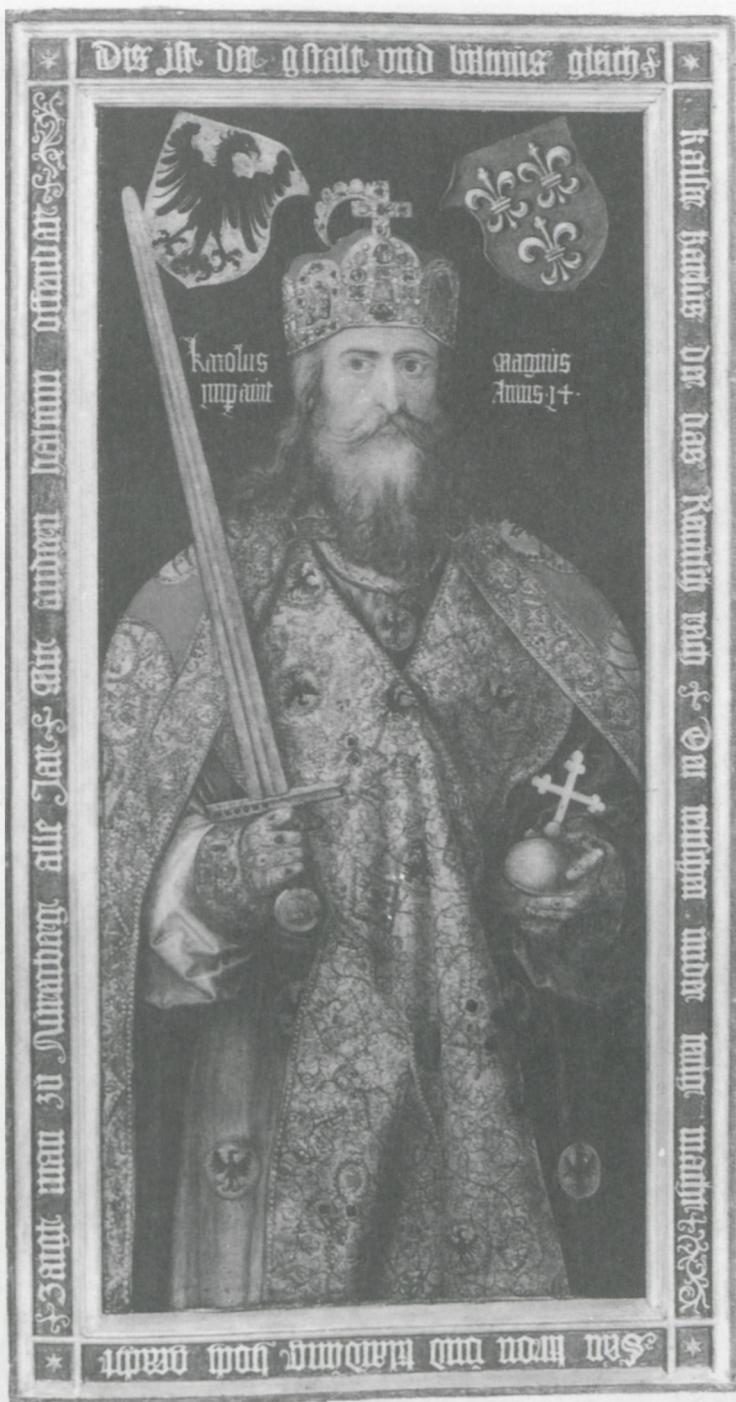
6. Grotesque pillory helmet, Germany, sixteenth century (?), Royal Castle on Wawel Hill



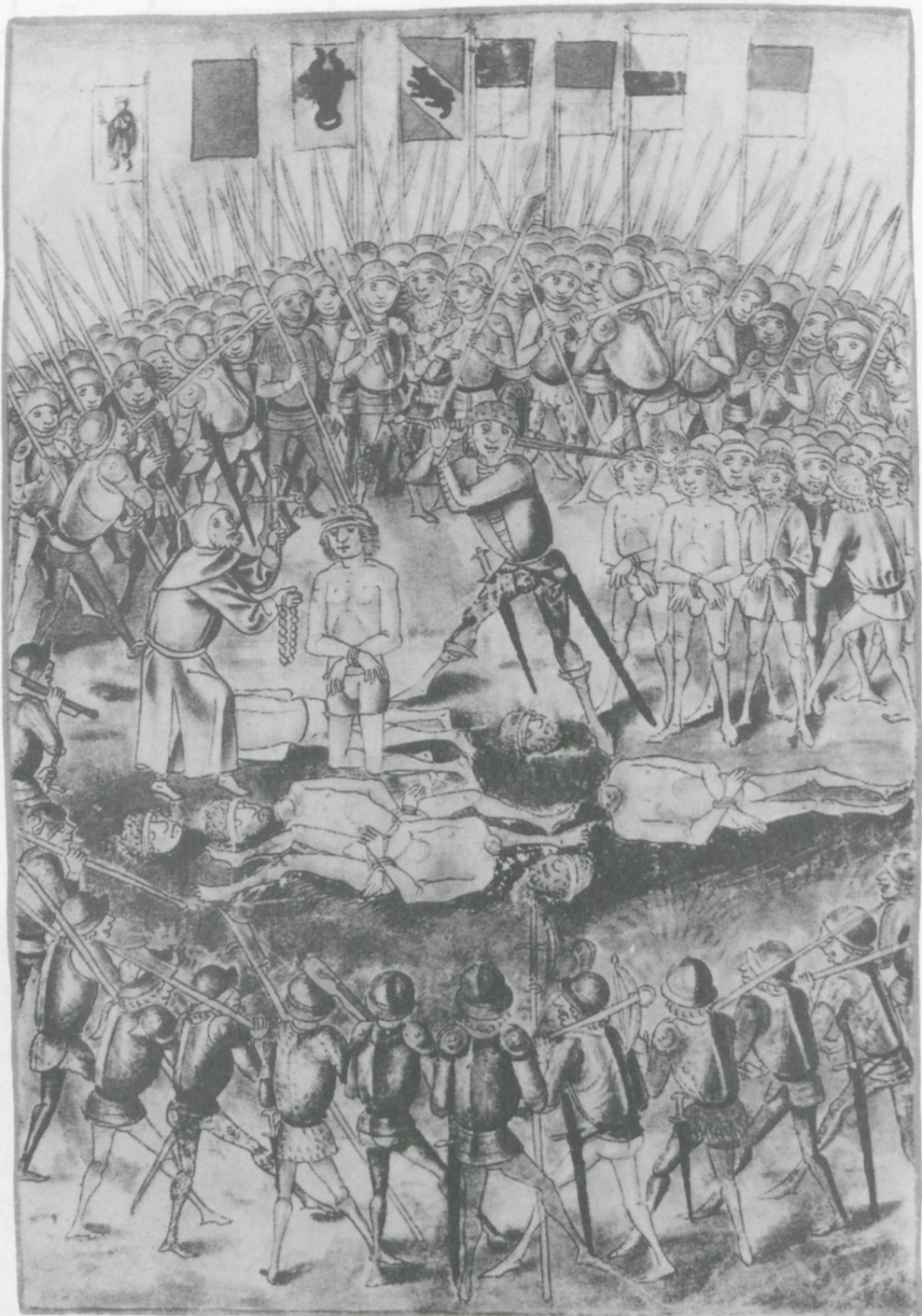
7. Grotesque helmet forged by Conrad Seusenhofer in Innsbruck, 1510–1515, Vienna, Court Collection of Hunting Arms and Armoury



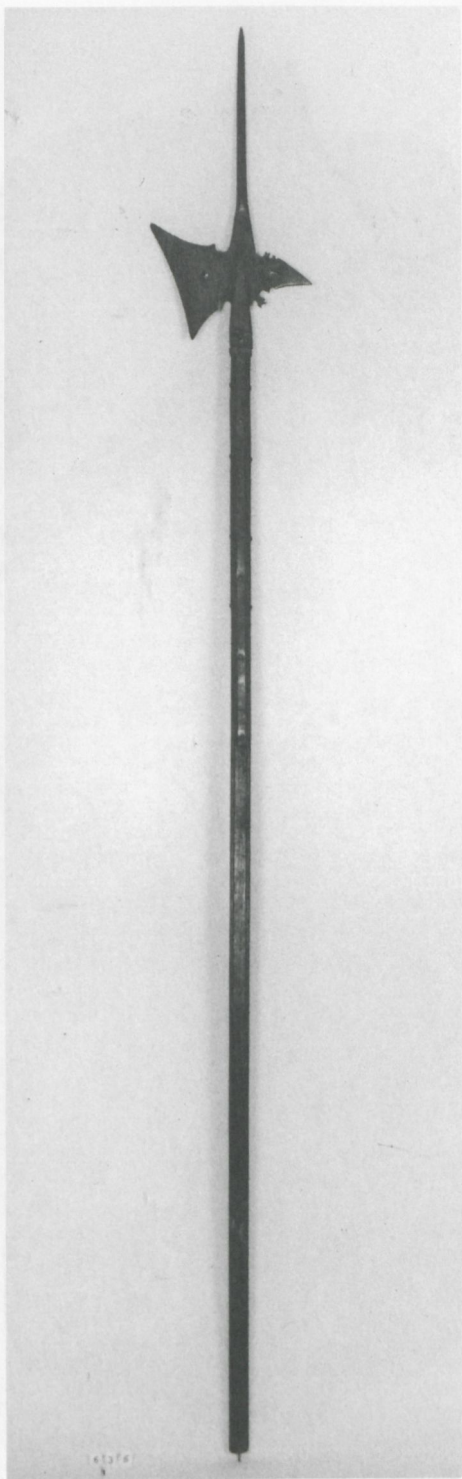
8. Jesus Christ presenting "the sword of power" to the Pope and the Emperor, miniature by Hans Bornemann (d. 1474), Lüneburg, Municipal Archive



9. Charlemagne, the Emperor of Rome and the King of the Franks (768–814), in coronation dress and with a ceremonial sword, an ideal portrait by Albrecht Dürer, Nürnberg, Germanisches Nationalmuseum



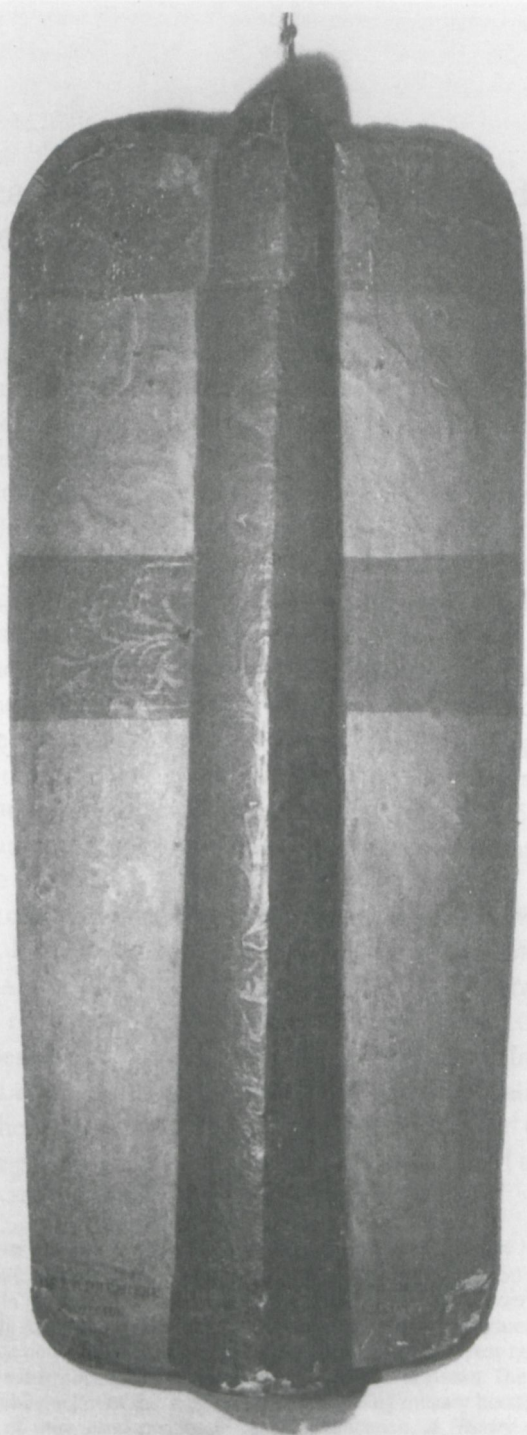
10. Mass-scale execution by sword in Berne in 1444, miniature in the *Chronicle* by Diebold Schilling from 1483, Berne, Municipal Library



11. Halberd, fifteenth/sixteenth century, Cracow, National Museum



12. A German battleaxe from the fifteenth century, Cracow, The Czartoryski Museum



13. Shield of Swiss foot soldiers from the fifteenth century, Cracow, the Czartoryski Museum