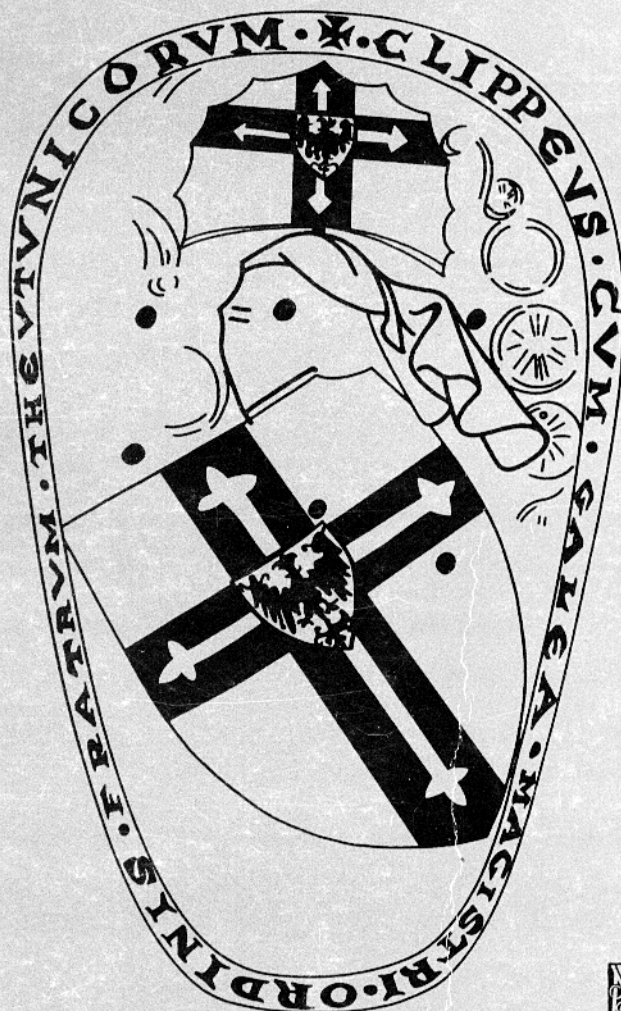


**ANDRZEJ NOWAKOWSKI**

# **ARMS AND ARMOUR**

**IN THE MEDIEVAL TEUTONIC ORDER'S STATE  
IN PRUSSIA**



OFICyna  
NAUKOWA

**STUDIES ON THE HISTORY OF ANCIENT AND MEDIEVAL  
ART OF WARFARE**

VOLUME II

ANDRZEJ NOWAKOWSKI

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ŁÓDŹ 1994

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## INTRODUCTION

European literature devoted to medieval chivalrous orders is both copious and varied. This problem has been dealt with by historians, lawyers, theologians, historians of art and literature and by scholars engaged in the study of European culture in the Middle Ages of which various chivalrous orders were a typical element.

One of these was the Teutonic Order whose history and various aspects of activity both in the Holy Land and in Europe have long been studied<sup>1</sup>. As a result, several important and valuable works have appeared<sup>2</sup>.

The historian of military matters is first of all interested in questions directly connected with the military activity of the Order. When we assess the state of knowledge and the involvement of the scholars who undertook studies of the

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<sup>1</sup> The bibliography compiled by H. K. L a m p e, *Bibliographie des Deutschen Ordens bis 1959*, Bonn-Godesberg 1971, though far from complete, lists 4609 items. There is no doubt that in the years 1960-1992 several hundred new publications appeared.

<sup>2</sup> A critical survey of the current state of research was made by M. B i s k u p, *Stan i potrzeby badań nad państwem krzyżackim w Prusach (w. XIII — początek XVI)*, "Zapiski Historyczne", XLI, 1976, 1, pp. 21-48. A list of more important literature has been compiled by M. B i s k u p, G. L a b u d a, *Dzieje Zakonu Krzyżackiego w Prusach. Gospodarka — społeczeństwo — państwo — ideologia*, Gdańsk 1986, pp. 516-553. The problems that face the researchers of the earliest history of the Teutonic Order are stated by U. A r n o l d, *Forschungsprobleme der Frühzeit des Deutschen Ordens 1190-1309*, [in:] *Werkstatt des Historikers der mittelalterlichen Ritterorden. Quellenkundliche Probleme und Forschungsmethoden*, ed. by Z. H. N o w a k, Toruń 1987, pp. 19-32. The most important literature on the history of the Teutonic Order, published so far, can be found in the catalogue of the exhibition organized on the occasion of its 800 anniversary in Nürnberg: *800 Jahre Deutscher Ordens. Ausstellungskatalog des Germanisches Nationalmuseums Nürnberg mit der Internationalen Historischen Kommission zur Erforschung des Deutschen Ordens*, ed. by G. B o t t and U. A r n o l d, Gutersloch/München 1990.

military history of the Orders significant preferences, notably in the literature dating from before 1980, become apparent. Most attention has been paid to the history of wars and battles, especially to the Polish-Teutonic conflicts, and notably the Great War of 1409-1411. Much has been written about the battle of Grunwald fought on 15th July 1410. This is shown by the relevant bibliography, which lists 1167 writings published until 1989 including 409 scholarly and popular publications<sup>3</sup>. The history of Polish-Teutonic wars has also been reflected in books and articles dealing with general military matters. In these publications the problem in question has been treated marginally, and is rarely based on sources, but usually on published works<sup>4</sup>.

The knowledge of Teutonic defensive architecture, notably that in Prussia, has been greatly developed. At present, all castles are catalogued and even partly rebuilt. However, too little attention has been paid to castles as points of resistance, nor have their defensive properties been analysed in the context of contemporary art of war<sup>5</sup>.

Though a considerable progress has been made in these studies, the origin of the Teutonic castle still remains unsolved. Strategy and tactics used by the Teutonic Knights in campaigns or in particular battles are an interesting though not yet

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<sup>3</sup> H. Baranowski, I. Czarciniński, *Bibliografia bitwy pod Grunwaldem i jej tradycji*, ed. M. Biskup, Toruń 1990. Cf. also W. Mierzwa, *Bibliografia Grunwaldzka*, Olsztyn 1990, which lists writings not included by H. Baranowski and I. Czarciniński, and dealing with the tradition, journalism and belles-lettres associated with the battle. That the interest in Grunwald problematics is intense is best shown by the launching of a new periodical "Studia Grunwaldzkie", published in Olsztyn, whose first volume appeared in 1991.

<sup>4</sup> G. Köhler, *Die Entwicklung des Kriegswesens und Kriegsführung in der Ritterzeit von Mitte des XI Jahrhunderts bis zu den Husitenkriegen in drei Bände*, II, III, Breslau 1886-1889; M. Jähns, *Geschichte der Kriegswissenschaften vornehmlich in Deutschland*, I Abt., München - Leipzig 1889; H. Delbrück, *Geschichte der Kriegskunst im Rahmen der politischen Geschichte*, III, Berlin 1907; W. Dziewanowski, *Podręcznik historii wojskowej powszechnej. Średniowiecze*, Warszawa 1932; Ch. Oman, *A History of the Art of War in the Middle Ages*, London 1929; F. Lot, *L'art militaire et les armées au Moyen-Age en Europe et dans le proche Orient*, I-II, Paris 1946; E. Raziński, *Historia sztuki wojennej*, II, Warszawa 1960.

<sup>5</sup> The article by I. Sławiński, *Strategia i funkcja zamku krzyżackiego oraz rozwój jego elementów obronnych na przykładzie zamków Polski północnej — głównie terytorium dawnego państwa krzyżackiego oraz pogranicza polsko-krzyżackiego*, "Biuletyn Informacyjny PKZ", 8, 1969, pp. 45-47, though not free from simplifications, is an exception. The role of the castles in the military system of the Order, their importance for the army as provision bases and as armouries have been dealt with by F. Bennin ghen, *Die Burgen als Grundpfeiler des spätmittelalterlichen Wehrwesens im Preussisch-livländischen Deutschordensstaat*, "Vorträge und Forschungen hrg. vom Konstanzer Kreis für mittelalterliche Geschichte", XIX, 1, Sigmaringen 1976, pp. 565-601; M. Arsyński, *Die Deutschordensburg als Wehrbau und ihre Rolle im Wehrsystem der Ordensstaates Preussen*, [in:] *Das Kriegswesens des Ritterordens im Mittelalter*, "Ordines Militares. Colloquia Toruniensia Historica", VI, Toruń 1991, pp. 89ff. Of similar character is the article by J. Łobocki, *Problematyka militarna budowy zamków na Pomorzu w średniowieczu*, [in:] *Średniowieczne zamki Polski Północnej*, Malbork 1983, pp. 72-88.

adequately examined aspect of Teutonic warfare<sup>6</sup>. The historians, including the Polish ones, were too much influenced by the idea that the Teutonic art of war was uniform in character. This is particularly noticeable in the earlier works, especially the German ones, which reconstructed its principles only on the basis of the Statutes of the Order, while the realities of the battlefields and the fact that the Teutonic written war laws concern specific areas of activity: Syria and Palestine, were ignored. Thus the Statutes are of little use in widely different ecological and landscape zones represented by lands where military activities of the Order were the most intense, that is in Poland, Prussia or Lithuania<sup>7</sup>.

Recently much attention has been paid to the structure of the armed forces of the Order, and the participation of particular social groups<sup>8</sup>. The part played by mercenaries in the wars waged by the Teutonic Knights in the 14th-16th centuries has also been examined<sup>9</sup>.

Though the need to study the arms and armour used in the Order's State in Prussia has been recognized, studies of this subject have only recently been un-

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<sup>6</sup> Recently this problem has been tackled by A. Nadolski, *Grunwald. Problemy wybrane*, Olsztyn 1990. A very interesting analysis of the organization of Teutonic expeditions, especially to Lithuania and Samogitia, was made by F. Bennin ghen, *Zur Technik der spätmittelalterliche Feldzüge im Ostbaltikum*, "Zeitschrift für Ostforschung", XIII, 1970, 4, pp. 631-651; cf. also idem, *Die Gotlandfeldzüge des Deutschen Ordens 1398-1408*, ibidem, XIII, 1964, 3, pp. 422-477.

<sup>7</sup> K. Schüneman, *Deutsche Kriegsführung im Osten während des Mittelalters*, "Deutsches Archiv für Geschichte des Mittelalters", II, Berlin 1938, pp. 60-71; K. Górkki, *Kawaleria krzyżacka*, "Przegląd Kawaleryjski", Warszawa 1934, 12, pp. 1-15.

<sup>8</sup> As it is impossible to list all writings devoted to this problem, only the most important publications will be mentioned. For the years of the Great War, the most essential is the already mentioned work by A. Nadolski, *Grunwald ...*, pp. 41-58, where both the earlier and more recent literature is abundantly quoted. The structure of the Order has been discussed by A. Nowakowski, *O wojskach Zakonu Szpitala Najświętszej Marii Panny Domu Niemieckiego w Jerozolimie zwanego krzyżackim*, Olsztyn 1988, pp. 45-87. Of the more detailed works special attention is claimed by S. Ekda hl, *Über die Kriegsdienste der Freien im Kulmerland zu Anfang des 15. Jahrhunderts*, "Preussenland", 1964, 1, pp. 1-14; F. Bennin ghen, *Die Kriegsdienste der Komturei Danzig von das Jahr 1400*, [in:] *Acht Jahrhunderte Deutscher Ordens in Einzeldarstellungen*, Bad Godesberg 1967, pp. 191-222.

<sup>9</sup> The greatest contribution has been made by the Swedish scholar, S. Ekda hl, who published the source of the highest importance for the assessment of the role of Teutonic mercenaries in the Great War, namely: *Das Soldbuch des Deutschen Ordens 1410/1411*, I, Köln - Wien 1988 [further cited as *Soldbuch*]. Besides, he is the author of several articles: *Kilka uwag o "Księdze Żołdu" Zakonu Krzyżackiego z okresu Wielkiej Wojny 1410-1411*, "Zapiski Historyczne", XXXIII, 1968, 3, pp. 111-130; *Danzig und der Deutsche Orden 1410. Die Ausschreibungen gegen die Ordenssöldner*, [in:] *Danzig in acht Jahrhunderten*, ed. by B. Jännin g, P. Lethem an, Münster 1985, pp. 121-150. Very interesting remarks on the recruiting and participation of the Baltic pirates in the Teutonic troops can be found in: S. Ekda hl, "Schiffskinder" im Kriegsdienste des Deutschen Ordens. Ein Überblick über die Werbungen von Seeleuten durch den Deutschen Orden von der Schlacht bei Tannenberg bis zum Brester Frieden, "Acta Visbyensia", XI, 1973, pp. 233-274. In the quoted works further bibliographical information can be found.

dertaken<sup>10</sup>. This is the more surprising as the studies of medieval arms and armour are doubtless of great interest. The necessity to deal with this problematics was becoming ever more urgent especially in view of the progress in knowledge about the European, also Polish, arms and armour of the Middle Ages. It has appeared that the part played by arms and armour in the life and culture of medieval communities was of primary importance.

Whatever the period, the role of arms and armour in combat is similar to that played by tools in the production process. Thus both their construction and technology should be analysed, as they had a direct effect on the usefulness of military equipment in battles the result of which it often determined. However, it is not the sole reason for the interest it arouses. Military equipment has also a social aspect as certain military objects often perform function connected with cult and ceremony.

Moreover, they are vehicles for symbols and ideology. Besides, they often are true works of art, and indicators of social and economic status of their owners. Therefore the study of arms and armour lies within the scope of archaeology, history of art, history of material culture, museology, and history of other scholarly disciplines. As for the Teutonic military equipment, anticipating further remarks on the current state of knowledge, it should be stressed that earlier literature is characterized by considerable occidentalism and consequently by schematism. If a Teutonic warrior was mentioned, and this did not happen frequently, he was regarded as a representative of the West European chivalrous culture, a man armed with the best and newest weapon, in every respect far above his Slavonic or Baltic opponents. This gave rise to the following formulations: "Die Litauerreisen ... waren ... nur ritterlicher Sport"<sup>11</sup> or "Für die Ritter ... war diese sogar nicht mehr, als eine frühliche Jagd"<sup>12</sup> encountered in the works of otherwise serious scholars. It is difficult to find there even the least appreciation of the military skill of the Balts.

In the view of several scholars, the superiority of the military equipment of the Teutonic Knights over that of their opponents lasted throughout the period of the existence of the Order's State on the Baltic coast. This study deals with the arms and armour of the Teutonic troops in Prussia. The term "Teutonic troops" covers all armed units at the disposal of the Order in Prussia, irrespective of the nature of the formal ties that linked them with the hierarchy of authority. They

<sup>10</sup> A. N o w a k o w s k i, *Stan i potrzeby badań nad wojskowością krzyżacką*, "Pomorania Antiqua", VI, 1975, pp. 281-293. The state of research has been recently discussed by A. N a d o l s k i, *Die Forschungen über die Bewaffnung des Deutschen Ordens und seiner Gegner in Osmiteuropa*, [in:] *Werkstatt des Historikers der mittelalterlichen Ritterordens. Quellenkundliche Problemen und Forschungsmethoden*, Toruń 1987, pp. 49-63 and by A. N o w a k o w s k i, *New Studies on the Arms and Armour in the Teutonic Order's State in Prussia. The Status Quo and Perspectives*, "Fasciculi Archaeologiae Historicae", V, 1992, pp. 83-89.

<sup>11</sup> F. G a u s e, *Geschichte des Preussenlandes*, Leer 1966, p. 19.

<sup>12</sup> E. M a s c h k e, *Der Deutsche Ordensstaat — Gestalten seiner grossen Meisters*, Hamburg 1936, p. 85.

included the Teutonic Knights, and sergeants, other members of the garrisons of convent castles and other fortresses, Polish, German and Prussian feudal lords obliged to military service on the strength of received endowments, as well as urban and rural population called up as the need arose.

Written sources repeatedly tell us about such composition of Teutonic troops, discerning three categories of warriors. For instance, according to P. Dusburg, the participants in the campaign of 1331 included *frater Henricus commendator magnus ... et CL fratres cum valido exercitu et duobus milibus peditum*<sup>13</sup>. The equipment of the mercenaries who took part in wars waged by the Order, and of the so-called "hospites", if their presence can be established beyond doubt, will be omitted from these considerations since they were not organically linked with the military structure of the Order's State. They usually served briefly either for pay or — as far as the hospites are concerned — because of their desire to fight with the pagans.

It is hoped that thanks to this definition it will not be necessary to make hazardous and highly debatable attempts to categorize medieval army according to the ethnic origin of the warriors involved. To make such an attempt would be sensible only if it succeeded in showing that equipment varied according to the ethnicity of its owner. Yet there is nothing to indicate that the effort involved would bear fruit. The interregional character of various types of arms and equestrian equipment is a well know fact, and to adopt for the Middle Ages the criterion of their origin would in many cases be futile<sup>14</sup>.

The spatial scope of the study covers lands incorporated into the Order's State in Prussia, whose frontiers varied in the course of time. In the period up to 1466, i.e. to the so-called Peace Treaty of Toruń, the territory is defined by frontiers established in the early 14th century, after a period of conquests and augmentation of the Order's possessions. Thus the State included Prussia proper, the Chełmno Land and Gdańsk Pomerania. New March, Kuyavia and the Dobrzyń Land have not been included. In the discussion of the later periods, the territory that the Order had lost as a result of the Thirteen Years' War (1454-1466), i. e. the later Polish Royal Prussia, will be excluded from the considerations. Thus our study will cover areas held by the Teutonic Knights by the terms of the Treaty of Toruń.

The chronological frames are less difficult to define. The study will concentrate on arms and armour in use since the appearance of the first Knights in the

<sup>13</sup> *Petri de Dusburg Chronicon terrae Prussiae*, ed. by M. T ö p p e n, *Scriptores Rerum Prussicarum*, I, Leipzig 1861, p. 178 [further cited as *D u s b u r g*].

<sup>14</sup> A. N a d o l s k i, *Historia uzbrojenia w badaniach nad kulturą materialną Polski średniowiecznej*, "Kwartalnik Historii Kultury Materialnej", XIX, 1971, 4, p. 630; A. N o w a k o w s k i, *Historia uzbrojenia a dzieje polskiego średniowiecza*, "Wiadomości Historyczne", 148 (XXVI), 1983, pp. 187-193; i d e m, *Uzbrojenie średniowieczne w Polsce (na tle środkowoeuropejskim)*, Toruń 1991, pp. 11-12.

Chełmno Land, i.e. since about 1230 till the secularization of the Order in 1525 due to which the Prussian branch of the Order ceased to exist. The period of the Great War of 1409-1411 is an important turning-point. The years preceding it are characterized by considerable military activity of the Order and mark the heyday of the State's history in Prussia. The years of prosperity doubtless influenced the organization of the military force of the Order, its numerical strength and composition, and these in turn affected the military equipment. It is obvious that the kinds of weaponry and equipment, their fighting usefulness and ways of use developed as a result of experience gained during military confrontations.

The Great War, which ended in defeat, was followed by considerable changes in the structure of the Teutonic troops: the ratio of the Knights, burghers and peasants was decreasing, while the importance of foreign mercenaries, who could not be defined as Teutonic in the sense adopted in this book, was steadily increasing.

The subject matter of the study should now be defined. An attempt will be made to reconstruct in the possibly fullest way the kinds, and — if possible — also the types of weapons and equestrian equipment used by the warriors serving in the army of the Order's State. All kinds of arms and armour the use of which is documented by sources from the territory and period in question will be discussed. Both offensive and defensive arms and armour will be dealt with, yet the siege-engines and fire artillery will not be treated<sup>15</sup>. Other subjects will include horse harness and equestrian equipment as their association with chivalry and tactics is obvious. Chivalrous costume, banners, pennons and other military badges will not be analysed in detail. These very interesting problems should be the subject of separate studies. Neither the fleet nor arms and armour of the crew of battle ships will be considered, as to their study a different method should be employed.

It should be stressed that the organization of the Order's forces, their numerical strength and the proportions of various kinds of troops, commanding methods, battle order, etc., will be considered only when they directly influence arms and armour. The courses of wars and battles are of interest to us only in the cases when relevant sources provide important information on the history of arms and armour.

In this study all available categories of sources have been analysed: surviving examples of arms and armour, written records, and iconographic material. Anticipating further remarks about the sources, it should be mentioned that because of their variety other criteria as to their usefulness for the study of arms and armour had to be adopted. The materials at our disposal are characterized not only by

<sup>15</sup> Interesting information on the Teutonic artillery, though obtained from written sources only, is given by V. S c h m i d c h e n, *Die Feuerwaffen des Deutschen Ordens bis zur Schlacht bei Tannenberg 1410*, Lüneburg 1977; Ch. P r o b s t, *Salpetererinfur und Salpetersieder im Deutschor-denland Preussen*, "Waffen- und Kostümkunde", 1965, 1, pp. 60-64 discusses certain problems of gun powder production.

different qualities and different inner structure but also by quantitative disproportions between particular categories of sources and their informative variety.

Thus the outcome of these considerations will be determined by maintaining right proportions between the sets of information gained from the analyses of particular groups of sources.

## THE STATE OF RESEARCH ON THE ARMS AND ARMOUR OF THE TEUTONIC TROOPS

The literature to date on the arms and armour used by Teutonic troops can be divided into two categories: that devoted to the history of the Order, notably its wars, and that dealing with the history of the Teutonic arms and armour only.

Monumental works of medievalists, mainly Polish and German, which reconstruct either the whole history of the Teutonic Order or only some military event fall into the first category. Works of this kind include some information about arms and armour, mostly brief mentions based on literature only, and not on source study. For this reason only some will be mentioned<sup>16</sup>.

One of the earliest works on the history of the Order was written by Ch. Hartknoch who — basing on the Order's Statutes and regulations — devoted a few passages to the Teutonic arms and armour<sup>17</sup>. The monumental work by J. Voigt, who also used written sources only, contains relatively abundant information on the subject in question<sup>18</sup>. Voigt's work is mentioned because it became, particularly for 19th-century historians, the basic source of knowledge of the Teutonic arms and armour. The authors who referred to his findings did not do researches of their own, but rested contented with quoting the views of this eminent scholar. Thus the state of knowledge of this subject has for long been determined by this historian.

In the 20th century no distinct growth of interest in arms and armour was noticed among authors of great historical monographs. This state of things seems to have been due not only to the lack of skill of using methods typical of the researchers into military accessories but also to the lack of appreciation of the role played by arms and armour in the historic process. The authors fascinated by the course of military activities paid most attention to problems which in their view were far more important: great strategy, the respective characters of

<sup>16</sup> The bibliography is very extensive. The more important publications are cited by M. B i s k u p, G. L a b u d a, *o.c.*, pp. 547-548, and particularly by A. N a d o l s k i, *Grunwald ...*, pp. 234-242. The latest publications include: M. B i s k u p, *Grunwaldzka bitwa. Geneza - przebieg - znaczenie - tradycja*, Warszawa 1991; J. T y s z k i e w i c z, *Ostatnia wojna z Zakonem Krzyżackim 1519-1521*, Warszawa 1991.

<sup>17</sup> M. C h r i s t o p h o r i H a r t k n o c h s, *Alt und Neues Preussen ...*, Frankfurt - Leipzig 1684, pp. 261, 306.

<sup>18</sup> J. V o i g t, *Geschichte Preussens von den ältesten Zeiten bis zum Untergang der Herrschaft des Deutschen Ordens*, I-IX, Königsberg 1827-1839.

commanders and politicians involved, operation plans, peace negotiations, etc. Arms and armour, owing to which great commanders could realize their plans, somehow failed to capture their attention. That weapons were underrated as an important element of military policy seems also to have been partly caused by the lack of knowledge of their practical use: the history of the wars waged by the Teutonic Knights was dealt with mainly by civilians who lacked military experience.

The work by F. A. Vossberg, the well known numismatist, belongs to the second group of publications. His fundamental study, in many ways still actual today, on Teutonic coins, contains a chapter where weapons and horse equipment of the Teutonic Knights are discussed<sup>19</sup>. His sources of information consisted only of statutes, rules and customs of the Order and therefore his data on arms and armour are sparse, being no more than a list of particular categories of military equipment.

Studies fully devoted to the subject in question did not appear until half a century later after the publication of Vossberg's work. Yet the article by T. Blell, of less than 10 pages, cannot be regarded as a serious study on this subject<sup>20</sup>. M. Töppen, author of interesting studies on the life of the inhabitants of medieval Elbląg, paid considerable attention to the organization, numerical strength and compositions of the detachments of this town, which took part in military campaigns of the Order<sup>21</sup>. He drew his inferences from written sources, notably the account book of the town of Elbląg<sup>22</sup>. Yet he did not write much on arms and armour as this subject was only briefly treated in the sources<sup>23</sup>. Töppen was also interested in Teutonic artillery<sup>24</sup>.

G. Bujack's article, which appeared a few years later, was until recently the most outstanding one in the field of research on the Teutonic arms and armour<sup>25</sup>. Though the organization of campaigns and the structure of the armed forces of the Order were Bujack's main subject, his study merits attention because in addition to statutes he used other written sources, iconographic material, and the few original examples of arms and armour. Bujack discovered that extensive research

<sup>19</sup> F. A. Vossberg, *Geschichte der preussischen Münzen und Siegel von frühester Zeit bis zum Ende der Herrschaft des Deutschen Ordens*, Berlin 1843, pp. 13-15.

<sup>20</sup> T. Blell, *Kriegsgewand und Bewaffnung des Hochmeisters und der Ritter des Deutschen Ordens in der 1. Hälfte des 13. Jahrhunderts*, "Sitzungsberichte der Altertumsgesellschaft Prussia zu Königsberg", 6, 1879/1880, pp. 42-48.

<sup>21</sup> M. Töppen, *Elbinger Antiquitäten. Ein Beitrag des städtischen Lebens im Mittelalter*, 1, Marienwerder 1870, pp. 74-104.

<sup>22</sup> *Das Elbinger Kriegsbuch*, "Altpreussische Monatschrift", XXXVI, 1889, pp. 223-273.

<sup>23</sup> Mentions such as *her Johann von Hervorde 2 perde und 2 wepener* dominate in the sources, M. Töppen, *Elbinger Antiquitäten* ..., p. 75.

<sup>24</sup> M. Töppen, *Die ältesten Nachrichten über des Geschützwesen in Preussen*, "Archiv für Officiere des Kgl. Preussischen Artillerie und Ingenieurs Corps", 32, Berlin 1868. This publication is now only of historical significance.

<sup>25</sup> G. Bujack, *Zur Bewaffnung und Kriegsführung der Ritter des Deutschen Ordens in Preussen*, "Programm des Altstädter Gymnasium für Ostern" 1887/1888, Königsberg 1888, pp. 1-22.

possibilities exist in the analysis of written sources. He noticed that the Teutonic arms and armour were by no means uniform, and paid some attention to shields, swords, staff weapons and parts of horse harness.

We should also mention the article by M. Baltzer, who — in contrast to his predecessors — took interest in the arms and armour of later periods, mainly dating from the second half of the 15th century<sup>26</sup>. Yet he did not attempt to classify weapons and equestrian equipment or to differentiate them typologically.

B. Engel had doubtless a share in the assessment and increase of the sources available to the researchers of Teutonic arms and armour. However, he was engaged in the publication of materials rather than in their analysis. He published information on arms and armour given in the account books of the Order<sup>27</sup>. Besides, he was the first to recognize the importance of pictorial evidence for the reconstruction of historic weapons and equestrian equipment<sup>28</sup>. Apart from papers devoted to artillery, which is beyond the scope of this study<sup>29</sup>, almost 60 years had to pass before further studies dealing with the Teutonic arms and armour have been published<sup>30</sup>. References to Teutonic military equipment made when discussing arms and armour from other parts of Europe appeared somewhat earlier<sup>31</sup>.

The first monograph of the Teutonic arms and armour was published in 1980<sup>32</sup>. This is what A. Nadolski wrote about the role of this book: "Der unbestreitbare Wendepunkt auf dem uns interessierenden Gebiet erfolgte im Jahre

<sup>26</sup> M. Baltzer, *Zur Geschichte des Danziger Kriegswesens im 14. und 15. Jahrhunderts*, [in:] "Programm des Kgl. Gymnasium zu Danzig", Danzig 1893.

<sup>27</sup> B. Engel, *Nachrichten über Waffen aus dem Tresslerbuche des Deutschen Ordens 1399-1499*, "Zeitschrift für Historische Waffenkunde", I, 1897-1899, pp. 195-233.

<sup>28</sup> In a series of articles he published iconographic sources presenting warriors from Prussia. The representations are no longer extant so the publications are the only available evidence. B. Engel, *Waffengeschichtliche Studien aus dem Deutschordensgebiet*, "Zeitschrift für Historische Waffenkunde", II, 1900-1902, pp. 94-102, 174-175, 214-217, 348-351; III, 1902-1905, pp. 37-40; IV, 1906-1908, pp. 118-125; V, 1909-1911, pp. 12-15; VII, 1915-1917, pp. 136-139.

<sup>29</sup> B. Rathagen, *Die Pulverwaffen im Deutschordensstaat von 1362 bis 1450*, "Elbinger Jahrbuch", 2, 1924.

<sup>30</sup> A. R. Chodyński, *Zbrojownie malborskie. Katalog wybranych obiektów ze zbiorów Muzeum Zamkowego w Malborku*, Malbork 1978. Basing on written sources, the author lists kinds of arms and armour housed in Teutonic Marienburg. Despite its shortcomings (errors in terminology, erroneous assessment of certain references) the work merits attention though it is not very useful for the study of arms and armour.

<sup>31</sup> The following works can be cited as examples: H. Niekel, *Der mittelalterliche Reiterschildd*, Inaugural-Disertation zur Erlangerung des Doktorgrades der Phil. Fak. der Freien Universität, Berlin 1958; A. Nadolski, *Influences balto-slaves dans l'armement des Chevaliers Teutoniques*, [in:] *Berichte über den II. Internationalen Kongress für Slavische Archäologie*, II, Berlin 1973, pp. 33-36; A. Nowakowski, *Przyczynki do poznania tak zwanej zbroi mazowieckiej*, "Kwartalnik Historii Kultury Materialnej", XXI, 1973, 2, pp. 289-298. Graphic reconstruction of the figures of the Teutonic Knights can also be found in: E. Wagner, *Z. Drobna*, J. Durdik, *Kroje, zbroja zbrane doby predhusiske a husiske*, Praha 1956.

<sup>32</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich w Prusach w XIV w. i na początku XV w.*, Łódź 1980.



1980, mit der Herausgabe der monographischen Bearbeitung von Andrzej Nowakowski über die Bewaffnung des Deutschordensheeres in Preussen im Laufe des 14. Jhs. und zu Beginn des 15. Jhs. Die Monographie von Nowakowski zeichnet sich aus durch Auswertung aller zugänglichen Quellenkategorien, d.h. im Original erhaltenen Realien, an die Ikonographie und schriftliche Quellen. Fügen wir gleich hinzu, dass nur eine solche Themenbehandlungen den Anforderungen entspricht, die an eine auf moderne Weise begriffen waffenkundliche Arbeit gestellt werden"<sup>33</sup>. Since findings published there are used in this study, the monograph will not be discussed in detail. A few years later this writer published a book dealing with selected problems of the military history of the Order in the years 1250-1525<sup>34</sup>, including a chapter on arms and armour used by Teutonic troops<sup>35</sup>. Other subjects discussed by this author include production of arms and armour in Prussia and stores of mobilization weapons kept in castles<sup>36</sup>.

The 1980s witnessed a considerable development of studies on the problems under discussion. Polish experts on this subject play here a leading role. They have called attention to the erroneous assessment of the Teutonic arms and armour, which seemingly did not include Baltic and East European elements<sup>37</sup>. They wrote about the arms and armour of outstanding personalities in the history of the Order<sup>38</sup>. Publications discussing armouries and quantitative and qualitative changes in the equipment stored there also merit attention<sup>39</sup>. Valuable studies on the production of arms and armour in the Order's State<sup>40</sup>

<sup>33</sup> A. N a d o l s k i, *Die Forschungen* ..., p. 53.

<sup>34</sup> A. N o w a k o w s k i, *O wojskach* ...

<sup>35</sup> *Ibidem*, pp. 121-170.

<sup>36</sup> *Ibidem*, pp. 88-120.

<sup>37</sup> The first to pay attention to this problem was A. N a d o l s k i, *Influences* ..., and in Polish: *Niektóre elementy bałto-słowiańskie w uzbrojeniu i sztuce wojennej Krzyżaków*, "Pomorania Antiqua", V, 1974, pp. 165-173; A. N o w a k o w s k i, *Przyczynki* ...; *idem*, *Jeszcze o genezie pawęży. Uwagi na marginesie książki A. N. Kirpicznikowa*, "Kwartalnik Historii Kultury Materialnej", XXVIII, 1980, 1, pp. 11-115; M. G ł o s e k, A. N o w a k o w s k i, *Średniowieczna przyłbica z Muzeum Okręgowego w Toruniu. Przyczynek do znajomości bałtyjskiego uzbrojenia ochronnego*, "Kwartalnik Historii Kultury Materialnej", XXVIII, 1980, 1, pp. 53-61; A. N o w a k o w s k i, T. O r ł o w s k i, *Dwa przedstawienia uzbrojenia bałtyjskiego w średniowiecznej plastyce figuralfnej z ziem polskich*, "Acta Universitatis Nicolai Copernici, Archeologia", 8, 1984, pp. 83-95.

<sup>38</sup> J. D a n k a, A. N o w a k o w s k i, *Osobiste arsenaty Władysława Jagiełły i Ulryka von Jungingen w świetle współczesnych rachunków*, "Kwartalnik Historii Kultury Materialnej", XXIX, 1981, 1, pp. 21-34.

<sup>39</sup> A. N o w a k o w s k i, *Arsenaty zamków krzyżackich w Prusach w latach 1362-1431*, "Acta Archaeologica Lodziensia", 31, 1986, pp. 49-99 [further cited as *Arsenaty I*]; *idem*, *Arsenaty zamków krzyżackich w Prusach na początku XVI stulecia*, *ibidem*, 32, 1986, pp. 43-60 [further cited as *Arsenaty II*]; *idem*, *Some Remarks about Weapons stored in the Arsenals of the Teutonic Order's Castles in Prussia by the End of the 14th and early 15th Centuries*, "Ordines Militares. Colloquia Toruniensia Historica", VI, Toruń 1991, pp. 75-88.

<sup>40</sup> W. Ś w i e t o s ł a w s k i, *Zamkowe siodlarnie krzyżackie w Prusach*, "Kwartalnik Historii Kultury Materialnej", XXXVI, 1986, 4, pp. 649-663.

as well as on the role played by particular kinds of weapon in the military activity of the Teutonic Knights<sup>41</sup> have also been published along with those discussing original relics<sup>42</sup>.

Because of the progress made in the studies on the Teutonic arms and armour in Prussia, their results began to be used in the studies on Polish military equipment, mainly for the purpose of comparison. In the latest monograph of Polish medieval arms and armour several references are made to Teutonic materials: original examples, and written and iconographic sources<sup>43</sup>.

Prussian analogies are also a valuable comparative material in the studies of Polish military craft<sup>44</sup>. The relevant terminology used in Teutonic written sources sometimes facilitates studies on the terminology used in medieval Poland<sup>45</sup>.

It should be added that it would not be possible to study so much more fully the course of the battle of Grunwald fought on 15 July 1410, were it not for the attention paid to the changes that took place in the arms and armour of Teutonic Prussia.

Also problems of military history can now be treated more fully in monographs of the history of the Order's State<sup>46</sup> than it has so far been possible.

<sup>41</sup> S. E k d a h l, *Die Armbrust im Deutschordensland Preussen zu Beginn des 15. Jahrhunderts*, "Fasciculi Archaeologiae Historicae", V, 1992, pp. 17-48.

<sup>42</sup> M. G ł o s e k, A. N o w a k o w s k i, *o.c.*; A. N a d o l s k i, *Relikt późnośredniowiecznej broni obuchowej z Rękwownicy, woj. olsztyńskie*, "Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi. Seria Archeologiczna", 25, 1978, pp. 181-184; R. F r a n c z u k, T. H o r b a c z, *Fragmety późnośredniowiecznej zbroi z zamku krzyżackiego w Małej Nieszawce*, "Kwartalnik Historii Kultury Materialnej", XXXV, 1987, 2, pp. 219-234; A. N o w a k o w s k i, *Średniowieczny hełm z Olsztyna*, "Rocznik Olsztyński", XVI, 1989, pp. 147-154.

<sup>43</sup> *Uzbrojenie w Polsce średniowiecznej 1350-1450*, ed. A. N a d o l s k i, Łódź 1990, pp. 77, 89, 94, 151, 157ff. That Teutonic military equipment is virtually unknown is indicated by synthetic studies on the history of arms and armour in Poland published not long ago. Significantly, even the monumental work by Z. Ż y g u l s k i, *Broń w dawnej Polsce na tle uzbrojenia Europy i Bliskiego Wschodu*, 1st ed., Warszawa 1975, 2nd ed., Warszawa 1988, where Polish arms and armour are discussed against a wide comparative, occasionally non-European, background, does not mention Teutonic arms.

<sup>44</sup> J. S z y m c z a k, *Produkcja i koszty uzbrojenia rycerskiego w Polsce XIII-XV w.*, Łódź 1989; A. S w a r y c z e w s k i, *Platnerze krakowscy*, Warszawa - Kraków 1987.

<sup>45</sup> A. N o w a k o w s k i, J. S z y m c z a k, *Rodzaje uzbrojenia ochronnego w Polsce w okresie monarchii stanowej w świetle źródeł pisanych*, "Kwartalnik Historii Kultury Materialnej", XXXIII, 1985, 1-2, pp. 29-48.

<sup>46</sup> A. N a d o l s k i, *Grunwald 1410*, "Uniformes", 1981, 64, pp. 13-18; A. K l e i n, A. N a d o l s k i, A. N o w a k o w s k i, *Album Grunwaldzki*, Olsztyn 1988, p. 10; A. N o w a k o w s k i, *Wojownicy pod Grunwaldem*, Warszawa 1988, pp. 28-31; A. N a d o l s k i, *Grunwald* ..., pp. 53-58.

## SOURCES

The sources that are the basis of the study on the Teutonic arms and armour are varied, and in addition to original examples of military equipment include written and iconographic materials as well.

It is absolutely necessary to use all available materials since one category of sources provides but inadequate information. Yet it is not the abundance of information provided by the analysis of one category of sources that is important, but its authenticity and reliability<sup>47</sup>.

Among relevant written records the most valuable for the study of arms and armour are those that give direct information on the subject in question, without any embroidery. This group includes various account books, lists of expenses, reports on the inspection of castle armouries, municipal records, and some official and legal documents. If there is no suspicion that they were falsified, this category of sources can be regarded as trustworthy.

One of the most important written sources is *Das Marienburger Tresslerbuch*<sup>48</sup>, which contains lists of sums spent by the Order, mainly the Marienburg convent and the Grand Master, on buying and repairing arms and armour. The book is of special value because the information it provides is direct. Besides, it records current prices of arms and armour and sometimes even enables us to discern their variety or differences in quality of the same kind of weapon or equipment. The habit of recording the production centres or even the name of the

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<sup>47</sup> The part played by particular categories of sources in studies of medieval arms and armour has been repeatedly discussed. Recently on this subject A. N o w a k o w s k i, *Uzbrojenie średniowieczne w Polsce* ..., pp. 21-33.

<sup>48</sup> *Das Marienburger Tresslerbuch der Jahre 1399-1409*, ed. by E. J o a c h i m, Königsberg 1896 [further cited as *MTB*].

craftsman who sold a particular piece of arms and armour is also of considerable value, e. g. *item 4 m. vor 4 armbroste die unser homeyster selben koufte von Peter bogener zum Elbinge*<sup>49</sup>, or *item 4 m vor eyn rosezug unserm homeyster das Cunrat Leczkaw zu Danczk machen lis mit silber gemaler*<sup>50</sup>, or *item 48 m vor 32 ceplin und ysenhute der woren 24 stelyn und 8 yserynne von Jacop pleteners*<sup>51</sup>. From the above quotations, which tell us about decorating arms and armour and for whom they were made, it is possible to infer that helmets of the same type could be either of steel or of iron. Thus the set of information given by these notes is by no means negligible.

The book has already attracted the attention of historians of arms and armour and has been used in studies on the military history of the Order<sup>52</sup>. It contains several hundred pieces of information on offensive and defensive arms and armour, elements of horse harness, artillery, battle horses, supply columns, etc. The description is so precise that occasionally it is possible to reconstruct a piece of arms or armour: *item 16 ysenhute, 12 weyse und 4 swarze*<sup>53</sup>. There are several references to the mending of equipment, e.g. *item 7 scot dem sarewechter vor unsers homeysters rinkenharnasch zu bessern*<sup>54</sup> or *2 scot, dy Ruschen armledir zu bessern*<sup>55</sup>.

It is a pity that the book concerns only the years 1399-1409 and does not cover the period following the Great War since there is a lack of detailed information about this event so important for the Teutonic Knights.

Particularly valuable information can be found in *Das Ausgabebuch des Marienburger Hauskomturs*<sup>56</sup>, which in principle mentions the same equipment as the cash book. The phrases used are analogous, too, e.g. *item 1/2 m 1 sc. dem moler czu molen einen schilt mit silber und 1 tartsche dem groskompthur*<sup>57</sup>, or *item 4 sc. vor des homeisters huwen und swert reyn czu machen*<sup>58</sup>. The references to helmets and armour are rarer, while those about artillery and horse harness grow in number, this being understandable as the supervision over the

<sup>49</sup> MTB, p. 481.

<sup>50</sup> MTB, p. 589.

<sup>51</sup> MTB, p. 441.

<sup>52</sup> Only the earlier literature is cited: B. E n g e l, *Nachrichten über Waffen aus dem Tresslerbuche des Deutschen Ordens von 1399-1409*, "Zeitschrift für Historische Waffenkunde", I, 1897-1899, pp. 195-199; pp. 228-233; G. B u j a c k, *Das Söldnerwesen des Deutschen Ordensstaates in Preussen bis 1466*, "Zeitschrift für Preussische Geschichte und Landeskunde", VI, Königsberg 1869, pp. 717-736; M. T ö p p e n, *Über die Pferdezucht in Preussen zur Zeit des Deutschen Ordens, nebst einigen Bemerkungen über die Sweiken*, "Altpreussische Monatschrift", VI, 1867, pp. 681-703.

<sup>53</sup> MTB, p. 101.

<sup>54</sup> MTB, p. 561.

<sup>55</sup> MTB, p. 101.

<sup>56</sup> *Das Ausgabebuch des Marienburger Hauskomturs für die Jahre 1410-1420*, ed. by W. Z i e s e m e r, Königsberg 1911 [further cited as AMH].

<sup>57</sup> AMH, p. 336.

<sup>58</sup> AMH, p. 90.

workshop where horse harness was produced and kept was the duty of the castle commander. There appear new records about craftsmen who finished off arms and armour (*harnishfeger* and *swertfeger*) and about the *pfeilschefter* who produced bolts and provided them with feathering.

Valuable information is also provided by *Das Grosse Ämterbuch des Deutschen Ordens*<sup>59</sup>. The book, which covers — and this is important — the period from the second part of the 14th century to the secularization of the Order in 1525 (though there are gaps for the second half of the 15th century), contains inventories of the commanderies, Voigteien, smaller territorial units and of particular castles.

The inventories made during the transfer of the administration of a territorial unit can be trusted because they are based on personal inspection. As a rule, each covers several decades, so it is possible to note changes in the quality and quantity of arms and armour stored in the armouries.

Most castles had at least two armouries: one for the arms and armour of the commander and the Voigt, and the other where mobilization weapons were stored. This is shown, for instance, by the inventory of 1379 made in Königsberg *item harnusch: 12 panczir, 49 platen, 2 1/2 schog pruscher helme bose und gut, item in syner [Grand Marshall] kamer: 50 helmen und huben mit slappen, item 8 schose, item 6 par grusener und 2 hundskogil, item 5 kolnir, item 4 par strichhosen, item 37 bronigen in den stoben*<sup>60</sup>.

The mention tells us about the general arsenal of the castle, the armoury of the Grand Marshall, and about arms kept in living quarters.

When analysing the references to arms and armour, one is struck by the precision of the description and by the thorough knowledge of certain types of weapons, notably elements of armour, helmets and crossbows, shown by those responsible for the inventories. The source mentions more than ten types of armour or its parts, each of which has its own name. Sometimes additional definitions are recorded, e.g. *bose, gut, alte, or engelische, rusche*, etc. Helmets, too, were similarly defined, e.g. *item 118 helm und prewsche hawben, der ist 22 mit gehenge*<sup>61</sup> or *item 32 blancke hutten und hauwen ... item 2 swartcze eysenhutte, item 1 swartcze hauwe, item 14 swartcze pekelhawbechen*<sup>62</sup>. The same relates to the crossbow, in the description of which even the constructional details are recorded.

Though this book describes only mobilization arms and armour worn by local mercenaries, so-called Knechts, and ignores personal weapons of the Knights, as these were not registered, it is invaluable for the studies in question. It can also

<sup>59</sup> *Das Grosse Ämterbuch des Deutschen Ordens*, ed. by W. Z i e s e m e r, Danzig 1921 [further cited as GAB].

<sup>60</sup> GAB, p. 3.

<sup>61</sup> GAB, p. 39.

<sup>62</sup> GAB, p. 106.

be used in the study of other problems concerning the military history of the Order<sup>63</sup>.

Though of limited spatial scope, *Das Marienburger Ämterbuch* is of similar value<sup>64</sup>. It contains inventories of the offices of Marienburg commandery, of the Grand Commander and Treasurer, covering the years 1375-1452. The arms and armour listed there are exactly described, notably missile weapons stored in the crossbow workshop, eg. the list of 1393 reads: *item orter czu 14 armbrost ... item 20 neuwe armbrostwinden ... item 32 armbrost mit orten ym kasten dy sule haben, item 27 armbrost mit sulen, item 62 armbrost czu sulen*<sup>65</sup>. Of great interest is the inventory of the Grand Master's armoury of 1448: *item desir nochgeschriben harnisch ist geczalt in unsers homeysters harnischkamer*<sup>66</sup>. This armoury held great stores of various military equipment, including 646 breastplates, hauberks and brigandines, a lot of limb-defences, 470 helmets, and great numbers of hook-guns, crossbows, shields, pikes and saddles<sup>67</sup>.

Sources dominated by direct description of military equipment include the Statutes of the Order<sup>68</sup>. As already mentioned, they have been frequently used in earlier literature as sources of information about military matters of the Order, though as a matter of fact they are of little use for this purpose. Of the many parts of the Statute the regulations added by successive Grand Masters are the most useful, since they are evidence for the frequent breaking of legal norms and thus throw light on the daily life of the Knight often in conflict with the letter of the law. The fact that it was necessary to remind the Knights about their duties and to forbid certain behaviours tells us more about the realities of life, notably since the second half of the 14th century. Thus the additional rules are a more reliable source of information about the current customs of the Order than theoretical principles of the Statutes.

That references to arms and armour are fairly numerous is not surprising in view of the role played by military equipment in the life of the Order. The decrees of the Grand Masters: Dietrich von Altenburg (1335-1341) and Winrich von Kniprode (1351-1382) are of particular interest. These dignitaries tried to reintroduce former strict customs and therefore forbade the Knights to carry ornamented or sophisticated weapons.

Among other written records, connected with the administration of the Order, the accounts of the Grand Dispensers, which contain references to trade in military equipment, merit attention<sup>69</sup>.

<sup>63</sup> Cf. footnote 39.

<sup>64</sup> *Das Marienburger Ämterbuch*, ed. by W. Z i e s e m e r, Danzig 1911 [further cited as MAB].

<sup>65</sup> MAB, p. 143.

<sup>66</sup> MAB, p. 159.

<sup>67</sup> MAB, p. 159.

<sup>68</sup> *Die Statuten des Deutschen Orden nach dem ältesten Handschriften*, ed. by M. P e r l - b a c h, Halle 1890 [further cited as *Statuten*].

<sup>69</sup> *Handelsrechnungen des Deutschen Ordens*, ed. by C. S a t t l e r, Leipzig 1887 [further

Certain new materials relating to the subject in question are provided by collections of normative records concerning social and professional groups. Information about stores of municipal armouries and kinds of arms and armour kept there can be gleaned from orders and regulations issued by state authorities for the Prussian towns, especially during military campaigns. The listing of duties assigned to the population of Teutonic Prussia and occasional references to the kind of equipment it was expected to have during the war make the information reliable since there is no doubt that the instructions took account of the current situation<sup>70</sup>. As an example, we may quote the duties imposed by Ulrich von Jungingen in March, 1410: *item habin di stete eingetragen ... das alle lute in der steten wonende sullen habin iren harnisch, also pancere, broste, ysenhutte, blechhanczen*<sup>71</sup>. Of considerable interest are the orders that forbade to trade in arms with Poland<sup>72</sup> or to carry personal weapons in the streets: *item das nymand in den steten sal tragen swerth und keyn langer meszir*<sup>73</sup>.

Occasional references to arms and armour can be found in Hansa materials that contain correspondence and notes of the *Recesse* type concerning Prussian towns<sup>74</sup>. For instance, the record of 1393 lists elements of full defensive armour *ganczen plattenharnasch, was dorczu gehort, alze eyne hube, eyne plate, armleder, vorstael, beynwapen und ... eyne tarcze*<sup>75</sup>.

Among the accounts of Prussian towns, published so far, the most valuable is the account book of the town of Elbląg<sup>76</sup>, whose fragments were published and partially used already in the 19th century<sup>77</sup>. The book contains data concerning annual takings and expenditure of municipal officers. For us, of special interest are sums spent on arms and armour, munition and transport of municipal military contingents that took part in the campaigns in Gotland in 1405, in Samogitia in 1405, and in the wars of 1409-1410, 1413, and 1414.

The records of the book are very similar to those in *Das Marienburger Treslerbuch*, the references to cannons, crossbows, defensive weapons and horse harness being particularly numerous. Here are some examples: *item gegeben Iohannes Wilden 5 mr. vor 4 stormtarczen czuczumachin. Item gegeben Stregener,*

cited as HDO].

<sup>70</sup> *Acten der Standetage Preussens unter der Herrschaft des Deutschen Ordens*, ed. by M. T ö p p e n, I-V, Leipzig 1874-1886 [further cited as ASP].

<sup>71</sup> ASP, no 58.

<sup>72</sup> ASP, no 31.

<sup>73</sup> ASP, no 239.

<sup>74</sup> *Die Recesse und andere Akten der Hansetage von 1256-1430*, ed. by M. K o p p m a n, I-V, Leipzig 1870-1882.

<sup>75</sup> *Ibidem*, IV, no 280.

<sup>76</sup> *Nowa Księga Rachunkowa Starego Miasta Elbląga. 1404-1414*, ed. by M. P e l e c h, pt. I (1404-1410), Warszawa - Poznań - Toruń 1987, pt. II (1411-1414), Warszawa-Poznań-Toruń 1989 [further cited as NKRSM].

<sup>77</sup> M. T ö p p e n, *Elbinger Antiquitäten ...*, B. R a t h g e n, o.c., pp. 61-95; F. B e n n i n g - h o v e n, *Die Gotlandfeldzüge ...*, pp. 456-475.

*dye stormtarczen czu beslan*<sup>78</sup> or *item vor 4 ysenhuette nye czu padawitten, dy her Liffart mit zik ken Engelant, unde 2 gancze bynharnsch bouen unde nenende, unde 1/2 binharnsch al reyne to maken unde 1 par vorstale unde 1 rore*<sup>79</sup>.

Unfortunately, the so-called *Elbinger Kriegsbuch* of 1383-1409<sup>80</sup>, published by M. Töppen, lists only warriors sent from Elbląg to take part in various campaigns launched in those years. It says extremely little about arms and armour, referring only to: "horseman", "armoured warrior", "lanceman", "shooter", etc.<sup>81</sup>

Lists of sums spend by towns on war campaigns contain sparse information of importance for the study on arms and armour. This concerns mainly Toruń<sup>82</sup>. Though the records tell us about military equipment provided by Toruń, which at that time was the member of the Prussian Confederation, yet the larger part of the collection had already been amassed during Teutonic rule<sup>83</sup>.

Interesting information can be found in the acts of the Polish-Teutonic lawsuits of the 14th century<sup>84</sup>, especially in the materials of the process of Warsaw of 1339. The testimony of the witnesses throws light not only on military equipment but also on Teutonic garment worn during campaigns or on the participation of warriors of Prussian origin in Teutonic troops, and also on banners and signs put on the cloth of the banners.

The relevance of other sources, notably documents containing direct information about arms and armour, should also be discussed. In Teutonic Prussia, as in other European countries, the formulas used there are schematic. Only the subjects of legal documents vary, but in the case when the recipient of the grant was obliged to appear armed, the descriptions of arms and armour are conventional. Here are some examples differing in chronology. In 1310 the owner of the estates on the Chełmno law was obliged to serve *cum uno dextrario*<sup>85</sup>.

<sup>78</sup> NKRSME, no 971.

<sup>79</sup> NKRSME, no 783.

<sup>80</sup> Cf. footnote 22.

<sup>81</sup> M. Töppen, *Elbinger Antiquitäten ...*, pp. 74-104.

<sup>82</sup> I. Janosz - Biskupowa, *Materiały dotyczące udziału Torunia w wyprawie krzyżackiej na Ziemię Dobrzyńską w r. 1409*, "Zapiski Historyczne", XXV, 1960, 2, pp. 83-101. The remaining Toruń books virtually give no information on the kinds of arms. Cf. *Księga Theudenskusa*, ed. by L. Koczny, Toruń 1937; *Księga długów miasta Torunia z okresu wojny trzynastoletniej*, ed. by K. Ciesielska and I. Janosz - Biskupowa, Toruń 1964. The municipal book of Świecie does not provide relevant information, cf. F. Bennin ghen, *Der Stadtbuch von Schwetz 1374-1454*, "Zeitschrift für Ostforschung", XXI, 1972, pp. 54-80.

<sup>83</sup> The mentions mostly refer to artillery which we do not discuss. M. Biskup, *Wykaz broni palnej i innego sprzętu wojennego, wysłanego przez Toruń w okresie wojny trzynastoletniej*, "Zapiski Historyczne", XXVI, 1966, 1; cf. also M. Biskup, *Wykaz sprzętu artyleryjskiego Zakonu Krzyżackiego w Prusach z około 1523 r.*, "Komunikaty Mazursko-Warmińskie", 1985, 1-2, pp. 97-103.

<sup>84</sup> *Lites ac res gestae inter Polonos Ordinemque Cruciferorum*, 2nd ed. by Z. Celi chowski, Poznań, 1890 [further cited as *Lites*].

<sup>85</sup> *Pommerelisches Urkundenbuch*, ed. by M. Perlbach, Danzig 1882, no 692 [further cited as *Pom.Ukb.*].

According to a document of 1342 granted to a Prussian, he was obliged to take part in the campaign *sub forma Pruthenicali ... cum armis et equis consuetis*<sup>86</sup>. The phrase dominant in documents reads: *servicium quod plathendinst dicitur*<sup>87</sup> or *rossdienst*<sup>88</sup>. The document of 1390 contains the phrase: *diesselbin sullin haben ir gantzen harnasch von dem haupte bis czu fus*<sup>89</sup>. For that reason, when we meet the phrase *platendienst*, which was the synonym of military service already in 13th-century documents, or: *consueta arma Pruthenicalia*, we cannot reconstruct the type of arms and armour — a thing of primary importance for this study<sup>90</sup> — even if the phrase is accompanied by explanations: *videlicet bronnia, galea, lancea et clipeo*<sup>91</sup>.

Of the sources narrating military events, only those written in Prussia and Poland will be of some use, since the authors of West European or Old Russian chronicles had a poor second-hand knowledge of military matters; moreover, these chronicles contain only general information of little use to us. Nor do Scandinavian sources contain anything of importance as far as arms and armour are concerned<sup>92</sup>.

Three kinds of narrative records can be discerned: rhetorical, indirect and direct.

In the records of the rhetorical kind arms and armour are only a stylistic element of the narration, serving to emphasize the character of the events. The phrase *alii gladio trucidati sunt*<sup>93</sup> does not mean that all were put to the sword, the word sword being used to denote any kind of weapon. An indirect description contains terms suggesting that in the narrated events weapon played a major role, e.g. *occisit et captis multis hominibus armata manu*<sup>94</sup>, *et in illa fuga multi fuerunt occisi tam equites quam pedites*<sup>95</sup>, or *fratres et armigeri*<sup>96</sup>.

<sup>86</sup> *Preussisches Urkundenbuch*, III, ed. by H. Koeppe n, Marburg 1958, no 449 [further cited as *Pr. Ukb.*].

<sup>87</sup> *Pr.Ukb.*, vol. IV, Marburg 1960, no 166.

<sup>88</sup> *Pr.Ukb.*, no 388.

<sup>89</sup> *Codex Diplomaticus Prussicus*, ed. by J. Voigt, IV, Königsberg 1857, no 82 [further cited as *Cod.Dipl.Pruss.*].

<sup>90</sup> The critical edition of Teutonic documents can be found in the fundamental collection, prepared by several authors: *Preussisches Urkundenbuch*, I-V, 1882-1975. A general knowledge of the Order's acts can be derived from the publication E. Joachim, W. Hubatsch, *Regesta historico-diplomatica Ordinis S. Mariae Theutonicorum 1198-1525*, Pars I-II, Göttingen 1948-1973.

<sup>91</sup> J. Voigt, *Geschichte Preussens von ältesten Zeiten bis zum Untergange des Herrschaft des Deutschen Ordens*, VI, Königsberg 1832, p. 677.

<sup>92</sup> Cf. A. F. Grabski, *Echa bitwy grunwaldzkiej w historiografii zachodnioeuropejskiej*, "Zapiski Historyczne", XXII, 1967, 1, pp. 7-48.

<sup>93</sup> *Dusburg*, p. 176.

<sup>94</sup> *Dusburg*, p. 89.

<sup>95</sup> *Kronika Oliwska*, [in:] *Monumenta Poloniae Historica*, VI, Kraków 1893, p. 930.

<sup>96</sup> *Dusburg*, p. 61.

Though of little use for our study, the indirect references give some information on arms and armour, since they suggest the character of the encounter. The third kind of narratives contains direct references parallel with those found in the above discussed sources.

Though the Teutonic literature from the relevant period is fairly abundant<sup>97</sup>, only a few works are useful for our study.

The earliest among comprehensive chronicles is the *Chronicon terrae Prussiae* by P. Dusburg, which offers little opportunity for the study of arms and armour<sup>98</sup>. The part *Bellum Lithowinorum* is of greater interest. The events described there are closer in time to the author and therefore the descriptions of battles are more detailed than those in *Bellis fratrum domus Theutonice contra Prutenos* though it does not lack information about arms and armour, especially the role they played in cult and ideology<sup>99</sup>. Unfortunately, battles with the Prussians and Lithuanians are schematically narrated, and the description of arms and armour is usually limited to rhetorical and indirect references such as *Frater Henricus dictus Stango, commendator de Cristburg, cum exercitu magno de magistri mandato processit ad bellum contra Sambiam ... occisit et captis multis hominibus ... armata manu ... lanceis suis plures vulneravit*<sup>100</sup>, or *de Bavaria sagittarius in castris Raganita fuit*<sup>101</sup>.

Only some records, e.g. that of 1246 of the raid on Sambia or that of the battle near Grodno in 1305, are marked by a vividness of description and inform in some detail about arms and armour<sup>102</sup>.

Of the Prussian chronicles that by Wigand of Marburg is of the greatest value for the study of arms and armour<sup>103</sup>. The author, regarded as herald of the Grand Master Winrich von Kniprode, wrote about the wars conducted by the Order in

1311-1394, relating them from the lay point of view and presenting the battles between the Teutonic Knights and the Lithuanians as chivalrous activities only. He sometimes mentions the names of the participants, e.g. *Conradus Hoberg vibrata lancea sua eundem detrusit de equo in terram*<sup>104</sup>, or *Accidit, quod quidem frater Tilemannus de Sunpach magister sagittariorum telo igneo vexillum combussit et statim post paganorum regem de Tracken telo vulnerat in collum inter scapulos*<sup>105</sup>. Like Dusburg, he occasionally informs about the composition of the Teutonic troops, the kinds of weapons carried by the combatants, and also about the participation of Prussian knights and mobilized peasants<sup>106</sup>.

Of the other chronicles written in Prussia, only a few merit attention of a scholar engaged in the study of arms and armour. The so-called *Die ältere Hochmeisterchronik*, which compiles the records of earlier chronicles, occasionally supplementing the descriptions of events borrowed from other authors, offers little information on the subject in question<sup>107</sup>. In addition to description of such type as *luten an pferdin und an wapin*<sup>108</sup>, it contains several relations of combats where arms and armour are less schematically treated, e.g. the description of the campaign of 1262, which relates the dramatic episode: *In dem selbin streite iagte bruder Gerhard Sachze eynem Prusyn noch, und hib ym yn dem loffe das haupt abe*<sup>109</sup> or the references of 1453 to the siege of a fortress: *Idoch VIII manne lifen an den berg mit armbrosten und mit tarzen*<sup>110</sup>.

Unfortunately, the later works of Prussian historiography, which relate the course of the Thirteen Year's War (1452-1466), are of no use for the study of arms and armour. The memoirs of an unknown adherent of the Order, a rather biased description of battles fought with the Prussian Confederation and with Poland, though lively and picturesque, inform occasionally about military equipment, yet only that used by alien mercenaries<sup>111</sup>. Nor can any reference to arms and armour be found in the memoirs of Johann Lindau, Gdańsk secretary, who wrote about the war from the point of view of the merchants of Gdańsk<sup>112</sup>.

Of the Polish narrative records, the chronicle by Jan Długosz<sup>113</sup> is of the greatest importance for the subject in question. Leaving aside the assessment of

<sup>97</sup> The progress made in the study of Order's literature did not reduce the value of the work by M. T ö p p e n, *Geschichte der preussischen Historiographie von P. v. Dusburg bis auf K. Schütz, oder Nachweisung und Kritik der gedruckten und ungedruckten Chroniken zur Geschichte Preussens unter der Herrschaft des Deutschen Ordens*, Berlin 1853. New publications include K. H e l m, *Die Literatur des Deutschen Ordens im Mittelalter*, "Zeitschrift für den Deutschen Unterricht", XXX, Berlin 1916, pp. 289-306, 363-370, 430-438; K. H e l m, W. Z i e s e m e r, *Die Literatur des Deutschen Ritterordens*, Gießen 1951; O. E n g e l s, *Zur Historiographie des Deutschen Ordens im Mittelalter*, "Archiv für Kulturgeschichte", XLVII, 1967, 3, pp. 15ff. The burghers historiography is analysed by J. D w o r z a c z k o w a, *Dziejopisarstwo gdańskie do połowy XVI wieku*, Gdańsk 1962.

<sup>98</sup> *Scriptores Rerum Prussicarum*, I, Leipzig 1861.

<sup>99</sup> A fairly extensive chapter is devoted to the symbolism of the arms, based on the information from the Scripture, D u s b u r g, pp. 44-48.

<sup>100</sup> D u s b u r g, p. 89.

<sup>101</sup> D u s b u r g, p. 179.

<sup>102</sup> D u s b u r g, pp. 89, 175-176.

<sup>103</sup> *Cronica nova Pruthenica*, [in:] *Scriptores Rerum Prussicarum*, II, Leipzig 1863, pp. 468-661 [further cited as W i g a n d]. The original chronicle has not survived, only its Latin version completed in 1464 on Jan Długosz's order is known; the few original fragments have been included into the 16th-century chronicle by Kaspar Schütz.

<sup>104</sup> W i g a n d, p. 528.

<sup>105</sup> W i g a n d, pp. 493-494.

<sup>106</sup> W i g a n d, pp. 481, 493.

<sup>107</sup> *Die ältere Hochmeisterchronik*, ed. by M. T ö p p e n, [in:] *Scriptores Rerum Prussicarum*, III, Leipzig 1865.

<sup>108</sup> *Ibidem*, p. 563.

<sup>109</sup> *Ibidem*, p. 565.

<sup>110</sup> *Ibidem*, p. 636.

<sup>111</sup> *Geschichte von wegen eines Bundes von Landen und Steten*, ed. by M. T o e p p e n, [in:] *Scriptores Rerum Prussicarum*, IV, Leipzig 1885.

<sup>112</sup> *Johann Lindaus Geschichte des dreizehnjährigen Krieges*, ed. by T. H i r s c h, [in:] *Scriptores Rerum Prussicarum*, IV, Leipzig 1885.

<sup>113</sup> *Joannis Długossi seu Longini Canonici Cracoviensis Opera Omnia, cura A. Przeździecki edita*, XII-XIV, (libri X-XII), Cracoviae 1876-1878 [further cited as D ł u g o s z, with the number of the volume].

the value of this work as a source for the history of the 13th and 14th centuries, it should be stressed that the reliability of the description of events beginning from the early 15th century has not on the whole been questioned<sup>114</sup>. The importance of military matters in Długosz's works has been stressed in relevant literature<sup>115</sup>. He wrote not only about the course and reasons for launching a campaign but also about preparations for activities and their course, and he also tried to assess the results of wars. The comprehensive description of the Polish-Teutonic wars of 1409-1411 and 1454-1462 respectively can serve as examples.

However, the Teutonic arms and armour are only rarely described, mainly when Długosz narrates the combats between Polish knights and their Teutonic opponents. For instance, in his relation of the battle of Grunwald he wrote: *milites autem regi, viso exercitu sub sedecim signis posito, plerique hostilem rati, alii ingenii humani vitio in spem melioram proni Lithuanicum exercitum propter versalites lanceas alias Sulicze, quorum in eo frequens numerus habebatur*<sup>116</sup>. On another occasion he mentions a Polish warrior being wounded by a Teutonic weapon *Dobeslaus de Oleschnicza miles ... bombardae minoris seu fistulae ictum, qui scutum perforavit, exceperat*<sup>117</sup>.

The *Cronica conflictus* written soon after the battle of Grunwald is limited to the description of military activities that lasted from 24 June to 21 September 1410<sup>118</sup>. It does not mention either Polish or Teutonic arms and armour, and the only exception is the passage about the warriors in the reserve companies of the Grand Master, who before the attack *lanceas hastaque ex humeris depositas scutis iunxerunt*<sup>119</sup>.

Attention should also be paid to another work by Jan Długosz, namely to *Banderia Prutenorum* written in 1448<sup>120</sup> and containing coloured drawings of

<sup>114</sup> The sources used by Długosz are presented in: K. P i e r a d z k a, *Studia nad źródłami do XI i XII księgi "Annales" Jana Długosza głównie w latach 1411-1480*, [in:] *Pamiętnik VIII Powstaniego Zjazdu Historyków Polskich w Krakowie*, I, 1, Warszawa 1958 and J. D ą b r o w s k i, *Dawne dziejopisarstwo polskie do r. 1480*, Warszawa 1964, pp. 189-194. Cf. also A. S e m k o w i c z, *Krytyczny rozbiór Dziejów Polski Jana Długosza (do roku 1384)*, Kraków 1887; M. B o b r z y ń s k i, S. S m o l k a, *Jan Długosz, jego życie i stanowisko w piśmiennictwie*, Kraków 1893; *Rozbiór krytyczny Annalium Poloniae Jana Długosza z lat 1385-1490*, I, years 1385-1444, ed. by J. D ą b r o w s k i, Wrocław 1961; *Lata wojny trzynastoletniej w Rocznikach czyli Kronikach inaczej Historii Polskiej Jana Długosza (1454-1466)*, ed. by S.M. K u c z y ń s k i, I-II, Łódź 1964-1965. Information on Długosz's scholarly apparatus can be found in: *Długossiana. Studia historyczne w pięćsetlecie śmierci Jana Długosza*, Warszawa 1980 oraz S. E k d a h l, *Die Schlacht bei Tannenberg 1410. Quellenkritische Untersuchungen*, I, Berlin 1982, pp. 260-274.

<sup>115</sup> K. O l e j n i k, *Rozwój polskiej myśli wojskowej do końca XVII wieku*, Poznań 1976, pp. 38-39.

<sup>116</sup> D ł u g o s z, XII, p. 59.

<sup>117</sup> D ł u g o s z, XII, p. 92.

<sup>118</sup> *Cronica conflictus Wladislaw regis Poloniae cum Cruciferis. Anno Christi 1410*, ed. by Z. C e l i c h o w s k i, Poznań 1911 [further cited as *Cronica Conflictus*].

<sup>119</sup> *Cronica Conflictus*, p. 22.

<sup>120</sup> Długosz's work has been published several times. The most recent publication, with an

Teutonic banners from Grunwald. The drawings are accompanied by brief information about the units that fought in 1410 under the signs mentioned in the book. Though Długosz regarded his work as a source of information for his contemporaries and descendants, and as evidence of an important historic event, whatever his intention, the book provides excellent description of war banners, and so is of interest for the historians of arms and armour.

The second category of our sources — iconographic material — is not as varied as written records. Yet this does not mean that the use of artistic representations in the study of medieval material culture, including arms and armour, is not beset with difficulties. Leaving aside the problem of assessing a work of art as a historical source<sup>121</sup>, it should be stressed that medieval art represents, though not always faithfully, contemporary reality. For this reason it is important, though in a different way, for the study in question, its usefulness being conditioned by the degree of faithfulness to the things portrayed<sup>122</sup>.

The use of iconographic sources in the reconstruction of arms and armour has a fairly long tradition also in Polish literature<sup>123</sup> including that dealing with Teutonic arms<sup>124</sup>. Nevertheless, attention should be paid to views which in the author's opinion exaggerate the importance of iconographic material in the study of medieval weapon<sup>125</sup>.

Consideration will be given here to the so-called *objets d'art*: sculpture (in-

excellent critical commentary and very good representations of the banners has been edited by S. E k d a h l, "Die Banderia Prutenorum" des Jan Długosz — eine Quelle zur Schlacht bei Tannenberg 1410, Göttingen 1976.

<sup>121</sup> Cf. G. B a u d m a n n, *Das Kunstwerk als Geschichtsquelle*, "Deutsche Vierteljahresschrift für Literaturwissenschaft und Geistesgeschichte", XXIV, 1950; P. S k u b i s z e w s k i, *Dzieło sztuki a źródło historyczne*, [in:] *Proces historyczny w literaturze i sztuce*, Warszawa 1967, pp. 28ff.; W. J u s z c z a k, *Dzieło sztuki czy fakt historyczny*, [in:] *Granice sztuki*, Warszawa 1972, pp. 19ff.

<sup>122</sup> The usefulness of iconographic sources for the study of medieval arms and armour has been discussed by C. G a i e r, *Les armes. Typologie des sources du moyen âge occidental*, 34, Brepols-Turnhout 1979. For Poland see A. N o w a k o w s k i, *Uzbrojenie średniowieczne ...*, pp. 26-29.

<sup>123</sup> For instand Z. B o c h e ń s k i, *Uzbrojenie w krakowskich dziełach Wita Stwosza*, "Rocznik Krakowski", XXVI, 1936; L. K a j z e r, *Uzbrojenie i ubiór rycerski w średniowiecznej Małopolsce w świetle źródeł ikonograficznych*, Wrocław 1976; Z. W a w r z o n o w s k a, *Uzbrojenie i ubiór rycerski Piastów śląskich od XII do XIV wieku*, Łódź 1976. In addition to original objects and written sources, the iconographic material has been widely used by the authors of the already quoted monograph: *Uzbrojenie w Polsce średniowiecznej* (cf. footnote 43).

<sup>124</sup> Iconographic material from the area of Teutonic Prussia has been used by A. N o w a k o w s k i, *Uzbrojenie wojsk krzyżackich ...*, (cf. footnote 32) and also by A. N o w a k o w s k i and T. O r ł o w s k i, *o.c.*, pp. 83-95. Recently on the Teutonic arms represented in West European iconographic material: C. G a i e r, *Quelques particularités de l'armement des Chevaliers Teutoniques dans le baillage de Germanie Inferieure aux XIV<sup>e</sup> et XV<sup>e</sup> siècles*, "Fasciculi Archaeologiae Historicae", I, 1986, pp. 27-33.

<sup>125</sup> O. G a m b e r, *Harnischstudien V. Stilgeschichte des Plattenharnisches von dem Anfängen bis zum 1440*, "Jahrbuch der Kunsthistorischen Sammlungen in Wien", L, 1962, pp. 53ff. He thinks that the information obtained from the analysis of iconographic material is more reliable than that gained from original objects which often were remade, had certain parts changed, etc.

ding architectural sculpture), wall and altar painting, coins and seals. Those showing weapons carried by Teutonic warriors are of great interest to us. Less attention will be paid to the representations of saints or kings, though they, too, are shown carrying weapons. They will be used for comparison, as examples of period weapons, but only when their faithfulness to the thing portrayed is unquestionable.

Numismatic and sphragistic sources reflect to a certain extent things typical of the period they come from, though the drawings are somewhat schematic. This is the result not only of the artist's intention but also of the need to miniaturize the representation, and of the poor skill of the craftsman who prepared the punch.

Representations shown on coins<sup>126</sup> and seals<sup>127</sup> have been occasionally used by historians of medieval arms and armour. Despite certain limitations, e.g. the repetition of the symbolic programme on coins and seals from different periods, they are occasionally of great value for the reconstruction of arms and armour<sup>128</sup>.

Scholars have for long been concerned with the art of the Teutonic State, and its place in the culture of medieval Europe has been the subject of discussions<sup>129</sup>. Though this question does not concern us here, attention should be paid to the fact that such notions as "Teutonic art", or "art of the Teutonic Order" are being slowly replaced by "art in Prussia" under Teutonic rule. The reason for this is that the intellectual level of most Knights was none too high, and also the fact that the patrons of art included mostly lay and monastic clergy and wealthy burghers<sup>130</sup>.

<sup>126</sup> Apart from the publications mentioned in footnote 123, Polish literature includes those based exclusively on the analysis of the representation on coins, e.g. S. S u c h o d o l s k i, *Numizmatyczny przyczynek do dziejów uzbrojenia w Polsce w XI i XII w.*, "Archeologia Polski", VII, 1963, I, pp. 121-133; A. N a d o l s k i, *Numizmatyczne źródła do dziejów uzbrojenia polskiego w XI w.*, [in:] *Munera Archaeologica Josephi Kostrzewski...dedicata*, Poznań 1963, pp. 419-423.

<sup>127</sup> It is impossible to quote even the most important literature. To the publications mentioned in footnote 12, we can add: M. G u m o w s k i, *Uzbrojenie i ubiór rycerski w czasach piastowskich*, "Broń i Barwa", III, 1936, 3, pp. 51-71; B. G e m b a r z e w s k i, *Żołnierz polski. Ubiór, uzbrojenie i oporządzenie*, I, Warszawa 1960; A. N o w a k o w s k i, *Przyczynki ...*, pp. 294ff.; Z. S t e f a n s k a, *Pancerze w Polsce średniowiecznej*, "Muzealnictwo Wojskowe", II, 1964, pp. 73-141.

<sup>128</sup> Attention is claimed by the similarity of the representations of the Silesian princes (e.g. Henryk IV Prawy) on seals and tombstones, cf. Z. W a r z o n o w s k a, o.c., p. 74.

<sup>129</sup> We will not cite full literature on fine arts and other manifestations of artistic culture in the Order's State since these problems are beyond the scope of this study. The most important publications include: H. P r u t z, *Der Anteil der geistlichen Ritterorden an dem geistlichen Leben ihrer Zeit*, München 1908; K. H. C l a s e n, *Der Deutschordensstaat Preussens als mittelalterliches Kunstgebiete*, [in:] *Actes du Congrès International d'Histoire*, Stockholm 1933, p. 93ff. The ideological impact on some works of art from Teutonic Prussia has been recently discussed by J. D o m a s ł o w s k i, *Die gotische Malerei im Dienste des Deutschen Ordens*, [in:] *Die Rolle der Ritterorden in der mittelalterlichen Kultur. Ordines militares. Colloquia Toruniensia Historica*, III, Toruń 1985, pp. 177ff., further literature there, and by A. K a r ł o w s k a - K a m z o w a, *Bildideologie des Deutschen Ordens auf dem Hintergrund der mitteleuropäischen Kunst*, ibidem, pp. 19ff.

<sup>130</sup> K. G ó r s k i, *Zakon Krzyżacki a powstanie państwa pruskiego*, Wrocław 1977, pp. 98-103.

Recent researches suggest that the notion of "Teutonic architecture" is untenable, as Teutonic Knights did not supervise the construction of castles, but acted as investor only<sup>131</sup>. Moreover, the lay and ecclesiastical architecture of Teutonic Prussia was closely linked with Hansa towns, which were the source of inspiration<sup>132</sup>.

Monuments of art in Prussia are listed in two earlier German works and in successive volumes of the *Catalogue of monuments of art* published in Poland after World War II<sup>133</sup>. This subject has also been treated in a number of other publications<sup>134</sup>. As several monuments were destroyed during World Wars I and II, the work by C. Steinbrecht<sup>135</sup> is still of great importance. Attention should also be paid to monographical studies of sculpture, wall and altar painting and architectural sculpture<sup>136</sup>.

<sup>131</sup> It should be stressed that in contrast, for instance, to the Benedictines and the Cistercians, the Statutes of the Teutonic Order do not define the architectural layout of castle-monasteries. Cf. M. S z c z u c z k o, *Funkcje zamku krzyżackiego w świetle statutów zakonnych*, [in:] *Średniowieczne zamki Polski Północnej*, Malbork 1983, pp. 49-57. The organization principles of castle building and their role in the military system of Teutonic Prussia is discussed, for instance, by M. A r s z y Ń s k i, *Technika i organizacja budownictwa ceglanoego w Prusach do końca XIV w. i w pierwszej połowie XV w.*, "Studia z Dziejów Rzemiosła i Przemysłu", IX, 1970, pp. 7-139; i d e m, *Die Burgen im Deutschordenslande Preussens als Quelle zur Erforschung der Geschichte des Deutschen Ordens und seines Staates*, [in:] *Werkstatt der Historiker der mittelalterlichen Ritterorden. Quellenkundlich Probleme und Forschungsmethoden*, ed. by Z. H. N o w a k, Toruń 1987, pp. 77ff.

<sup>132</sup> Interesting observations on the changing sources of inspiration of Teutonic architecture have been made by J. F r y c z, *Architektura zamków krzyżackich*, [in:] *Sztuka pomorza Bałtyku*, Warszawa 1978, pp. 19-48.

<sup>133</sup> *Die Bau- und Kunstdenkmäler der Provinz Westpreussen*, bearb. J. H e i s e, E. S c h m i d t, I-V, Danzig 1884-1919; *Die Bau- und Kunstdenkmäler der Provinz Ostpreussen*, bearb. A. B o e t t i c h e r, I-IX, Königsberg 1891-1899; *Katalog zabytków sztuki w Polsce*, Warszawa 1951 and ff.

<sup>134</sup> G. D e h i o, *Handbuch der deutschen Kunstdenkmäler*, II, Nordwestdeutschland, Berlin 1906 (several editions); K. H. C l a s e n, *Die mittelalterlichen Kunst im Gebiete des Deutschordensstaates Preussen*, I, Königsberg 1927; A. U l b r e c h t, *Kunstgeschichte Ostpreussens von der Ordenszeit bis zu Gegenwart*, Königsberg 1932; B. M a k o w s k i, *Sztuka na Pomorzu i jej dzieje i zabytki*, Toruń 1932; A. B r o s i g, *Plastyka gotycka na Pomorzu*, "Zapiski Towarzystwa Naukowego w Toruniu", VIII, 1929-1931; G. C h m a r z y Ń s k i, *Toruń dawny i dzisiejszy*, Toruń 1933; i d e m, *Sztuka pomorska*, [in:] *Słownik geograficzny Państwa Polskiego*, Warszawa 1937; B. S c h m i d, *Die Bau- und Kunstdenkmäler der Ordenszeit in Preussen*, I, Marienburg 1939, II, Danzig 1941; G. B r u t z e r, W. D r o s t, *Kunstdenkmäler der Stadt Danzig*, I-IV, Stuttgart 1957-1963; T. M r o c z k o, *Architektura gotycka na ziemi chełmińskiej*, Warszawa 1980.

<sup>135</sup> C. S t e i n b r e c h t, *Die Baukunst des Deutschen Ritterordens in Preussen*, I-IV, Berlin 1885-1920; i d e m, *Schloss Lochstedt und seine Malereien. Ein Denkmal aus des Deutschen Ritterordens Blütezeit*, Berlin 1910.

<sup>136</sup> The following publications can serve as examples: G. B r u t z e r, *Mittelalterliche Malerei im Ordenslande Preussens. Westpreussen*, Danzig 1932; B. S c h m i d, *Malerei und Bildhauerkunst im Deutschordenslande Preussen*, I-II, Berlin 1939. Recently, comprehensive monographs have appeared in Poland: J. J u r k o w l a n i e c, *Gotycka rzeźba architektoniczna w Prusach*, "Studia z Historii Sztuki", XLII, Wrocław 1989; J. D o m a s ł o w s k i, A. K a r ł o w s k a - K a m z o w a, A. S. L a b u d a, *Malarstwo gotyckie na Pomorzu Wschodnim*, Warszawa - Poznań 1990.



Works of art used in this book will now be discussed. Those of the 14th and early 15th century have already been dealt with by this author<sup>137</sup>. Of the many sources from the area and period in question, only a few offer possibilities for the study of arms and armour.

Representations of battles are of major interest because they demonstrate the practical use of weapons. The earliest one is the frieze on the capital of the column in the high castle of Marienburg, which depicts a battle between the Teutonic Knights and the Prussians (Figs. 35, 36). The scene dating from about 1300 has been published several times<sup>138</sup> and has been discussed in a separate paper<sup>139</sup>. Apart from its high artistic value, the frieze is doubtless a good source for the study of arms and armour. Both the Teutonic warriors and their opponents are fully armed.

The capital of the column at Kwidzyna dates from the second quarter of the 14th century<sup>140</sup>. Its frieze shows scenes of knightly combat: one shows two fully armed horsemen attacking each other, and the other depicts the same knights fighting with swords (Fig. 37). The view expressed in literature that the scenes represent a knightly tournament seems erroneous<sup>141</sup>.

Of considerable interest from our point of view is the miniature from the so-called *Apocalypse of Teutonic Order* (*Deutschordens - Apokalypse, Prosa - Apokalypse*), whose manuscript dates to the 14th century<sup>142</sup> (Fig. 38). It presents the combat of the Emperor with the Gog and Magog people. Both armies consist of horsemen. The Emperor's army, which wears a typically West European armour, is regarded by German historians as Teutonic, whereas the Gog and Magog units, depicted by the artist in oriental armour (the warriors wear conical helmets while their Christian opponents, great helms typical of the chivalrous culture of the West) symbolize the Poles<sup>143</sup>. If this interpretation is correct, the miniature would be the earliest representation of Polish-Teutonic combats.

<sup>137</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 44-48.

<sup>138</sup> Ibidem, Fig. 6, 47; J. Jurkowlaniec, *o.c.*, p. 60.

<sup>139</sup> B. Schmidt, *Die Kriegskapitäl in der Marienburger*, "Alt-Preussen", VII, 1942, p. 14.

<sup>140</sup> Inventory no MZM/DA/5.

<sup>141</sup> K. Górski, *Zakon krzyżacki* ..., Fig. 31- according to the captions for the illustrations, this is the scene of the battle between Polish King Władysław Łokietek (the Short) and Jan of Luxemburg, King of Bohemia. The basis of this interpretation is unknown to us. J. Jurkowlaniec, *o.c.*, p. 60, following the earlier German literature, thinks that the frieze shows a chivalrous tournament. He does not, however, identify the participants. Cf. K.H. Clausen, *Bildhauerkunst* ..., p. 38.

<sup>142</sup> The original is in the Library of Nicolaus Copernicus University, Toruń, MS 44. It seems that owing to the analysis of the military equipment depicted in the miniature it is possible to date the work more precisely to the first quarter of the 14th century. Cf. also J. Herrmann, *Der Bildschmuck der Deutsch-Ordensapokalypsen Heinrich von Hessler*, "Veröffentlichungen aus der Staats- und Universitätsbibliothek zu Königsberg", Königsberg 1934, pp. 31ff.

<sup>143</sup> The catalogue of the exhibition "800 Jahre Deutsche Ordens" (cf. footnote 2), p. 100, reads *Die Darstellung durfte die militärischen Auseinandersetzungen zwischen dem Deutschen Orden und Polen in der ersten Hälfte des 14. Jahrhunderts reflektieren, sie zeigen die Sache des Ordens in hellem Licht.*

The fresco that decorates the walls of the church in the village of Bunge, Gotland, includes a scene representing a unit of Teutonic cavalry charging at enemy troops<sup>144</sup>. The painting was probably created during the Teutonic occupation of the island in 1398-1409. Though the design is primitive, certain interesting details are noticeable (Fig. 58).

The most outstanding work of Prussian art is doubtless the picture that represents the siege of Marienburg by Gdańsk and royal troops in 1460, painted by a Low German artist between 1481 and 1488. Until 1945 the picture was in Artus' Hall in Gdańsk (it was lost after the entry of the Soviet troops into the town).

Apart from its high artistic merits, the picture offers a wealth of details of material culture, including arms and armour (Fig. 68). For the historian of arms and armour of particular interest is the scene that depicts the combat between the troops of Polish-Gdańsk coalition and the unit of Teutonic warriors emerging from behind the town walls<sup>145</sup>.

Attention should also be called to the wood-engraving in the Berno chronicles by Diepold Schilling: the earlier so-called *Ämtliche Bernerchronik* (1474-1478) and the *Spiezer Berner-Chronik* (1484-1485)<sup>146</sup>. They depict the battle of Grunwald, and the Polish-Teutonic combat is represented in a convention reminiscent of the *Apocalypse*. The Teutonic troops represent moral virtues, and the Polish troops symbolize the world of Evil hostile to the Christian world (Figs. 61, 62). In accordance with the custom of the age, the knights are shown wearing armour coeval with the times when the chronicles were written. Though the representation of the warring troops is biased, the military equipment is faithfully and skillfully rendered, notably in the later miniature.

Of the remaining works of art, the tombstones of Teutonic dignitaries, which naturally enough are precisely dated, are worthy of note. Those that have already attracted the attention of the historians of arms and armour include the tombstone of the Grand Master Heinrich von Dusemer, who died in 1351 (Fig. 40), and that of the Bratian Voigt Kunon von Liebenstein, who died in 1391 (Fig. 49). The non-Teutonic origin of small pavises depicted on the tombstones has been stressed<sup>147</sup>. Of much later date is the tombstone of the Grand Master Friedrich of Saxony, who died in 1510. The tombstone, which is in Meissen Cathedral, shows the Grand Master wearing fine full plate armour. A photograph is all that has been left from the portrait of this dignitary, shown in full armour with a sword

<sup>144</sup> S. Ekdahl, *Die Banderia* ..., p. 28, Fig. VII.

<sup>145</sup> This picture has been repeatedly published by Polish and German historians dealing with the history of the Teutonic Order. The print made from the photographic plate kept in the National Museum in Gdańsk (this is the only surviving document of the work) has recently been published by M. Biskup, G. Labuda, *o.c.*, Fig. 76.

<sup>146</sup> K. Sroczyńska, *Ze studiów nad ikonografią bitwy pod Grunwaldem*, "Rocznik Olsztyński", IV, 1961/1962, pp. 53-56, Figs. 1-2.

<sup>147</sup> H. Nickel, *o.c.*; A. Nowakowski, *Przyczynki* ...

and shield, painted by an outstanding anonymous artist (Fig. 62) and kept until 1945 in Königsberg Cathedral<sup>148</sup>.

Of certain interest is also a terracotta portrait from the castle at Bierzglowo, dating from 1263-1270<sup>149</sup>, but unfortunately heavily damaged. It shows a Teutonic horseman and two Prussians defeated by him. Because of the poor state of preservation, it is not possible to analyse the weapons of the warriors.

The frescoes showing portraits of warriors in Königsberg Cathedral have also been mentioned in literature<sup>150</sup>. The earlier one dates from about 1360 (Fig. 42) yet during the 19th-century reconstruction the redrawing of certain figures was unskillfully made. The later painting was copied by A. Olbers about 1900, and his water colour is the only document of the fresco<sup>151</sup>, which was probably created about 1370 and represents pilgrims - hospites of the Order who arrived in Prussia as crusaders<sup>152</sup>. The preserved parts of the painting show the chivalrous suite of Robert von Namur, who in the years 1340-1364 took part four times in the raids on Lithuania. Another fragment represents a Polish knight of the Kościecha coat-of-arms (Figs. 43, 44). This painting will be used for the purpose of comparison since the depicted knights were not members of the Teutonic troops in the meaning adopted in this book.

The representations of warriors on the altar now lost and once in the All Saints' chapel in St. Mary Basilica in Gdańsk, dating from the end of the 14th-early 15th century, are of considerable interest<sup>153</sup>. The painter represented faithfully a number of fully armed warriors (Figs. 55, 56).

Attention should also be paid to the painting on the reliquary from Kwidzynie Cathedral, made at the turn of the 14th and 15th centuries<sup>154</sup>. The painting shows fully armed knights yet without shields (Fig. 57).

The paintings in the castle at Lochstedt (Figs. 47,48) and in the church at Juditten (Figs. 50-54), dated to the close of the 14th century<sup>155</sup>, are of great value for the studies on the Teutonic arms and armour. The frescoes from Lochstedt show Order's dignitaries: the Grand Commander, the Grand Marshall and

the Keeper of the Wardrobe, all wearing armour and helmets. The paintings showing Teutonic Knights in the church at Juditten seem to have been reconstructed, and this operation deformed certain details of the drawings.

Teutonic seals have not been widely used in studies on arms and armour<sup>156</sup>. They rarely bear representations of armed warriors. The Order's seals from Prussia differ from contemporary examples from Europe. They are small, with scanty drawings, and the seals of the highest dignitaries are anonymous and bear schematic drawings<sup>157</sup>. On the other hand, the seals of provincial Teutonic officers — Commanders and Voigts — are fairly varied. They, too, are anonymous bearing only the name of the officer and the place-name<sup>158</sup>.

Because of this it is very hard to establish their date. In certain cases, the same seal was fixed to documents widely apart in time, especially if the drawing on the punch was still visible<sup>159</sup>.

Only a few seals can be used in this study. Representations of arms and equipment are found only on the seals of grand marshalls, certain commanderies and towns, though their date is frequently hard to establish. To make the matter worse, there is no full and modern inventory of seals from Prussia. They were published on various occasions by German and Polish scholars and are only rarely mentioned in general works devoted to medieval European sphragistics<sup>160</sup>.

Our attention is claimed by: the seal of the Prussian convent, made soon after the arrival of the Teutonic Knights in Chełmno Land, and fixed to documents drawn still before the final territorial organization of the Order's State; the surviving seal comes from 1230-1232 (Fig. 24); the seal of the Land Marshall in Prussia of 1282 (Fig. 25); two seals of the Grand Marshall representing a horseman wearing full armour, attached to documents of 1344 and 1416 (Figs. 26, 32); the seals of the Tuchola and Gdańsk Commanders, and town seals of Chełmno

<sup>148</sup> Acht Jahrhunderte Deutscher Orden in Einzeldarstellungen, Bad Godesberg 1967, pp. 10-11.

<sup>149</sup> A. Nowakowski, T. Orłowski, o.c., pp. 89-92.

<sup>150</sup> G. Bujack, Zur Bewaffnung ..., p. 83, pl. I. Cf. also A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 46, Fig. 17.

<sup>151</sup> The mentioned copy of the fresco is in the Provincial State Archive at Olsztyn. No XLII/DA/40,50.

<sup>152</sup> W. Paravicini, *Die Preussenreisen des europäischen Adels* (Beihefte der Francia 27,1), Sigmaringen 1989, pp. 138-142.

<sup>153</sup> B. Engel, *Waffengeschichtliche Studien* ..., II, pp. 348-351. Cf. also A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 46, Figs. 21-22.

<sup>154</sup> B. Engel, *Waffengeschichtliche Studien* ..., III, pp. 37-39. Cf. also A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 46, Fig. 40.

<sup>155</sup> C. Steinbrecht, *Schloss Lochstedt* ...; cf. also A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 47, Figs. 32-38.

<sup>156</sup> The Teutonic seals were used by A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 48-50.

<sup>157</sup> *Sfragistyka*, ed. by M. Gumowski, M. Haisig, S. Mikucki, Warszawa 1960, p. 220.

<sup>158</sup> *Ibidem*, p. 222.

<sup>159</sup> For instance, the same seal of the town council of Chełmno is attached to the documents of 1364 and 1500. Cf. M. Gumowski, *Najstarsze pieczęcie miast polskich z XIII i XIV w.*, "Roczniki Towarzystwa Naukowego w Toruniu", LXII, 1960, 2, p. 50.

<sup>160</sup> The following works by F. A. Vossberg are still of importance, *Geschichte der preussischen Münzen und Siegel* ... and *idem, Siegel des Mittelalters von Polen, Lithauen, Schlesien, Pommern und Preussen*, Berlin 1854. Certain Prussian seals are published by B. Schmidt, *Die Siegel des Deutschen Ordens in Preussen*, "Altpreussische Forschungen", XIV, 1937, pp. 179-186; XV, 1938, pp. 63-75. Cf. also H. Boehm, *Siegel des Deutschen Ordens* (published as a photocopy of the MS, without numbered pages and illustrations), Mergentheim 1989; M. Gumowski, *Pieczęcie i herby miast pomorskich*, "Roczniki Towarzystwa Naukowego w Toruniu", XLIV, 1939, pp. 83ff. In handbooks, Teutonic seals are discussed in more detail by G. Seyler, *Geschichte der Siegel*, Leipzig 1894, pp. 239-241.

and Paśłek (Figs. 28-31)<sup>161</sup>.

Apart from the monograph written by this author, Teutonic coins have not been used so far in the studies on arms and armour<sup>162</sup>. This is not surprising as they only very occasionally bear representation of armed warriors, and in this they differ diametrically from Polish coins<sup>163</sup>. The lack of a full catalogue of the Order's coins makes it still more difficult to record all relevant examples<sup>164</sup>.

So far as coins are concerned, the history of the Teutonic State in Prussia can be divided into two periods: the earlier, when bracteates were in circulation (to about 1380) and the later covering the years 1380-1525<sup>165</sup>. The bracteates include one type bearing a very schematic representation of a warrior with a shield and pennon<sup>166</sup>, and another showing a helmeted horseman carrying a spear and shield (Fig. 33). Unfortunately, according to numismatists, no more precise date than the turn of the 13th and 14th centuries can be established. The later coins include the ducats of Heinrich von Plauen depicting the Grand Master wearing armour and carrying a sword and shield<sup>167</sup> (Fig. 34), and the ducats of Konrad von Jungingen, who is shown wearing armour and Order's mantle and carrying a shield and sword<sup>168</sup>.

The last category of our sources consists of authentic military relics. We should note here that since the publications of the monography by this author in

<sup>161</sup> Grand Marshalls had resided in Prussia since 1309 and from that time they had their own seal. Its design did not change and in the years 1375-1510 its worn-out stamp was renovated only 5 times. Cf. *800 Jahre ...*, p. 376.

<sup>162</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, pp. 47-48.

<sup>163</sup> For instance, none of the 552 coins found at Sepólno Krajeńskie bears a representation of arms. A. Miłkołajczyk, *Skarb monet krzyżackich znalezione w Sepólnie Krajeńskim*, "Przegląd Archeologiczny", VI, 1975, pp. 560-564.

<sup>164</sup> Despite the passage of time and the development of numismatic studies in Poland and Germany, the list of Teutonic coins with information obtained from written sources, compiled by F. A. Vossberg, *Geschichte ...* (cf. footnote 19) is still of value. The catalogue of the collection of coins from the seat of the Order in Vienna was written by B. Dudik, *Des hohen Deutschen Ritterordens Münzsammlung in Wien*, Wien 1885. One volume of the catalogues of the Marienburg collections is devoted to Teutonic coins: E. Bahrfeld, *Die Münze- und Medaillensammlung in der Marienburg*, I, Danzig 1901. The study by E. Waschinski, *Brakteaten und Denare des Deutschen Ordens*, Frankfurt a. Main 1934, is a valuable monograph. Information about Teutonic coins is also given by E. Eisermann, *Deutschordensland und Münze*, "Blätter für Münzfreunde", LXXVI, Leipzig 1941, pp. 129-144, 155-156. Despite close economic relations between the Order and Poland, the Polish numismatic literature on this subject is scanty. More comprehensive publications include: M. Gumowski, *Moneta u Krzyżaków*, "Zapiski Towarzystwa Naukowego w Toruniu", XVII, 1952, 3-4, pp. 7-68 (without a catalogue); idem, *Brakteaty krzyżackie*, ibidem, X, 1937, pp. 373-410. The few articles by other authors publish coin finds (articles dealing with the economic aspects of monetary politics in the Order's State are not taken into account).

<sup>165</sup> M. Gumowski, *Moneta u Krzyżaków ...*, p. 8.

<sup>166</sup> M. Gumowski, *Brakteaty ...*, p. 390.

<sup>167</sup> F. A. Vossberg, *Geschichte ...*, no 629. Authors discussing shields from Teutonic Prussia have also mentioned this coin: H. Niekel, *o.c.*; A. Nowakowski, *Przyczynki ...*

<sup>168</sup> M. Gumowski, *Moneta u Krzyżaków ...*, p. 25.

1980<sup>169</sup>, the number of relics has considerably increased mainly due to the intensification of excavation of archaeological sites, notably of the motte type. However, their number is still not big enough to reconstruct fully the history of Teutonic arms and armour in Prussia.

Collections of arms and armour as well as armouries, which may have kept materials from the territory and period in question, have been destroyed or dispersed<sup>170</sup>, mainly during disasters which befell Prussia and were particularly grave during World War II. Certain military objects were lost much earlier, e.g. the two swords sent by the Teutonic Knights to Władysław Jagiełło on 15 July 1410 just before the battle of Grunwald, and kept in the treasury of the Wawel castle, Kraków. The swords, which survived the robbery of Wawel by the Prussians in 1795, were given by T. Czacki to Izabella Czartoryska's collections at Puławy, yet they were confiscated by the Russians in 1853<sup>171</sup> and have never been seen again<sup>172</sup>.

Only a few surviving Teutonic military objects can be associated with definite persons. They include a shield<sup>173</sup> and a sword<sup>174</sup> attributed to Konrad of Thüringen, who, however, never carried them, as they belonged to another historic person (we will revert to this question in the chapter on swords). The collections of the Tiroler Landesmuseum at Innsbruck include a shield associated with Karl of Trier (+1324)<sup>175</sup>. According to B. Engel, this shield is the original possession of the Grand Master, who left it in Tirol probably when travelling to

<sup>169</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 50, wrote *The situation in this field is far from satisfactory and the quantity of arms that may be taken into consideration is insignificant.*

<sup>170</sup> The armoury of the Marienburg castle, housing a large collection of arms and armour, which he has published rather cursorily, has been looted, so it is not possible to use this work to determine the chronology of the weapons that are of greatest interest to us, B. Schmidt, *Waffen in der Marienburg*, "Ostdeutsche Monatshefte", X, 1929, pp. 268-271. For the history of the Marienburg collections in the period until 1945, notably the collection of military equipment, cf. also A. R. Choduryński, *Zbrojownie malborskie*, Malbork 1978, pp. 27-34. Poles are also responsible for diminishing the stores of arms and armour collected in the castle — around 1810 general M. Grabowski carried away a sword and gave it to the Puławy collections of Izabella Czartoryska. Cf. *Poczet pamiątek zachowanych w Domu Gotyckim w Puławach*, Warszawa 1828, p. 38, no 384.

<sup>171</sup> Z. Żygulski (jun.), *Dzieje Zbiorów Puławskich (świątynia Sybilli i Dom Gotycki)*, "Rozprawy i Sprawozdania Muzeum Narodowego w Krakowie", VII 1962, pp. 43-44, 246-247.

<sup>172</sup> The attempt to identify the medieval estoc, possibly Teutonic, from the Czartoryski Collection in Kraków (inventory no XIV, 9) as one of the Grunwald swords, has failed, cf. Z. Spierałski, *O mieczach krzyżackich spod Grunwaldu*, "Zapiski Historyczne", XXXIX, 1974, 2, pp. 23-29.

<sup>173</sup> The shield is in the collection of the Universitätsmuseum für Kunst und Kulturgeschichte in Marburg, inventory no 3177. Cf. also H. Niekel, *o.c.*, pp. 27-32.

<sup>174</sup> In the collections of the Museum für Deutsche Geschichte in Berlin, inventory no W 1838. Cf. also P. Post, *Das Zeughaus*, Teil 1, Berlin 1939, pp. 13-14.

<sup>175</sup> B. Engel, *Waffengeschichtliche Studien ...*, II, 1900-1902, pp. 94-100; H. Niekel, *o.c.*, pp. 60-63.

Rome in 1320<sup>176</sup> (Fig. 4). Despite critics, who regard the shield from Innsbruck as a 13th-century relic, repainted in later times, and carried during parades, Engel stresses its field character. The dating of the shield to the early 14th century seems correct, but its character does not seem obvious<sup>177</sup>.

A finely ornamented breastplate, bearing a cross and letters GVDMTE, once the property of the Grand Master Albrecht Hohenzollern (Fig. 23), is dated to about 1510<sup>178</sup>. The spearhead bearing the coat-of-arms of Friedrich of Saxony should be dated to the early 16th century<sup>179</sup>.

Of the military objects which may be associated with Teutonic warriors and are kept in museum collections (apart from archaeological finds) certain relics claim special attention. These include four helmets from the environs of Toruń<sup>180</sup>, from Olsztyn<sup>181</sup> and Wystruc<sup>182</sup>, all dated to the 14th century, and a helmet once kept in the church at Mielno near Olsztyn<sup>183</sup> and allegedly found on the Grunwald battlefield. Two pavises should also be mentioned. One dated to the 15th century is now at Nürnberg<sup>184</sup>, and the other, in the Polish Army Museum in Warsaw<sup>185</sup>. Both shields with a black cross painted on their surface were probably owned by Teutonic Knights. Of the swords from Prussia, whose find-spots are unknown, only one can be in all probability regarded as Teutonic. At present, it is in the National Museum in Kraków, and once was in Marienburg<sup>186</sup>. In view of its size and ornamentation, it probably was a ceremonial weapon<sup>187</sup>. The same collection includes another sword traditionally associated with Knights-Templars. Since both swords bear identical sword-maker's mark and

<sup>176</sup> B. Engel, *Nochmals der Deutschordens-Hochmeisterschild*, "Zeitschrift für Historische Waffenkunde", II, 1900-1902, p. 214.

<sup>177</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 55.

<sup>178</sup> J. Schöbel, *Prunkwaffen und Rüstungen aus dem Historischen Museum Dresden*, Leipzig 1976, pp. 27, 37.

<sup>179</sup> W. Boehem, *Handbuch der Waffenkunde*, Leipzig 1890, p. 329; J. Schöbel, *Jagd Waffen und Jagdgeräte des Historisches Museum zu Dresden*, Berlin 1976, pp. 44, 84.

<sup>180</sup> The latest publication of the find: M. Głosek, A. Nowakowski, *o.c.*, pp. 53-60.

<sup>181</sup> A. Nowakowski, *Średniowieczny hełm* ..., pp. 148-154.

<sup>182</sup> W. Labaume, *Frühgeschichte Helme aus Ostpreussen*, "Nachrichtenblatt für Deutsche Vorzeit", XV, Leipzig 1939, p. 299; Nowakowski, *Uzbrojenie wojsk krzyżackich*..., p. 52, Fig. 39.

<sup>183</sup> The relic was lost in mysterious circumstances during World War II. It is published by W. Labaume, *o.c.*, pp. 296-301; Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 56, Fig. 2.

<sup>184</sup> H. Nickel, *Ullstein Waffenbuch - eine kulturhistorische Waffenkunde mit Markenverzeichnis*, Berlin 1974, pp. 28-30.

<sup>185</sup> The Polish Army Museum, Warszawa, inventory no 81. This might be the shield that until 1945 was in Marienburg. Cf. G. Bujack, *Zur Bewaffnung* ..., pp. 88-91.

<sup>186</sup> M. Głosek, A. Nadolski, *Miecze średniowieczne z ziem polskich*, Łódź 1970, p. 42, pl. XI.

<sup>187</sup> M. Głosek, *Znaki i napisy na mieczach średniowiecznych w Polsce*, Wrocław 1973, p. 42.

the latter is, too, of ceremonial character, it is regarded as a product of a Teutonic workshop<sup>188</sup>. However, there is absolutely no reason to try to interpret a 15th century estoc, kept in the State Art Collection on Wawel, as one of the "Grunwald" swords, handed to King Władysław Jagiełło by Teutonic heralds<sup>189</sup>.

Most military relics come from archaeological sites. In recent years their number has considerably increased.

Battlefields seem to be the most potent sources of military objects. This, however, is far from true. Only 3 swords have so far been found on battlefields, all probably connected with the battle of Płowce of 1331<sup>190</sup>. Moreover, there is no certainty that they belonged to Teutonic Knights. Nor have the excavations of battlefields yielded spectacular results. The tumulus at Płowce, associated with the battle of 1331, proved to be a 13th-century cemetery<sup>191</sup>. Nor have surface investigations and excavations of the Grunwald battlefield, though they have provided many pieces of information about the battle and relevant events, resulted in important discoveries of military objects<sup>192</sup>. Though the excavations have yielded a limited number of military finds, such as arrow- and boltheads, missiles of hand firearms, spearheads and fragments of a gauntlet<sup>193</sup>, there is no certainty that these were Teutonic weapons; they might as well have been used by Polish or Lithuanian warriors.

The excavations of the so-called mottes, particularly those in the Chełmno Land, proved to be most fruitful in this respect<sup>194</sup>. The mottes are remains of residential and fortified features built on mounds. They once had been the property of bishops, of knights or of the Order. Of particular interest are the results of excavations at Plemięta in Toruń province. The ruins of the residential and defensive tower, probably destroyed by fire in 1414, have revealed over two thousand various objects, including a fine set of arms and armour, which as yet has no counterpart among other archaeological sites examined so far<sup>195</sup>. Remains

<sup>188</sup> Ibidem, pp. 120-121, pl. XLVI.

<sup>189</sup> Z. Żygułski, *Broń w dawnej Polsce* ..., photo 23; *Broń średniowieczna z ziem polskich. Katalog*, Łódź 1978, p. 39, no 103, pl. XXIV. Cf. also footnote 172.

<sup>190</sup> M. Głosek, A. Nadolski, *o.c.*, p. 14.

<sup>191</sup> B. Łuczak, A. Nowakowski, *Cmentarzysko średniowieczne w Płowcach II, pow. Radziejów*, "Acta Universitatis Nicolai Copernici, Archeologia", V, Toruń 1975, pp. 201-205.

<sup>192</sup> The results of archaeological investigations carried out on the battlefield of Grunwald have been summed up by A. Nadolski, *Stan archeologicznych badań Pól Grunwaldu (do roku 1988)*, "Studia Grunwaldzkie", I, 1991, pp. 24-33. Further literature there.

<sup>193</sup> *Badania na Polach Grunwaldu*, "Rocznik Olsztyński", IV, 1961/1962, pp. 197-365; A. Nowakowski, M. Mielczarek, Z. Wawrzonowska, *Badania archeologiczne na Polach Grunwaldu w latach 1980-1985*, "Studia Grunwaldzkie", I, 1991, pp. 77-105; A. Nowakowski, M. Mielczarek, *Sprawozdanie z badań archeologicznych na Polach Grunwaldu w latach 1983-1984*, "Komunikaty Warmińsko-Mazurskie", 1985, 3-4, pp. 439-449.

<sup>194</sup> A. Kola, *Grody ziemi chełmińskiej w późnym średniowieczu*, Toruń 1991. Further literature there.

<sup>195</sup> Results of the excavations at Plemięta are published in the monograph: *Plemięta. Średniowieczny gródek w ziemi chełmińskiej*, ed. by A. Nadolski, Warszawa - Poznań - Toruń 1985.

of defensive armour claim special attention<sup>196</sup>. They testify that knights (the Plemięta motte belonged to gentry of medium wealth) were able to afford armour of good quality, though not too expensive, typical of Central Europe. Besides, the tower contained offensive weapons: a sword, daggers, battle-axes, spearheads, fragments of a crossbow, bolt- and arrowheads<sup>197</sup>. Parts of horse harness and equestrian equipment included bits, stirrups and spurs<sup>198</sup>. All these finds are of great importance to the historian of arms and armour since certain objects are unique. Two kettle-hats, fragments of a coat of plates, crossbow stirrups and certain bits have for the first time been found in Poland. They suggest that the assailants and destroyers of the Plemięta motte included warriors armed in oriental style: the Lithuanians, Old Russians or Tartars<sup>199</sup>.

Also of great interest are the discoveries made in the ruins of a fortified manor-house at Słozewy near Brodnica. The manor-house, destroyed by fire in 1414, was at that time the property of the Brodnica Commandery and part of the Order's farm<sup>200</sup>. The finds revealed in the burnt house included military objects: a battle-axe, a bit, spurs and a remarkable quantity of boltheads — over two thousand. Such a number of boltheads found at one site is of particular value to the historian of arms and armour<sup>201</sup> since it enables him to conduct typological studies and to try to reconstruct their production process<sup>202</sup>. The boltheads were stored in cists and clay pots. The presence of a smithery at Słozewy where the bolthead were formed and mounted on shafts is highly probable.

Other mottes, located in the Chełmno Land where military objects have come to light, include Bachotek, Słupski Młyn and Ryńsk, all in the Toruń province. In addition to the Chełmno Land, military finds came to light at Stążki, Elbląg province<sup>203</sup>.

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<sup>196</sup> A. Nadolski, E. Grabarczykowa, *Uzbrojenie ochronne*, [in:] *Plemięta ...*, pp. 85-88.

<sup>197</sup> M. Głosek, *Broń sieczna, drzewcowa i obuchowa*, [in:] *Plemięta ...*, pp. 99-106; A. Kola, G. Wilke, *Broń strzelecka*, ibidem, pp. 107-128.

<sup>198</sup> A. Nowakowski, *Elementy rzędu końskiego i oporządzenia jeździeckiego*, [in:] *Plemięta ...*, pp. 129-138.

<sup>199</sup> A. Nadolski, *Wprowadzenie w problematykę badań*, [in:] *Plemięta ...*, p. 7.

<sup>200</sup> G. Wilke, *Późnośredniowieczny dwór obronny w Słozewach koło Brodnicy w świetle badań archeologicznych*, [in:] *Średniowieczne siedziby rycerskie w ziemi chełmińskiej na tle badań podobnych obiektów na ziemiach polskich*, Toruń 1987, pp. 77-90.

<sup>201</sup> A. Kola, G. Wilke, *Zespół grotów beltów do kuszy z grodziska późnośredniowiecznego w Słozewach koło Brodnicy w świetle odkryć z 1973 r.*, "Zapiski Historyczne", XLI, 1976, 1, pp. 81-123.

<sup>202</sup> A. Kola, G. Wilke, *Produkcja grotów beltów do kuszy w świetle współczesnych prób eksperymentalnych. Uwagi o odkryciach na grodzisku późnośredniowiecznym w Słozewach, pow. Brodnica w 1973 r.*, "Acta Universitatis Nicolai Copernici. Archeologia", V, Toruń 1975, pp. 161-180.

<sup>203</sup> K. Grążawski, *Średniowieczny gródek rycerski w Bachotku w ziemi chełmińskiej w świetle badań archeologicznych*, "Sprawozdania Archeologiczne", 40, 1988, pp. 317-341; R. Boguolski, *Dotychczasowe wyniki prac archeologicznych na grodzisku wczesnośredniowiecz-*

Excavations of Teutonic castles have also yielded certain military materials, mostly boltheads and a few examples of staff weapons. A breastplate revealed by excavations carried out at Wielka Nieszawa near Toruń is a unique find<sup>204</sup>.

Further archaeological finds will be mentioned when particular categories of arms and armour are described. Yet it should be stressed that without these finds the studies, the results of which are present here, could not have been carried out.

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*nym w Słupskim Młynie, pow. Grudziądz*, "Komunikaty Archeologiczne", Bydgoszcz 1978, pp. 201-206; W. Wojnowska, *Wyroby żelazne z późnośredniowiecznego grodziska w Ryńsku (stan. 1) gmina Wąbrzeźno*, I-III, Toruń 1985.

<sup>204</sup> R. Franczuk, T. Horbacz, o.c., p. 91.

## DEFENSIVE ARMS

### THE HELMET

Information about helmets is provided by all categories of sources. Besides original examples, helmets are recorded in written sources and depicted in iconographic material as well. If the authentic helmets and their pictorial representations are easy to interpret and identify typologically, this is not always possible as far as written records are concerned. This reservation refers to all other categories of military equipment.

The type of helmet worn during a described event can only occasionally be guessed from narrative sources. When dealing with inventories, account books, lists of expenses, etc., we are faced with another kind of difficulty created by the bewildering variety of terms, names, and designations used to describe not only whole helmets but also their parts. Yet despite this abundance or perhaps because of it, it is not always easy to determine what type of helmet or its part the inspector of armouries or the scribe who recorded the expenses had in mind. That the interpretation of such records presents many difficulties is confirmed by the fact that even in modern literature on this subject we find fairly numerous examples of different interpretations of the same term mentioned in sources<sup>205</sup>, this being due to the difficulty of reconstructing correctly the medieval terminology of arms and armour. There is also the possibility, not directly ascertainable but very probable, of mistakes committed by the author of the examined sources. The mistakes may have occurred because of the inadequate knowledge of various kinds of arms and armour, notably their numerous variants. There was no such thing as an

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<sup>205</sup> An example is afforded here by the term "Beckenhube", which is translated as "przyłbica" (basnet with visor — Z. Żygulski, *Broń w dawnej Polsce ...*, p. 100) or as "łębka" (basnet — W. Dziewanowski, *Zarys dziejów ...*, p. 151). Similar difficulties occur when we try to determine the exact dividing line between a conical helmet and a basnet.

established and precise terminology. Generally accepted norms were lacking. Besides, we cannot disregard mistakes committed by scribes when copying manuscripts — such cases are often recorded by medievalists. Finally, we should take into account the existence of various intermediate non-typical forms of weapons, so-called bastards, which did not have specific names. They do not fit into the classification worked out by scholars on the basis of fragmentary materials from the past, owing to which our knowledge of them is patchy<sup>206</sup>.

The period when the Teutonic Knights arrived into Prussia and began to form their state is marked by a variety of helmets worn by European chivalry. In the 13th century, open helmets, conical or hemispherical in shape, without any face-guard, were dominant. The iron skull was made in one piece or of several plates riveted together, and sometimes reinforced with one or several hoops. The helmets were frequently fitted with a primitive face-guard, namely a nasal, that is a small rectangular metal plate, either fastened by rivets to the skull or forming its integral part. Inside, the helmets were provided with soft lining that protected the head from direct contact with the skull plate<sup>207</sup>.

That the helmets of early medieval tradition were widely used by Teutonic troops is repeatedly shown by available sources.

In Prussia, conical helmets remained in use at least till the early 15th century. The helmet from Mielno should be dated to the second half of the 14th century, and that from Wystruć on the river Pregoła, to the 13th-14th centuries<sup>208</sup>. Both helmets, now lost, were probably made in one piece. They had conical tops, yet they differed in appearance. The helmet of fine proportions from Wystruć (Fig. 13) was tall and slim, and the top of the skull was tapered gently upwards assuming a pointed shape. The example from Mielno was more squat with distinct bend half-way along the skull, and a rather sharp, though less pointed, top surmounted by a socket for a bunch of juniper (Fig. 7). Both helmets had holes for attaching mail aventails.

That the conical helmets were worn by Teutonic troops is confirmed by sphaeristic sources: by the seal of the Gdańsk Commandery (Fig. 30), and by the older seal of the town council of Chełmno (Fig. 27). The design of the warrior on the Chełmno seal is too schematic to allow us to determine the type of the helmet, yet the mail aventail is distinct. Though the manner of attaching the aventail is not visible, it can be reconstructed by means of parallels since it was shared by

<sup>206</sup> The terminology used by the authors of Polish medieval written sources to denote defensive arms has been discussed by A. Nowakowski and J. Szymczak, *o.c.*, pp. 29-46. The problems posed by the terminology of arms in Bohemian medieval encyclopedia have been dealt with by J. Danka, A. Nowakowski, J. Szymczak, *Militaria w "Liber viginti artium" Pawła z Pragi czyli tzw. Księdze Twardowskiego*, "Kwartalnik Historii Kultury Materialnej", XXXVI, 1988, 1, pp. 43-54.

<sup>207</sup> A. Nowakowski, *O wojskach ...*, pp. 125-126.

<sup>208</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 67 Fig. 39, following W. Labaume, dates it to the turn of the 14th and 15th centuries. However, it seems that the chronology

should be extended.

all types of helmets with the exception of kettle-hats. The aventail was attached by a leather thong or wire passed through pierced studs riveted to the lower edge of the skull. By unbinding the thong or wire, the aventail could be detached.

In written sources the helmet of this type is called *storczhelm* or *spiczhelm*<sup>209</sup>. The use of the term *helm* is also highly probable<sup>210</sup>. The aventails were called *helmengeheunge* or *geheunge czu helmen*<sup>211</sup>.

This type of headpiece was worn by Teutonic troops almost throughout the 15th century, though at that time it was decidedly anachronic<sup>212</sup>.

Examples named *prusche helmen*, that is helmets of Prussian origin, repeatedly mentioned in written sources, should be regarded as a specific version of the conical helmets<sup>213</sup>. They are but briefly referred to: *item 2 1/2 schog pruscher helme bose und gut*<sup>214</sup>, and for this reason cannot be reconstructed. Other references only inform that they were equipped with aventails, e.g. *prewsche helme mit gehengen*<sup>215</sup>. Helmets of this type are shown on the capital of the column in the Marienburg castle. They are worn there by the Prussians fighting with the Teutonic Knights (Figs. 35, 36). The helmets have conical skulls with a distinct ridge and an aventail. The helmet worn by a knocked down Prussian should be regarded as a *prusche helm* (Fig. 35). In contrast to the other helmets, this one has a thickened lower edge with an aventail of scale construction, composed of small rectangular plates fixed to organic material (leather?), one above the other, with their longer sides close together.

This is the only example of this type of cheek and neck protection recorded in Western and Central Europe. According to the view current in literature, these are oriental characteristics<sup>216</sup>. Helmets with identical aventails appeared in Byzantium already in the 12th century and occur fairly frequently in Byzantine iconographic sources<sup>217</sup>. The Eastern Slavs seem to have borrowed them from Byzantium and in turn passed them on to the Balts. Baltic — East Slavonic contacts are traceable also in other categories of arms and armour. Therefore the presence of Baltic helmets, named Prussian, in Teutonic armouries should not be surprising. Prussian units took often part in the Order's raids on Lithuania and Poland, e.g. in 1331. Wigand of Marburg wrote: *In hoc conflictu de fratribus manserunt et*

should be extended.

<sup>209</sup> GAB, year 1382, p. 6; year 1392, p. 7; year 1402, p. 562; also MAB, year 1391, p. 2.

<sup>210</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 63.

<sup>211</sup> GAB, year 1404, p. 8.

<sup>212</sup> GAB, year 1382, p. 6. Helmets of this type must have been popular among Teutonic troops since in 1391 the inventories of the armouries list nearly 440 examples.

<sup>213</sup> A. Nowakowski, *O wojskach ...*, pp. 65-68.

<sup>214</sup> At that time the helmets were in armouries where mobilization weapon, not always of the latest type, was stored. Cf. A. Nowakowski, *Arsenaly II*, pp. 46-47.

<sup>215</sup> GAB, year 1431, p. 28.

<sup>216</sup> Z. Żygułski, *Broń w dawnej Polsce ...*, p. 62.

<sup>217</sup> A. Bruhn-Hoffmeyer, *Military Equipment in the Byzantine Manuscript of Scylitzes in Biblioteca Nacional in Madrid*, "Gladius", V, 1966, pp. 9ff.

*Prutenis*<sup>218</sup>, and further on in the description of the battle of Plowce informed that *Pruteni vero perturbati sunt*<sup>219</sup>. Several other examples could be quoted here — the Prussians took part in the raid on Lithuania in 1317: ... *Marschalk czog mit den Natangen und Samen winterzeit yn Littawen*<sup>220</sup>. Additional arguments for non-Teutonic origin of the helmet with a scale aventail, i.e. the *prusche helm* are provided by the inventories of castle armouries. These helmets were mainly stored in fortresses built on lands taken from the Prussians: in Königsberg, Dziezgoń or Balda<sup>221</sup>.

The *prusche helmen* were fairly popular among Teutonic troops, being worn not only by the autochthons. They remained in use well into the 15th century, and were still present in Königsberg in 1440<sup>222</sup>.

At the close of the 13th century great helms that protected the whole head began to be worn by Teutonic Knights. In Europe, the helm of this type was an attribute of chivalry. Because of its impressive and forbidding look, it was frequently represented in art, though this does not necessarily mean that it dominated among various types of headpieces.

Great helms were not a success. In the 13th century they assumed a cylindrical shape. The skull was made of several plates riveted together and reinforced with hoops. In front were a single or double sight and small ventilation holes. The helm was worn over an arming cap or coif; occasionally the inside of the skull was lined with textile attached to the plates<sup>223</sup>. Its defects were: it was heavy, it limited the range of vision, and made breathing less easy. Despite appearance, the great helm did not protect the head well since its resistance to blows was weakened by its complex construction: numerous riveted joints and a flat top on which the weapon did not glance off. In the early 14th century attempts were made to eliminate some defects: the size of the helm was augmented so that it rested now on the warrior's shoulders, and its shape was changed. The segments of the skull were profiled, thanks to which its outline acquired some bends, and the top was no longer flat but domed<sup>224</sup>. However, this did not help much since the helm, for which the name "great" had been adopted, soon stopped to be worn during battles.

Great helms occur in Prussian art, but no references have been found in written records. This is due to the late date of the records, as those at our disposal (inventories, account books, etc. besides enigmatic references in narrative sour-

ces) date at the earliest to the second half of the 14th century. At that time the great helm was no longer worn on battlefields, and for this reason was no longer kept in armouries. Their frequent occurrence in iconographic material points to an artistic convention, current in Prussia, to represent knights wearing great helms. In this way their origin and status were emphasized. A plebeian or a pagan could be depicted wearing an open helmet. Yet a Christian, notably a distinguished knight, "had" to wear a great helm, sometimes supplemented with a crest and mantlings<sup>225</sup>. A striking example of this convention is afforded by the miniature from the *Apocalypse* (Fig. 38) which, as we remember, shows Christian warriors wearing great helms, and their Prussian opponents, open conical helmets. The Teutonic Knights and the Prussians shown on the Marienburg capital are similarly armed (Figs. 35, 36).

The earliest reference to the great helm in Prussia dates from 1298. The seal of the Prussian Land Marshall shows a knight wearing just this helm with a sight, while mantlings are absent. The somewhat later capital of the column at Kwidzyn, dating from the second quarter of the 14th century, shows fighting horsemen wearing great helms. Unfortunately, only one figure — a knight with a lion on his shield (Fig. 37) — is sufficiently well preserved to reveal the details of the helm. Its top is flat, it has a single sight, the front plate is ornamented, and it is covered with short mantlings.

A reference, though indirect, to great helms worn by Teutonic troops, can be found in the acts of the Polish — Teutonic process in Warsaw. One of the witnesses, the knight Jan of Kisielewo, described the events of 1331. When asked if he remembered the faces of the assailants, he answered that: ... *videlicet... multos quos non potuit bene cognoscere quia erant galeati*<sup>226</sup>. The Teutonic Knights unrecognized by the witness must have been wearing great helms, as at that time only they could have covered the whole face.

Later sources show us an improved version of the great helm. It can be seen on the seals of the Grand Marshall (Fig. 32), on the frescoes at Königsberg (Figs. 42-44), and on certain municipal seals (Fig. 28). Its skull is no longer cylindrical, the top is not flat but strongly domed, and the side walls are elongated resting on the shoulders of the knight. The sight is double. Neither riveting of plates nor laces are visible. Traces of plate riveting can be seen on helms worn by the Teutonic Knights on the frescoes at Juditten, dated to the close of the 14th century (Figs. 50-52). Typologically late, they have curved and concave front plates and one sight. Similar examples occur all over Europe<sup>227</sup>. They might present a transitional form between the great helm and the "frog-mouthed" helm, thus being principally not of field character. Identical helmets used as a heraldic element are presented on the tombstone of Kunon von Liebenstein (Fig. 49).

<sup>225</sup> A. Nowakowski, *Uzbrojenie ochronne*, [in:] *Uzbrojenie w Polsce średniowiecznej. 1350-1450*, Łódź 1990, p. 41.

<sup>226</sup> *Lites*, I, p. 203.

<sup>227</sup> W. Boehheim, *o.c.*, p. 29, Fig. 10.

<sup>218</sup> W i g a n d, p. 482.

<sup>219</sup> *Ibidem*.

<sup>220</sup> *Die ältere Hochmeisterchronik*, p. 589.

<sup>221</sup> *GAB*, pp. 3, 132, 683.

<sup>222</sup> *GAB*, p. 42.

<sup>223</sup> W. Boehheim, *o.c.*, p. 127. In Poland, which neighbored with Teutonic Prussia, the great helm was of identical construction. Cf. Z. Żygułski, *Broń w dawnej Polsce ...*, pp. 41-43.

<sup>224</sup> A. Nowakowski, *O wojskach ...*, p. 127.



Great helmets bore heraldic signs — crests. In accordance with the current fashion lay knights wore various emblems: animal horns, wings, bird's heads, etc.<sup>228</sup> The Teutonic Knights surmounted their helmets with a crest in the shape of a circle with a black cross or with white pennons also with the cross. The first version is worn by the Grand Master on the miniature in the *Apocalypse* (Fig. 38) and by Grand Marshall on the seal of 1344 (Fig. 26) and 1416 (Fig. 32). Pennons on the helmets of the Teutonic Knights are shown on the painting in the church at Bunge, Gotland (Fig. 58). It is interesting to note that bunches of two or three pennons are fixed to the side of the skull. Information about crests of this kind is recorded in written sources. During the already mentioned process of Warsaw, one of the witnesses, Mikołaj, prior of the Dominicans of Sieradz, stated that certain Teutonic Knights ... *habebant crucem nigram super caput in galeis*<sup>229</sup>.

Great helmets, especially the ceremonial ones, were often ornamented. This is indicated by references to silver rivets and nails used in joining the plates of the skull or in studding its surface to create a decorative pattern<sup>230</sup>. The relevant records read: *item 7 scot vor silberynne nelechin zu den 3 helm*<sup>231</sup> or *item 1/2 fird. logitis vor 12 silberynne noldyn*<sup>232</sup>. The *eichelen* mentioned in sources — e.g. *item 9 fird. und 5 pf. Willam vor 4 eychelen zu des meisters helm vor syme eygen golde und silber*<sup>233</sup> — are ornaments shaped as clubs placed on the front of the helmet or along its vertical axis<sup>234</sup>. The custom of decorating helmets in this manner prevailed all over Latin Europe<sup>235</sup>.

The kettle-hat is another type of headpiece worn by Teutonic troops throughout the period covered by this study. In shape it was similar to a hat (hence its name). It was made either of several plates riveted together or from one piece of metal. The skull was lengthened by the brim.

Kettle-hats were the most popular late medieval helmets in Europe. They were also widely used in Poland where they were worn by footwarriors and horsemen alike until the close of the 15th century<sup>236</sup>.

Known already in antiquity, they gained popularity in Europe already in the

<sup>228</sup> C. Blair, *European Armour circa 1066 to circa 1700*, London 1960, p. 204; Z. Ży-gułski, *Broń w dawnej Polsce* ..., p. 100.

<sup>229</sup> *Lies*, I, p. 264.

<sup>230</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 76.

<sup>231</sup> *MTB*, year 1399, p. 17.

<sup>232</sup> *MTB*, year 1400, p. 53.

<sup>233</sup> *Ibidem*.

<sup>234</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 76.

<sup>235</sup> Helmets of this type are shown, for instance, on the tombstone of Sir Hugh Hastings at Elsyng (died 1347) and in some French illuminated MSS of the 14th century. Cf. J. Hewitt, *o.c.*, II, pl. XXXVI; I, Fig. 47, p. 196; Fig. 48, p. 199; pl. LXII, p. 283. Moreover, the shield of the Grand Master Karl of Trier bears the representation of a cross with arms ending in a three-leaved figure (club).

<sup>236</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., pp. 53-56.

12th century, mainly among infantry<sup>237</sup>. In the Middle Ages they underwent evolution: the skull became deeper and the brim wider. In this way the face was better protected. In time, the sight was cut out in the brim. Occasionally a beavor was added thanks to which the head of the warrior was well protected. Kettle-hats were frequently worn over coif.

In relevant sources these helmets occur frequently. They are mentioned in written records and shown in iconographic material. However, the most important piece of information is the find from Plemięta near Grudziądz where in the ruins of the residential and defensive tower remains of two kettle-hats have been revealed. Both kettle-hats have been reconstructed<sup>238</sup>.

They are identical in construction but differ slightly in size. They consist of two parts: skull and brim, each made in one piece of metal. The brim and skull overlap each other and are joined by rivets. The inner side of the brim has studs for attaching the lining, and eyelets for attaching the mail aventail (Fig. 16). Kettle-hats of the same construction are known from European iconographic material. The closest parallel is provided by an Italian specimen published by G.C. Stone and dated to the 15th century<sup>239</sup>.

Another type is represented by kettle-hats with a profiled skull surmounted by a crest. Their brims are wide and cover the studs for mail-aventail. This version is called *breite isenhute*<sup>240</sup>. It is worn by St. Florian depicted on the predella of the altar in St. Mary's Basilica in Gdańsk, dated to the first half of the 15th century<sup>241</sup> (Fig. 59). The kettle-hat of this type with mail-aventail is called *kepe-lyn mit eyme gehenge*<sup>242</sup>.

That kettle-hats were made not only of iron but also of steel is indicated by a note about buying from master Jacob 32 helmets of which *der woren 24 stelyn und 8 yserynne*<sup>243</sup>. Steel examples were called white, and iron ones, black. In 1401 a record was made: *16 ysehute — 12 weyse und 4 swarze*<sup>244</sup>. According to a custom prevailing all over Europe, kettle-hats were painted<sup>245</sup>, as is indicated by a record of 1448: *229 huth (sic !) blangke eyszehutte, item 82 geswerczte hutthe*<sup>246</sup>.

<sup>237</sup> C. Blair, *o.c.*, p. 31.

<sup>238</sup> A. Nadolski, E. Grabarczykowa, *o.c.*, pp. 85-98.

<sup>239</sup> A. Matejček, J. Peina, *La peinture gotique Tcheque 1350-1450*, Prague 1950, p. 65, pls. 184-185; E. Wagner, Z. Drobna, J. Durdik, *o.c.*, III, pl. 2 no 4; G.C. Stone, *A Glossary of the Construction, Decoration and Use of Arms and Armor*, New York 1961, p. 173, Fig. 216/3.

<sup>240</sup> *GAB*, year 1393, p. 475.

<sup>241</sup> B. Engel, *Zwei ritterliche Heilige von einer Altartafel (Predella) in der Marienkirche zu Danzig*, "Zeitschrift für Historische Waffen- und Kostümkunde", IV, 1908, 4, p. 119.

<sup>242</sup> *MTB*, year 1401, p. 101.

<sup>243</sup> *MTB*, year 1407, p. 441.

<sup>244</sup> *MTB*, year 1401, p. 101.

<sup>245</sup> Such helmets are often mentioned in Polish sources — e.g. *galea alba, galea nigra*, etc. Cf. K. Górski, *Historia jazdy polskiej*, Kraków 1894, pp. 280-281.

<sup>246</sup> *MAB*, year 1448, p. 159.

Kettle-hats were made in Prussian smithies, also in that of Marienburg<sup>247</sup> where the already mentioned master Jacob with his helpers had been working, as is confirmed by a record: *item 4 m Jacob pletener und syme conpan of ysenhute zu badwhuten*<sup>248</sup>. Helmet-makers were also active at Elbląg where they not only made kettle-hats but also padded and cleaned them: *item 8 sc. vor 2 hutte czu padewiten, unde dy reyne czu machin*<sup>249</sup>. The term *padewoten*, *padewiten*, etc. denotes an elastic lining frequently with quilted cotton: *item vor 1 hundskogel to padewaten, vor czetir, parcham, bomwulle 2 sc.*<sup>250</sup>.

It is worthwhile to quote the prices of these helmets, which usually oscillated around half-a-mark, averaging 11-15 scotten<sup>251</sup>. It was not much, as other helmets were more expensive. In Poland their prices were similar<sup>252</sup>.

As has already been mentioned, kettle-hats were very popular among Teutonic troops. The inventory of the armoury of the Grand Commander of 1404 lists 250 kettle-hats, that is near half of all helmets stored there<sup>253</sup>. The inventory made in 1448 of *unsers homeystes harnischkamer* lists 450 helmets, of which as many as 351 were kettle-hats<sup>254</sup>. They were also worn by burghers, who according to the order of the Grand Master had to arm themselves in preparation for the Great War with *pancere, broste, ysenhutte*<sup>255</sup>. In the years preceding the battle of Grunwald, kettle-hats were in all castles of the Commanders where they predominated in number: of the 2026 headpieces, 729 were kettle-hats<sup>256</sup>. In the early 16th century the mobilization stocks of arms and armour, helmets including, were less impressive. Nevertheless, kettle-hats were still numerically superior. In 1507 all castles stored 120 helmets, of which as many as 112 were kettle-hats<sup>257</sup>. The inventories of 4 castles list only those helmets (23 examples)<sup>258</sup>.

Kettle-hats were also popular among the Teutonic Knights, notably in the 14th century, and among knights of lesser status. This is indicated by the order of the Grand Master Dietrich von Altenburg of about 1340, according to which the Knights when in the field have to *ire schilde, wopen noch ysenhute abe legen durfen*<sup>259</sup> and by the already discussed archaeological discoveries from Plemięta.

<sup>247</sup> The production of helmets in the Order's State is discussed by A. Nowakowski, *O wojskach* ..., pp. 98-102.

<sup>248</sup> *MTB*, year 1404, pp. 307-308.

<sup>249</sup> *NKRSME*, pt. I, no 969

<sup>250</sup> *NKRSME*, pt. I, no 88.

<sup>251</sup> *MTB*, pp. 147, 148, 231, 304ff.

<sup>252</sup> J. Szymczak, *Organizacja produkcji i ceny uzbrojenia*, [in:] *Uzbrojenie w Polsce średniowiecznej 1350-1450*, Łódź 1990, p. 232; idem, *Produkcja i koszty* ..., pp. 126-128.]

<sup>253</sup> *MAB*, p. 2.

<sup>254</sup> *MAB*, p. 159.

<sup>255</sup> *ASP*, no. 85.

<sup>256</sup> A. Nowakowski, *Arsenały I*, p. 93, table 3.

<sup>257</sup> A. Nowakowski, *Arsenały II*, p. 47.

<sup>258</sup> *Ibidem*.

<sup>259</sup> F.A. Vossberg, *Geschichte* ..., p. 13.

Miniatures from Berner chronicles provide an additional argument that corroborates the important role played by these helmets in the Order's State in Prussia during the last half-century of its existence. Most of the Teutonic Knights fighting at Grunwald wore kettle-hats (Fig. 61).

Let us now turn to basnets. The basnet is the result of the evolution of the traditional open helmet with a skull shaped as a slightly oval cone whose lower parts were lengthened and to which an aventail was attached by a new method, namely by means of studs<sup>260</sup>.

It is significant that pieces of information about basnets worn by European knighthood are distributed over all available sources. Their presence in Latin Europe is primarily documented by pictorial evidence, while original basnets, like the example from Nürnberg<sup>261</sup>, are quite exceptional. And yet the basnet was extremely popular because of its practical qualities. The elongated sides of the skull, and particularly the mail aventail attached to it, protected part of the face and the neck of the warrior. The helmet was light, and moreover, it did not restrict the range of vision and the ease of breathing. There are reasons to think that since the second half of the 14th century the basnet had become the main headpiece worn by European Knighthood during warfare<sup>262</sup>.

No direct references to basnets are found in available written records which repeatedly mention a helmet called *hube*, *huwe* or *hauwe*, whose type cannot be identified by the name alone. The difficulties stem from the fact that in medieval German, apart from the great helm, all kinds of headpieces made of organic material or metal, and protecting not only the top of the head but also the cheeks and neck of the warrior, are defined by this term<sup>263</sup>. Modern German terminology of arms and armour includes "Hirnhaube", "Helmhaube" or "Beckenhaube"<sup>264</sup>. The first name refers to small iron coverings with mail aventail worn under the great helm as a "round topped basnet". The second term denotes a quilted protection for the skull, and the third, the basnet. When we encounter the term *hube*, we are unable to guess which variant of the helmet the author had in

<sup>260</sup> A. Nowakowski, *Uzbrojenie ochrone* ..., p. 43; a helmet of a transitional construction from a conical headpiece to a typical basnet is in the Collezione Odescalchi in Rome, cf. N. di Carpegna, *Antiche Armi dal sec. IX al XVIII, già Collezione Odescalchi*, Roma 1965, no 23, p. 8; idem, *La Collezione d'Armi Odescalchi in Roma*, "Waffen- und Kostümkunde", 1966, pp. 66-67.

<sup>261</sup> J.G. Mann, *Notes on the Evolution of Plate Armour in Germany in the Fourteenth and Fifteenth Century*, Oxford 1935, p. 75, Fig. 4. It might be a basnet which lost its visor. Helmets of this type are also published by M. Terenzi, *Mostra di Armi Antiche (sec. XIV-XV) Poppi in Cosentino, Castello dei Conti quidi, 16 Luglio-16 Agosto 1967*, Firenze (date of publication is not given), nos 13-14.

<sup>262</sup> Z. Żygliski, *Broń w dawnej Polsce* ..., p. 99; A. Nowakowski, *Uzbrojenie ochrone* ..., pp. 44-45.

<sup>263</sup> Similar difficulties are encountered by scholars who try to identify basnets among the terms occurring in Polish medieval written sources. A. Nowakowski, J. Szymczak, *o.c.*, p. 34.

<sup>264</sup> *Glossarium Armorum. Arma Defensiva*, German ed. *Schutzwaffen*, Graz 1972, pp. 14-15, pls. 35-36. Cf. also J.G. Mann, *Notes on the Evolution* ..., p. 75.

mind. The reference to four *slomhuben* kept in 1402 in the Marienburg armoury is an exception<sup>265</sup>. The prefix *slom-* suggests a conical shape of the helmet and certain Slavonic influences as well<sup>266</sup>. On the ground of numerous parallels from Western and Central Europe<sup>267</sup>, it is possible to suppose that this was a basnet with a pointed skull and a marked ridge, of the kind worn by Order's dignitaries at Lochstedt (Figs. 47, 48), and represented on the altarpiece in the All Saints' chapel in St. Mary's Basilica in Gdańsk (Figs. 55, 56).

According to the references in *Das Marienburger Tresslerbuch*, the prices of the helmets varied<sup>268</sup>. They were: 2 *scot. vor der meisters hube*<sup>269</sup>, 10 *scot vor eyne hube*<sup>270</sup>, or 2 *m. vor 2 huben*<sup>271</sup>. The cheapest example is a leather hood worn beneath the helmet; perhaps the example that cost 10 scotten is also a headpiece of this type, while the helmet bought for 1 mark is in all probability a basnet or another type of open decorated helmet (their prices are similar). That helmets of this kind were made is indicated by a mention about paying 2 marks and 3 scotten *for dem nuwem goltsmede herzog Switirgals hauwe zu machen*<sup>272</sup>. The artisan seems to have decorated the helmet with noble metals, which covered the pierced studs or the strip running along the lower edge of the skull<sup>273</sup>.

That the Teutonic warriors, even the most outstanding ones, wore basnets with mail aventail is testified by the frescoes from Lochstedt, which show the Grand Master, the Grand Marshall and the Keeper of the Wardrobe. These dignitaries wear basnets with a pointed skull (*slomhuben*), and the mail aventail, which falls to their shoulders, is fastened in front and thus protects the lower part of the face and neck of the knight (Figs. 47, 48).

Helmets constructed in the 14th century include an improved basnet to which a visor of an early type, that is a mobile part protecting the warrior's face, was added. Visors differed in shape, in the way of attaching them to the skull, and in size. They were not an integral part of the skull and could be detached or lifted to uncover the face<sup>274</sup>.

<sup>265</sup> MAB, p. 4.

<sup>266</sup> According to the latest researches, the term *szlom*, *slom*, etc. was used in medieval Poland to denote basnet. Cf. A. Nowakowski, *Uzbrojenie ochronne*, ... pp. 44, 45.

<sup>267</sup> Cf. for instance, the miniatures from the so-called "Silesian Legend" and the analysis of arms and armour depicted there, Z. Wąrzonowska, *Uzbrojenie wojsk polskich i tatarskich w miniaturach żywota św. Jadwigi kodeksu lubińskiego*, "Kwartalnik Historii Kultury Materialnej", XXII, 1974, 1, p. 46; E. Wagner and others, o.c., pls. 11, 14, 16; A. Nowakowski, *Uzbrojenie ochronne*, ... pp. 44-45.

<sup>268</sup> The same is observed in Poland, cf. A. Nowakowski, J. Szymczak, o.c., pp. 34-35.

<sup>269</sup> MTB, year 1409, p. 578.

<sup>270</sup> MTB, year 1401, p. 101.

<sup>271</sup> MTB, year 1409, p. 527.

<sup>272</sup> MTB, year 1402, p. 172.

<sup>273</sup> A helmet thus decorated is in the Churburg collection, cf. O. Trap, J. Mann, *Die Churburger Rüstkamer*, London 1953 no 13.

<sup>274</sup> The origin of the basnet with visor has recently been discussed by A. Nowakowski, *Uzbrojenie ochronne*, ... pp. 48, 49.

The visor is not a medieval innovation. It was already in use in ancient Greece and Rome, among certain nomads of the Great Steppe, and — possibly under their influence — in Old Russia as well<sup>275</sup>. The nasal, usually shaped as an elongated triangle, was the earliest version of the visor of the medieval basnet. Its one end was fixed to a hook fastened to the front of the skull, and the other end was attached to the hood or the mail aventail, occasionally to the collar of the mail shirt. This innovation was not very handy and was soon discarded. The small nasal was widened and domed, thanks to which it became a protection for the whole face. Sights and ventilation holes were added. It did not cling to the face. At first the visor was attached by pivots, owing to which it could be detached. The pivots were on both sides of the skull<sup>276</sup>. In the mid-14th century a "Klappvisier" was constructed; it was fixed to the skull by means of a front pivot. It was possible to lift or even to detach it. At the close of the 14th century a visor in the shape similar to a pointed animal snout appeared in Germany. Its considerable size and numerous holes ensured good ventilation, and the pointed shape protected against blows. The weird appearance of the helmet, which alone could strike the opponent with awe, was not without significance. In literature, this type is called "pig-faced basnet", and in German and Polish publications it is usually called "houndskull". In the course of time, the front pivot was replaced by side pivots<sup>277</sup>.

In the twenties of the 15th century an improved version called *armet* was constructed by Italian artisans<sup>278</sup>. To the hemispherical skull two convex plates that covered the cheeks and could be drawn aside were added. This was the first European close-helmet.

Both *armets* and basnets occur in available sources, and two original basnets have survived in Prussia. Information is also provided by written records and iconographic material.

Unfortunately, we do not know if the earliest basnet with a movable nasal was worn in Prussia. It is neither shown in iconographic material nor mentioned in written records — this is rather understandable as they date from the periods when this basnet was no longer worn.

That basnets with "Klappvisier" were worn is shown by iconographic material and by a surviving helmet of this type. We do not know by which names they were called in written record. Perhaps they were termed *huben* or, particularly in

<sup>275</sup> Z. Żygulski, *Broń w dawnej Polsce* ..., p. 100; A.N. Kirpichnikov, *Drevnerusskoe oruzhie*, vol. I, Arkheologiya SSSR. Svod arkheologicheskikh istochnikov, vyp. E 1-36, Leningrad 1965, nos. 30-36.

<sup>276</sup> Basnets with visors not yet domed but shaped as enlarged nasals, yet already fixed by means of a frontal pivot, can be seen on several tombstones of West European knights. The tombstones date mainly to the '70s of the 14th century. Cf. O. Gamber, *Harnischstudien* V, Figs. 46, 48.

<sup>277</sup> C. Blair, o.c., pp. 68-70.

<sup>278</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., p. 49.

the 15th century, *helmen*. This is indicated by the analysis of the inventory of the Grand Commander's armoury made in 1404 and listing 248 *isenhute bosze und gut*, 145 *helme bosze und gut*, 53 *helme mit berten*, 127 *storczhelme*, 4 *slomhuben*, 15 *genwische huben*<sup>279</sup>. The record lists kettle-hats (*isenhute*), conical helmets (*storczhelme*), and basnets (*slomhuben*). The remaining helmets are probably basnets with visor, especially those mentioned as *helme mit berten* and *genwische huben*, since it would be hard to imagine that in the early 15th century when basnets with visor were very popular in Europe, the personal armoury of the Order's dignitary did not store such helmets.

A very interesting basnet with "Klappvisier" (Fig. 10), revealed during buildings works, is housed in the Museum of Warmia and Mazury at Olsztyn<sup>280</sup>. Only a sizable part of the skull has survived. The helmet was beaten in one piece of iron. The skull has holes for fastening the lining, and studs for the mail aventail. Unfortunately, the visor has not survived, though it doubtless represented the type known by the German name "Klappvisier". The Olsztyn helmet has many parallels, the closest one being the basnet from Siedlątków on the Warta river (Central Poland), dated to 1370-1390<sup>281</sup>. Also very similar is the example from Berlin, made about 1370<sup>282</sup>.

All this seems to suggest that the Olsztyn basnet was made in 1370-1380. It is by no means inferior to the finest helmets of this type. Very likely, it was made in Prussian helmet-producing workshops<sup>283</sup>.

Helmets of this type are shown in iconographic materials from the fourth quarter of the 14th century. Fine basnets with visor occur on the altar-piece in the All Saints' chapel in St. Mary's Basilica in Gdańsk (Figs. 55, 56) or on the reliquary from the turn of the 14th and 15th centuries from Kwidzyń (Fig. 57).

Of great interest is the helmet kept in the Museum in Toruń. It is made of iron, and is conical in its upper part and near-cylindrical in the lower. The upper part is pointed, and the lower part has holes for attaching the lining and pierced studs for the mail aventail. Just under the band on the right side of the skull is a rivet (the left one has not survived) for the visor<sup>284</sup> (Fig. 9). The constructional details of the helmet from Toruń have made the historians of arms and armour uneasy, as it was impossible to assign it to any known category. Its singularity consists in the combination of West European construction with the oriental shape of the skull<sup>285</sup>. Accordingly, the helmet has been regarded as made by

a Slavonic artisan who to a certain extent made use of German models<sup>286</sup>. It has been described as non-typical and unusual because of the skull reminiscent of an oriental "chichak"<sup>287</sup>, or alternately, the strange shape has been attributed to the invention of the helmet-maker who wanted to blend Western and Eastern characteristics<sup>288</sup>.

Recent research shows that this helmet occurs in Teutonic written sources as *pekilhube*<sup>289</sup>, and is by no means exceptional, as the shape of the skull is strikingly similar to that of the Mielno helmet (Fig. 7).

*Pekilhuben* occur several times in written record. The earliest mention dates from 1364 and refers to the inspection of the castle armoury at Starogród<sup>290</sup>, the latest dates from 1451 and concerns the armoury at Paślęk<sup>291</sup>.

In all probability these helmets (etymologically the name *pekilhube* comes from "pickel" [sharp] point and "haube") were constructed by Baltic artisans. At first they were worn by the Prussians, and from them borrowed by the Teutonic Knights. Thus the *pekilhuben* were typical helmets, yet not in Western Europe but in the Baltic area where both the occidental and oriental characteristics were combined in the production of arms and armour<sup>292</sup>. The name *prowsche hube*, which occurs in written records of the early 15th century<sup>293</sup>, is an additional argument in favour of this supposition. In our view, both source names: *pekilhube* and *prowsche hube* can be regarded as synonyms used to describe the Baltic helmet named "Prussian" by the Teutonic Knights. The presence of Baltic types of arms and armour in the Order's armouries in the 14th and 15th centuries is perfectly understandable<sup>294</sup>.

On the margin of these considerations, it is hardly possible to refrain from remarking that the modern heirs to the Order's State owed to it more than the name of the Prussians. The Pickelhaube — the helmet worn by soldiers in the army of the Prussian kings and later by German soldiers up to World War I — originated in the Baltic culture. Though the constructors of the modern "Pickelhaube" were probably unaware of this, its reappearance is another example of

1915-1917, pp. 108-109; A. Maryanowski, *Hełm średniowieczny w Muzeum Miejskim w Toruniu*, "Broń i Barwa", IV, 1937, nos. 11-12, p. 243.

<sup>286</sup> B. Engel, *Eine eigenartige Beckenhaube*, p. 108.

<sup>287</sup> *Broń średniowieczna...*, Katalog, p. 17.

<sup>288</sup> Z. Żygułski, *Broń w dawnej Polsce* ..., p. 136.

<sup>289</sup> The first to do this was Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 72-73; cf. also M. Głosek, A. Nowakowski, *o.c.*, p. 60.

<sup>290</sup> GAB, p. 495.

<sup>291</sup> GAB, p. 106.

<sup>292</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 74, 144-148.

<sup>293</sup> GAB, year 1411, p. 32; year 1431 p. 39.

<sup>294</sup> The *pekilhube* is mentioned both in Polish and Bohemian sources. The presence in Poland and Bohemia of helmets that originated under the Baltic influence is not surprising as they are by no means the only Baltic elements of defensive arms that occurred in West Slavonic territories in the Middle Ages. Cf. A. Nowakowski, *Uzbrojenie ochrone* ..., p. 57.

<sup>279</sup> MAB, p. 2.

<sup>280</sup> The most recent and the fullest description of the find in: A. Nowakowski, *Średniowieczny hełm* ..., pp. 147-154.

<sup>281</sup> A. Nadolski, *Hełm i fragmenty zbroi z XIV wieku znalezione w Siedlątkowie na Warcie*, "Studia i Materiały do Dziejów Dawnego Uzbrojenia i Ubioru Wojskowego", IV, 1969, pp. 8-10.

<sup>282</sup> H. Müller, F. Kuntzer, *Europäische Helme aus dem Sammlung des Museums für Deutsche Geschichte*, Berlin 1971, Figs. 37, 39, p. 326.

<sup>283</sup> A. Nowakowski, *Średniowieczny hełm* ..., p. 153.

<sup>284</sup> M. Głosek, A. Nowakowski, *o.c.*, pp. 53-55.

<sup>285</sup> B. Engel, *Eine eigenartige Beckenhaube*, "Zeitschrift für Historische Waffenkunde", VI,

the revival of long forgotten cultural components. This example is of particular interest, since it concerns resurrection of an element that was alien to the culture of which in the course of time it became something of a symbol.

Another variant of the basnet with visor worn by Teutonic troops in the second half of the 14th and the first half of the 15th century are helmets with a pointed visor, called pig-faced basnets. In relevant literature it has so far been maintained that in Teutonic source these helmets are called *hundiskogel*<sup>295</sup>. However, as shall be explained below, they denote another type of headpieces.

Pig-faced basnets are known from iconographic material alone. They occur on the seal from Chelmno from the second half of the 14th century (Fig. 27), and on the wings of the altar in the All Saints' chapel in St. Mary's Basilica in Gdańsk (Figs. 55, 56). Unfortunately, we do not know if they were as popular as the other types of basnets and when they stopped to be worn in the field.

Another type in all probability worn by Teutonic troops in the 15th century, notably in its second part, was a basnet with an ovoid or conical skull, a strongly convex visor and two circular ear-guards. Helmets of this type are worn by certain Teutonic Knights in the scene of the battle of Grunwald depicted in Schilling's Chronicle (Fig. 60). This type of helmet was rather popular in Europe. It was worn both by Polish<sup>296</sup> and by German knights<sup>297</sup>.

Mention should also be made about armets, popular in the early 15th century in many European countries, yet surprisingly nearly unknown in Poland, which neighboured with Prussia<sup>298</sup>. Whether they were worn by Teutonic Knights is not certain, since only one mention of 1513 refers to *3 hemlin*<sup>299</sup> — this term possibly means armets — kept in Labiawa (Labiaw)<sup>300</sup>.

Also sallets might have been used in the Order's State. They appeared in Europe in the first quarter of the 15th century and became very popular on battlefields. Sallets only once appear in relevant sources: they are worn by Teutonic Knights in the picture "The Siege of Marienburg" (Fig. 68).

According to written sources, several kinds of ornaments were used to decorate helmets. The pierced studs on basnets with or without visor were gilded or

silvered: *9 scot ouch vor golt, die koperynne osechin zu vorgolden*<sup>301</sup>, or *item 1 m 1/2 m und 3 1/2 scot ... logit. zu osechen und andere gerete zu den helm*<sup>302</sup>. The pig-faced basnet from Churburg, dated to 1380-1390<sup>303</sup>, is an excellent parallel. Particularly impressive helmets assigned for gifts to alien rulers, and made in Prussian workshops, are mentioned in the record of 1399 which says about a helm given to Zygmunt Korybutowicz, prince of Lithuania: *item 2 m. und 4 sc. logit. dem meister zu 3 helm. item 2 m. 4 sc. machelon, item 7 scot. vor silberynne nelechin zu den 3 helm ouch meister Willam zum Elbinge ... die helm worden herzoge Sigismundo gesandt*<sup>304</sup>, and another of 1410 which says about gilding ornaments on the helmet given to Witold, Grand-Duke of Lithuania: *item 15 scot prusch vor eychelen und andere gerete zu Wytows helm zu vorgulden*<sup>305</sup>.

A coif, padded on the inside, and protecting the head, neck and shoulders of a warrior, was sometimes worn instead of a helmet. Coifs of this kind were used in all countries of Latin Europe throughout the Middle Ages<sup>306</sup>.

Coifs are mentioned in written records as *hundiskogel* and *hundiskappe*. As already mentioned, these terms were incorrectly associated with pig-faced basnets<sup>307</sup>. That these terms denote coifs is shown by the analysis of written sources in which the coif is mostly mentioned with other elements of defensive mail armour, e.g. *item 122 m. ane 8 scot. vor 11 gestelte panzer vor 2 schurze, 2 hundiskogiln un vor eyn crayn*<sup>308</sup>. This record mentions 11 mail hauberks, 2 mail skirts, 2 coifs, and 2 mail collars. There are more references of this type, e.g. *item 8 1/2 m. vor 2 panzer, 2 schorsch und vor 2 hundiskogil*<sup>309</sup>; a full body armour — but of mail! — is mentioned here. Also in municipal written sources the term *hundskogil* — if it does not occur separately — is always associated with a mail element of defensive armour, e.g. *item vor 1 panzer unde 2 hundeskogelen gegeben 4 1/2 mr., item 8 sc. vor 1 panzer reyne to maken unde vor 1 hundeskogel unde to vorbereten*<sup>310</sup>. That this term cannot be identified with the pig-faced basnet is convincingly proved by other references as well<sup>311</sup>. The inventory of the Grand Master's armoury made in 1448 lists equipment called *ringharnasch* (that is made of mail), which included 300 *hundesko-*

<sup>295</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 72-73. The erroneous interpretation of the term "hundeskogel" occurs also in literature dealing with medieval defensive arms in Germany: cf. W. Boehheim, *o.c.*, p. 43; H. Müller, F. Kunter, *o.c.*, p. 328; and in Poland: W. Dziewanowski, *Zarys dziejów* ..., p. 150; Z. Żygulska, *Broń w dawnej Polsce* ..., p. 101; and recent publications: A. Nowakowski, *Uzbrojenie ochronne* ..., p. 56.

<sup>296</sup> Nowakowski, *Uzbrojenie ochronne* ..., p. 56.

<sup>297</sup> Evidence is provided by iconographic material, e.g. the altar of Albrecht II (about 1438) from Klosterburgen (J.G. Mann, *Notes on the Evolution* ..., pl. 18), a picture of Jan van Eyck from 1415-1417 (A. Wese, *Skulptur und Malerei in Frankreich in XIV. und XV. Jahrhundert*, Potsdam 1927, p. 85, fig. 100) or by altar from Lorch on the Rhein (G. Dehio, *Geschichte des deutschen Kunst*, II, Berlin-Leipzig 1923, p. 178, Fig. 257).

<sup>298</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., p. 49.

<sup>299</sup> GAB, p. 297.

<sup>300</sup> A. Nowakowski, *Arsenały II*, p. 46.

<sup>301</sup> MTB, year 1400, p. 53.

<sup>302</sup> Ibidem.

<sup>303</sup> L.G. Boccia, E.T. Coelho, *L'arte dell'armatura in Italia*, Milano 1967, pl. 1, p. 126.

<sup>304</sup> MTB, p. 19.

<sup>305</sup> MTB, p. 53.

<sup>306</sup> W. Boehheim, *o.c.*, pp. 132-136.

<sup>307</sup> Attention to this was paid by A. Swaryczewski, *Platmerze* ..., p. 67.

<sup>308</sup> MTB, year 1404, p. 304.

<sup>309</sup> MTB, year 1408, p. 465.

<sup>310</sup> NKRSME, pt. I, no 1044.

<sup>311</sup> Term similar to *hundiskogel*, namely *huczkop*, *huskop*, etc. used in Polish medieval records, have recently been identified as mail aventail. Cf. J. Szymczak, *Produkcja i koszty* ..., pp. 129-130.

geln<sup>312</sup>. The helmets were separately listed. A record of 1414 says: *item 8 sc. dem sarewechter vor 1 panzer reyn czu machen unde 1 hundeskogeln czu vorlegen*<sup>313</sup>. It says that the mail-maker lengthened the "hundiskogel". This could be only done with a coif and not with a steel helmet. It is noteworthy that all mentions about coifs bought from Prussian artisans use the term mail-maker: *Heinrich Padeborge sarewachter and Hannus sarewachter von Danczk*<sup>314</sup>.

The coifs were quite expensive: *item 5 m ane 10 scot vor 5 hundiskogeln, yo di kogil vor 22 scot*<sup>315</sup>, the most expensive examples cost one mark<sup>316</sup>. Sums for padding and repairing varied, e.g. *item vor 1 hundeskogel to padewaten von cze-tir, parcham, boumwulle 2 sc.*<sup>317</sup> or *item 1 sc. vir 1 hundeskogel to voderen*<sup>318</sup>.

This type of headpiece was very popular among Teutonic troops. In the years just before the Great War (1409-1411) they accounted for over 10% of all other types of headpieces kept in castle armouries<sup>319</sup>. They were still there in the early 16th century<sup>320</sup>. This is another argument for not regarding *hundiskogel* as helmets. That they were also worn by burghers is indicated by written sources<sup>321</sup>.

Aventails called *gehenge* should also be referred to. As their prices varied, it may be assumed that there were divers types of aventails<sup>322</sup>. The price depended on the density of the mail, the size of the rings, and the kind of metal used. In 1400 various aventails were bought for the armoury of Marienburg: *das gehenge zu 22 scot; 4 m. ane 1 fird. vor 4 gehenge, das gehenge vor 16 scot*<sup>323</sup> and *12 gehenge, das stucke vor 10 scot, das stucke vor 8 scot*<sup>324</sup>.

Leather or cotton linings protecting the head and worn under the helmet were called *slappe*. That they were used for various types of iron helmets is indicated by the mention: *50 helme mit slappen*<sup>325</sup> or *huben mit slappen*<sup>326</sup>.

Summing up the considerations about helmets used by Teutonic troops, we should call attention to their variety. They included both modern examples, and those which generally were no longer used by leading chivalrous armies of Wes-

tern Europe. This is particularly striking when we try to assess the quality and modernity of the arms and armour kept in armouries. The analysis of mobilization stores from the turn of the 14th and 15th centuries clearly indicates that not all helmets were modern<sup>327</sup>. Hundred years later, the stores of helmets amassed in these armouries presented a similar picture as far as their fighting value was concerned<sup>328</sup>. What has been written above seems to confirm that defensive armour in Prussia developed on the same lines as that in all parts of Europe. The armouries of the Order's State probably did not generally differ from those of Central and Western Europe as far as the stores of arms and armour are concerned. Certainly the arms and armour of the Order's State did not surpass in quality those of its neighbours.

It should be stressed that the types of helmets worn by the Teutonic Knights, notably in the 14th and 15th centuries, were not limited to those made and popular in the area of the Latin culture. Helmets constructed in the area of the Baltic culture were likewise popular. Those *prusche helmen* or *pekilhuben*, which were an element of eastern cultural tradition, were unknown among chivalrous armies of the West. Even if arms and armour worn by Teutonic troops show certain distinctiveness when compared, for instance, with those from Poland — a country with which the Order's State fought most frequently — it manifests itself, among other things, in the oriental character of certain helmets worn by the Teutonic Knights<sup>329</sup>.

## THE ARMOUR

The period covered by this study is characterized by tremendous changes that were taking place in armour worn at that time. Body and limb defences, used in Latin Europe, did not change much until the mid-15th century. Fundamental changes occurred in the second half of the 14th and in the early 15th century. Defensive armour worn in the early 14th century differs enormously from that worn hundred years later. In the course of one century the figure of a knight changed far more than during the preceding two centuries. This was due to the construction of new types of offensive weapon and the improvement of the former types. As a result, constant improvement of defensive armour was greatly accelerated.

As a result of this evolution, armour of steel plate was constructed. The European plate armour was an original invention, an excellent metallurgical creation. It enclosed the warrior completely in a stiff covering composed of several ele-

<sup>312</sup> MAB, p. 159.

<sup>313</sup> NKRSME, pt. II, no 1460.

<sup>314</sup> MTB, year 1409, p. 72.

<sup>315</sup> MTB, year 1402, p. 147.

<sup>316</sup> MTB, year 1403, p. 304.

<sup>317</sup> NKRSME, year 1409, no 81.

<sup>318</sup> NKRSME, pt. I, year 1409, no 1044.

<sup>319</sup> A. Nowakowski, *Arsenały I*, p. 94, table 1.

<sup>320</sup> A. Nowakowski, *Arsenały II*, p. 47.

<sup>321</sup> For instance NKRSME, nos 783, 969, 1460 and many others.

<sup>322</sup> Considerable differences in value of mail aventails are also observable in Poland. Cf. J. Szymczak, *Produkcja i koszty ...*, pp. 129-130.

<sup>323</sup> MTB, p. 100.

<sup>324</sup> MTB, p. 61.

<sup>325</sup> GAB, year 1379, p. 3.

<sup>326</sup> Ibidem.

<sup>327</sup> A. Nowakowski, *Arsenały I*, p. 85.

<sup>328</sup> A. Nowakowski, *Arsenały II*, pp. 46-47.

<sup>329</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 77.

ments, yet constructed in such a way as to ensure near-full freedom of movement. It took the armourers over hundred years to invent full plate armour that replaced hauberks of mail and of small plates. Years of experimenting, of striving for the best technological solutions lasted in Latin Europe from the close of the 13th to the early 14th century. The known authority on arms and armour, C. Blair, has divided the history of European armour into periods, two of which directly precede the appearance of plate armour: "Introduction of plate armour" (1230-1330), and "Early plate armour" (1330-1410)<sup>330</sup>. The years following 1410 are marked by the end of the efforts to combine, in the best possible way, various parts of armour to create an effective whole. Those years saw the flowering of the armourer's art.

The evolution of medieval armour should not be regarded as a homogenous process in respect to its construction, style and chronology<sup>331</sup>. Among the historians of Western and Central European arms and armour there is consensus of opinion that there are at least three factors which had a key influence on the development of particular forms and their popularity among warriors. These are: the rejection of oriental patterns familiar in the Early Middle Ages; the emergence and gradual increase in differences between the chivalrous and the plebeian arms and armour; and the creation of schools and styles in the production of arms and armour, the development of which followed local tastes and fashions<sup>332</sup>. Besides the trends towards unification there were contrary tendencies too. The armourers were not only experimenting but also took the tastes of buyers into account. As a result, armours were produced that differed from the "model" created by the historians of arms and armour whose approach to typological evolution is marked by purism<sup>333</sup>. High prices of armour certainly did hinder wide spread of innovations, as not all warriors could afford to buy the latest in military equipment. The adoption of new models of armour seems to have been a slow process. Therefore the persistence of certain forms of body and limb defences and the combination of old and new elements, particularly among poorer combatants, should be taken into considerations.

In the study of the development of and changes in armour, the development of its particular elements should be taken into account. This is of particular importance as far as plate armour is concerned. Plate armour, especially towards the end of the Middle Ages, consisted of many parts constructed so as to ensure their best cooperation. The armour could be, and often was, a whole, uniform not only in technological and structural but also in stylistic aspects. Yet it was so composed that it was possible to form numerous temporary combinations as the need arose.

<sup>330</sup> C. Blair, *o.c.*, p. 63.

<sup>331</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., pp. 31-33.

<sup>332</sup> Z. Żygulski, *Broń w dawnej Polsce* ..., p. 98.

<sup>333</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., p. 31.

Studies on the development of armour should not concentrate on its particular parts only without paying attention to the whole<sup>334</sup>. Yet in an analytical approach, this is sometimes indispensable. For practical reason, various parts of armour from breastplate to limb defences will be successively discussed in this book.

Attention should also be paid to accompanying accessories, such as clothing and ornaments, which usually are an integral part of the armour. Their character was in part utilitarian and in part decorative or heraldic. This second aspect seems to have been of particular importance as far as armour worn during ceremonies and tournaments is concerned, though it was not without significance on battlefields. This problem is here barely touched upon, as it should be considered in a separate study which would take civilian fashion into account. For the study of this subject, the cooperation with a historian of costume is needed.

Available sources tell us quite a lot about armour. Yet the fullest and most essential information is revealed by written sources, though not all references are of equal value<sup>335</sup>.

It is difficult to deduce types of armour from narrative sources and documents. The description is usually poor, mostly confined to such phrases as "armed warrior", "horseman", etc.<sup>336</sup> Armour is rarely mentioned, and no details are given. As an example, we can cite the endowment made under the Chełmno law, in which the duty to serve clad in armour is imposed. Because of the abundance of references, the situation may seem promising for the historian of arms and armour. Unfortunately, this is not the case<sup>337</sup> as in the documents there are only two ways of telling about the duty, irrespective of the time the endowment was made: *mit harnish unde pferden ... zcu dienen*<sup>338</sup> or *servicium quod plathendinst dicitur*<sup>339</sup> or *just rossdiens*<sup>340</sup>. The donor only rarely demands a specific type of armour. Yet even in these documents the only terms are *panczir*<sup>341</sup>, *bronia-brunea*<sup>342</sup> and *plate*<sup>343</sup>. We think, however, that not always, especially in the

<sup>334</sup> Z. Żygulski, *Broń w dawnej Polsce* ..., p. 98.

<sup>335</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 77.

<sup>336</sup> *Ibidem*, p. 78.

<sup>337</sup> A similar phenomenon occurs in Poland, where the military duties of the landowners, especially those concerning their equipment, are only schematically defined. Cf. St. M. Zajączkowski, *W sprawie wielkości pocztów rycerskich w Polsce w okresie monarchii stanowej (w świetle dokumentów nadawczych monarchów)*, "Acta Universitatis Lodziana", Folia Historica, Seria I, no 29, Łódź 1978, pp. 62-64; A. Nadolski, J. Dankowa, *Uwagi o składzie i uzbrojeniu polskiej jazdy rycerskiej w latach 1350-1450*, "Studia i Materiały do Historii Wojskowości", XXVI, 1983, pp. 94-95.

<sup>338</sup> *Pr.Urkb.*, III, no 466.

<sup>339</sup> *Ibidem*, IV, no 166.

<sup>340</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 145.

<sup>341</sup> *Cod.Dipl.Prus.*, IV, no 77.

<sup>342</sup> *Pr.Urkb.*, IV, no 365.

<sup>343</sup> *Pr.Urkb.*, III, no 479.

case of *plate*, just that type was meant, as the term is synonymous with armour whichever its construction may have been<sup>344</sup>.

Another group of written sources includes inventories of armouries, account- and cash-books, and collections of commercial records. Owing to the direct description of arms and armour, these sources can be regarded as reliable, and for this reason they are of great value. They tell us much about armour worn by Teutonic Knights in Prussia. They can be used in an attempt to study the evolution of armour, the emergence of new types, and to draw some inference about certain problems concerning its production and distribution.

Armour worn by infantry and cavalry is repeatedly represented in iconographic materials. However, they are not always adequate enough. As is known, pictorial art of medieval Europe does not so much mirror reality as expresses certain ideas. As far as coins, seals or tombstones are concerned, this has resulted in schematic or symbolic representations. Moreover, the artisans who made the designs on coins or seals were hampered by the material that was difficult to work, by the need to use definite technics, and by the small size of drawings. As a result, various objects look alike and several details cannot be ascertained<sup>345</sup>.

Wall paintings of lay character, and certain works of ecclesiastical art are more useful for our purpose. Unfortunately, they usually represent persons of high social status, while members of lower social classes are ignored.

In comparison with my first monograph<sup>346</sup>, the possibilities of using original relics of arms and armour, which are of the greatest value, are now far more abundant. They have already been mentioned, yet we wish to stress that owing to archaeological discoveries, it is sometimes possible to identify a discovered object by associating it with information given in written sources.

The first type of armour worn in the Order's State to be discussed here is the mail hauberk, i.e. armour composed of interlinked iron or steel rings. It can be partial, consisting of a mail shirt only, or full, supplemented by mail hose. All kinds of sources tell us about mail hauberks, which in written records are called *panzer*<sup>347</sup>.

The mail hauberk, which according to recent research had been invented by the Celts<sup>348</sup>, was a very popular body and limb defence used in Europe through-

out the Middle Ages. It was worn as the only defence, and later, beneath developed armour plate. It is possible to presume that in the Early Middle Ages it was the favourite type of body defence<sup>349</sup>. It protected against cut and thrust, but not against blow, and for this reason a garment of thick fabric, of leather or quilted cotton was worn beneath to provide an additional layer that would lessen the impact of blows.

The mail hauberk was used in Teutonic Prussia throughout the Middle Ages. Its domination lasted probably to the mid-14th century and then it was slowly being replaced by new body and limb defences. The co-appearance of the mail hauberk with various types of plate defences, and since the end of the 14th century with full plate armour, is confirmed by relevant sources. The same process was taking place all over Latin Europe at nearly the same time.

The earliest information about the mail hauberk is obtained from the analysis of the convent seal attached to the document of 1232 (Fig. 24). It shows St. George clad in a mail shirt extending to his knees, worn over a long tunic. Probably at that time the Teutonic Knights were also familiar with full mail hauberks with hose, though the information about it is of later date. The seal of the Prussian marshal, fixed to the document of 1282, shows a mounted knight clad in armour of that type (Fig. 25). Other relics are dated to the first half of the 14th century. One of these is the seal of the Commander of Gdańsk, which shows a knight in full mail hauberk with a long surcoat worn over it (Fig. 30). An excellent representation of a mail hauberk with plate poleyns can be seen on the capital from Kwidzyń, which shows a battle of mounted knights (Fig. 37). The miniature from the so-called *Apocalypse* also shows knights clad in full mail hauberk with a tunic worn over it (Fig. 38). Teutonic Knights depicted on the earlier fresco (the upper row) in Königsberg Cathedral also wear mail hauberks, though unfortunately the drawing is blurred (Fig. 42).

The earliest written references to the armour in question date from 1364<sup>350</sup>. At that time the mail hauberk was worn, especially by knights, under the breastplate and closed leg-harness. A very good example is afforded here by the warriors depicted on the later fresco in Königsberg Cathedral: they are clad in full mail armour over which they wear spherical breastplates covered with cloth, plates of cuisse and greaves and full poleyns as well (Figs. 42-44). Conclusive evidence for this "symbiosis" of the mail hauberk and plate armour is supplied by the discoveries at Plemięta where damaged fragments of plates and mail hauberk have come to light.

That mail armours were present in castle armouries is repeatedly confirmed by inventories. At Königsberg, the inventory made in 1379 lists 32 *panczir*, in 1382: 39 examples, in 1392: 19 and in 1404: also 19<sup>351</sup>. In the years preceding

<sup>344</sup> Similar difficulties are encountered by the historians of medieval defensive arms in Poland. Also here the references found in sources are usually of the type: "cum duobus ioppis", "in levibus armis", etc., Cf. A. Nowakowski, *Uzbrojenie ochronne ...*, p. 60.

<sup>345</sup> Z. Żygułski, review: L. Kajzer, *Uzbrojenie i ubiór ...*, and Z. Wawrzonowski, *Uzbrojenie ... Piastów śląskich*, "Kwartalnik Historii Kultury Materialnej", XXV, 1977, 2, p. 283. The review presents also an assessment of studies on the history of arms and armour, based on uncritically used iconographic material, p. 284. A. Nowakowski, *Historia uzbrojenia ...*, pp. 7-8.

<sup>346</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*

<sup>347</sup> Ibidem, p. 81. The term *panzer*, *panzir*, etc. occurs also in German, Bohemian and Polish sources. According to the opinions of the historians of arms and armour, it denotes "mail hauberk". Cf. A. Nowakowski, J. Szymczak, *o.c.*, pp. 42-46.

<sup>348</sup> A. Nadolski, *Broń i strój rycerstwa polskiego w średniowieczu*, Wrocław 1979, pp. 39-40.

<sup>349</sup> W. Boehem, *o.c.*, pp. 24-25.

<sup>350</sup> *GAB*, year, 1364 p. 495.

<sup>351</sup> *GAB*, pp. 3-8.



the Great War mail armours were kept in nearly all armouries in the castles owned by convents and Voigts. They accounted for 10% of all types of armour amassed in the Order's State<sup>352</sup>. The inventory of the Grand Master's armoury of 1448 lists as many as 267 examples of mail armour<sup>353</sup>. They were still present in Teutonic armouries in the early 16th century<sup>354</sup>. That mail hauberks were also worn by burghers is shown by the following passage: *item vor Puschwalde syn panczer... reyne to maken*<sup>355</sup> or *item gegeben 1 f. vor 3 panczer to vorbereten*<sup>356</sup>.

Interesting conclusions may be drawn from the analysis of the prices of mail hauberks, which ranged from 1.5 to over 10 marks, e.g.: *item 3 m. vor zwey panzer, die unser homeyster selben koufte*<sup>357</sup> (it says about the mail hauberk given to Grand-Duke of Lithuania, Świdrygiełło); *Item 26 1/2 m. 1 sc. vir 3 panzer*<sup>358</sup>. Purchases of mail hauberks greatly varying in prices are mentioned in another record: *item 17 m. vor 7 panczer, der woren 6 vor 13 m. gekouft und 1 vor 4 m*<sup>359</sup>. This amazing variety indicates that mail hauberks differed not only in material they were made of, but also in completeness: the more expensive example in all probability included also hose<sup>360</sup>.

Information about mail hauberks is provided by mentions of the following type: *item 52 m. 1 fird. vor 19 yserynne penzer, yo das panzer vor 3 m, ane 1 fird*<sup>361</sup>. We learn about steel examples from such notes as this: *item 16 m. vor 2 panzer, eyn stelyn und eyn yserynnes*<sup>362</sup>.

Sometimes the sources tell simply about "good" mail hauberks: *Item 37 m. 4 scot. vor gute panzer*<sup>363</sup>. It is interesting to note that the hauberks were destined for the Grand Master, yet they were bought by the House Commander of Gdańsk.

Another type of armour used in the area in question was made of small plates. Two versions may have been known: lamillar and scale armour.

Armour of small plate was constructed in Asia. It spread to Europe in the Early Middle Ages, probably under Avarian influence, it became popular in Old Russia where it was worn already in the 9th century<sup>364</sup>. Among Eastern Slavs

this type of armour was extremely popular until the end of the 14th century. It was also known in Scandinavia: the battlefield at Visby (1361) yielded over ten armours composed of small plates<sup>365</sup>. Lamillar armour was used in Poland still in the first half of the 14th century. It was certainly worn in Masovia<sup>366</sup>, while in other province of the Polish Kingdom also scale armour was in use<sup>367</sup>.

That the armour made of small plates was also worn in Teutonic Prussia is shown by written and iconographical sources.

In written sources this type of armour is called *bronye-bronie*, *bronge-bruninge*, etc.<sup>368</sup> Unfortunately, we do not know if those terms refer to scale or to lamillar armour.

Armour composed of small plates was kept in castle armouries, sometimes in large quantities. In 1383 the armoury of the Grand Commander held 37 *bruningen*, in 1387 150 *brongen* und 5 *brongen*, and in 1391 100 *brongen* ane 3 *brongen*<sup>369</sup>. In the early 15th century there were about 145 examples of this armour in 9 castles, accounting for about 5% of all kinds of body defence kept at that time in Prussia<sup>370</sup>. That this armour was occasionally worn with pauldrons is testified by this record: *134 armleder czu den brongen*<sup>371</sup>.

It is interesting to note that in contrast to other types of armour, small plate armour did not differ in value. According to all available mentions, it cost 1 1/2 mark: *item 4 1/2 m. vor 3 bronien, die der groskompthur selben koufte*<sup>372</sup> or *item 9 m. Jorge bronyemecher vor 6 nuwe brongen*<sup>373</sup>. These records point to the unification of armour, which may have been worn by local mercenaries or servants and therefore there are no mentions about finer examples, which must have been more expensive.

Scale armour depicted on the predella of the altar in the All Saints' chapel in St. Mary's Basilica in Gdańsk (Figs. 55, 56) covers the whole trunk of the knight extending to the knees.

It seems reasonable to surmise that this type of body defence reached Teutonic Prussia from the East Slavonic countries, in all probability through the agency of the Balts. It was worn already in the early 14th century not only by members of the castle garrisons but also by local knights obliged to serve clad in *gut panczer oder Brunie*<sup>374</sup> or to turn up *cum brunii et ceteris armis*<sup>375</sup>. Yet the two

<sup>352</sup> A. Nowakowski, *Arsenały I*, p. 86.

<sup>353</sup> *MAB*, p. 159.

<sup>354</sup> A. Nowakowski, *Arsenały II*, p. 49.

<sup>355</sup> *NKRSME*, pt. I, no 81.

<sup>356</sup> *Ibidem*, pt. II, no. 1460.

<sup>357</sup> *MTB*, year 1402, p. 220.

<sup>358</sup> *MTB*, year 1409, p. 586.

<sup>359</sup> *MTB*, year 1402, p. 220.

<sup>360</sup> Also in medieval Poland the prices of mail hauberks varied. In the years 1350-1450 the prices ranged from 2 to 10 marks. Cf. J. Szymczak, *Produkcja i koszty ...*, pp. 108-112.

<sup>361</sup> *MTB*, year 1404, p. 304.

<sup>362</sup> *MTB*, year 1409, p. 585.

<sup>363</sup> *MTB*, year 1402, p. 220.

<sup>364</sup> A. F. Medvedev, *K istorii plastichatogo dospekha na Rusi*, "Sovetskaya Arkheologiya", 1959, 2, pp. 119-134.

<sup>365</sup> B. Thordemann, *Armour from the Battle of Visby*, I, Stockholm 1939, contains literature and iconographic material concerning armour of small plates.

<sup>366</sup> A. Nowakowski, *Przyczynki ...*, pp. 292-293.

<sup>367</sup> A. Nowakowski, *Uzbrojenie ochronne ...*, p. 65.

<sup>368</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, pp. 84-85.

<sup>369</sup> *MAB*, pp. 1-2.

<sup>370</sup> A. Nowakowski, *Arsenały I*, table 2.

<sup>371</sup> *MAB*, p. 2.

<sup>372</sup> *MTB*, year 1405, p. 341.

<sup>373</sup> *MTB*, year 1409, p. 527.

<sup>374</sup> J. Voigt, *o.c.*, V, p. 676.

<sup>375</sup> *Ibidem*, p. 677.

versions: lamellar and scale, do not seem to have been popular in Prussia, as they were not practical: they were stiff and the scales or lames fell easily off from the leather shirt. That the armour was being repaired is shown by references: *item 5 fird. vor 5 alde bronynen zu bessern*<sup>376</sup>.

By the end of the 13th century a new type of armour, namely the coat of plates had become popular in the Order's State. Everything seems to indicate that its evolution led to the construction of the breastplate.

Information about the construction of the coat of plates, mentioned in written records as well, is provided by the already mentioned discoveries at Plemięta. The coat of plates from Plemięta represents a variant very popular in Europe and assigned by B. Thordemann to type IVa<sup>377</sup>. It consists of 3 rows of vertically arranged lames, riveted on the inside to a leather jerkin shaped as a poncho. The lames protected the breast and sides of the warrior, while his back was protected by the jerkin with no lames attached. All this was put on over the head and buckled at the side<sup>378</sup> (Fig. 17).

The coat of plates was very popular in Europe<sup>379</sup>. Its construction was simple and its price low. Yet it was not without shortcomings: its construction was none too firm since the lames tended to fall off when the cover became worn or rivets got loose. Coats of plates were usually worn over the mail hauberk or between it and an outer garment<sup>380</sup>.

In written records this type is called *plate*, *plata*, etc.<sup>381</sup> It is referred to up to the mid-15th century, both in documents and other sources. It is symptomatic that the feudal duty of military service when concerning feudal lords of lesser status was called *platendienst* — *servicium quo plathendinst dicitur*<sup>382</sup>. Its origin from the plate armour leaves no room for doubt and this indicates its popularity in Prussia<sup>383</sup>.

That coats of plates were widely used by Teutonic warriors is documented by written records. For instance, the endowment granted in 1342 by Ludolf König to two free peasants was formulated as follows: *dictus vero Michael cum una plata et Martinus cum una plata ... fideliter servire tenebuntur*<sup>384</sup>. Mentions about

coats of plates frequently appear in convent books, where prices of the armour at the turn of the 14th and 15th centuries are quoted. The value of the coats of plates varied. The Marienburg armoury had specimens worth 1 mark each: *item 4 m. 4 platen zu machen zum Huse*<sup>385</sup>, other cost 2.5 marks: *item 5 m. vor 2 platen*<sup>386</sup>, and the most expensive and possibly the best examples for the Grand Master's armoury were worth 3.5 marks each: *item 7 m. vor 2 platen, die unser homeyster koufte*<sup>387</sup>. In Poland the coats of plates were of similar value, the most expensive examples being worth 4 or 5 marks<sup>388</sup>.

Written sources provide also other evidence for the use of various types of coats of plates. They tell us namely about incomplete coats of plates which protected only the breast, and were named *halbe plate*<sup>389</sup> or *platen halb und ganz*<sup>390</sup>. This name should perhaps be given to the armour from Plemięta.

Several mentions tell us about riveting the lames to the outer garment: *item 3 m. her Urbach vor 6 platen uf zu slon*<sup>391</sup> or *item 2 m. vor 4 platen ufzusloen*<sup>392</sup>. The inventory of the Marienburg arsenal, made in 1396, lists: *36 platen of ledir geslagen*<sup>393</sup>. Equally numerous are references to the mending of this armour. The lames fell off or the rivets split, as is indicated by the reference: *item 4 m. vor 8 platen zu bessern*<sup>394</sup>.

It seems feasible to surmise that the term *platen* occasionally means a white breastplate composed of several plates arranged either horizontally or vertically, possibly polished. This suggestion is based on references to *blanke platen*<sup>395</sup>. These shining armours are possibly breastplates similar to those housed in the armoury at Churburg or found in the burial mound at Visby<sup>396</sup>.

Interesting information about coats of plates occurs in the Order's Statutes: *wir wollin ouch das brudere haben wopen nach der gewonheit des landes das sind platen adir panzer. Ab' swebische platen sal nimant vüren ane sunderlich urloub des meisters*<sup>397</sup>. Significantly, this record names coats of plates an armour after the local custom. This unmistakably shows the great popularity of that armour in Prussia, especially during the first two centuries of the Order's stay in this country. Unfortunately, we are unable to tell what kind of armour was called

<sup>376</sup> MTB, year 1408, p. 465.

<sup>377</sup> B. Thordemann, *o.c.*, I, pp. 216-217.

<sup>378</sup> A. Nadołski, E. Grabarczykowska, *o.c.*, pp. 89-92.

<sup>379</sup> Apart from the Visby finds, also other examples of plate armour are known. Cf. for instance, W. Fleischerhauer, *Spangenharnischfund aus Burg Helfenstein*, "Zeitschrift für Historische Waffenkunde", N.F. IV, 1932-1934, pp. 250ff.; R. Pichoda, *Ein Mährischer Spangenharnisch*, *ibidem*, II, 1926-1928, pp. 225ff.

<sup>380</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 85.

<sup>381</sup> *Ibidem*. The terms used in Polish sources to denote this armour are "plathae", "lathae", and are similar to those found in Teutonic records. They probably have a common root. Cf. A. Nowakowski, J. Szymczak, *o.c.*, p. 38.

<sup>382</sup> *Pr.Urkb*, IV, no 166.

<sup>383</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 85.

<sup>384</sup> *Pr.Urkb.*, III, no 479.

<sup>385</sup> MTB, year 1402, p. 112.

<sup>386</sup> MTB, year 1409, p. 527.

<sup>387</sup> MTB, year 1403, p. 220.

<sup>388</sup> J. Szymczak, *Produckja i koszty* ..., p. 115.

<sup>389</sup> GAB, year, p. 609.

<sup>390</sup> GAB, year 1407, p. 690. The term "halbe plate" occurs also in Polish sources. Cf. J. Szymczak, *Uzbrojenie i koszty* ..., p. 115.

<sup>391</sup> MTB, year 1399, p. 11.

<sup>392</sup> MTB, year 1402, p. 147.

<sup>393</sup> GAB, p. 80.

<sup>394</sup> MTB, year 1401, p. 101.

<sup>395</sup> For instance: GAB, pp. 80, 150.

<sup>396</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 86.

<sup>397</sup> F.A. Vossberg, *Geschichte* ..., p. 14.

*swebische platen*, to wear which the consent of the Grand Master was needed.

Coats of plates were very numerous in castle armouries. In 1391 there were as many as 450 examples at Marienburg, while there were only 104 mail hauberk and 97 examples of armour composed of small plates<sup>398</sup>. According to the inspection of the Grand Commander's armoury, carried out in 1404, the stores of the coats of plates had greatly diminished and numbered only 324 examples<sup>399</sup>. In the early 15th century the coats of plates were kept in large castles. They were not recorded only at Bratian, Bobrowniki, Tuchola and Pokarmin (in the last fortress no defensive armour of any kind was stored). In 12 armouries they were numerically superior to other types of armour, e.g. at Balga there were 148 examples of body defences, including 88 coats of plates; at Toruń the respective figures are: 94 and 68<sup>400</sup>. Before the battle of Grunwald, the coats of plates accounted for 41% of all types of body defences stored in whole Prussia<sup>401</sup>. This indicates that the dominant type of armour was by no means the latest.

In the evolution of the coat of plates, the tendency to enlarge and join the lames, especially the breast, is apparent. As a result, a solid plate was constructed, consisting either of one piece or of several smaller plates joined for good. Thus a stiff breastplate was made, which could be profiled so as to become more or less convex. Somewhat later a backplate was constructed, joined to the breastplates by means of straps and buckles. This full plate body defence called breastplate was supplemented with a skirt composed of overlapping horizontal lames. The breastplate and skirt were hidden beneath a frequently coloured cloth fixed by means of small rivets or narrow metal borders. This type of trunk protection is called the breastplate, and its appearance should be dated to the first half of the 14th century<sup>402</sup>. In the course of time the cloth cover was discarded and the plates were revealed. This marks the beginning of the period of the so-called white armour.

The breastplate was changing in shape, also under the influence of civilian fashion. As a result, a close-fitting armour with a narrow waist and globular breastplate was constructed in the second half of the 14th century<sup>403</sup>.

Available sources provide quite ample information about the breastplate. A fragment of this armour has survived in the castle at Mała Nieszawka, it is mentioned in written records and represented in iconographic material.

Breastplates are defined in written records as *brust* or *brustblech*<sup>404</sup>. This term was widely used in Prussia without any additions or changes up to the 16th

century. For this reason, it is rather difficult to identify the type of the breastplate which did change, especially after 1410. Thus the records from the close of the period in question, which provide only meagre information, cannot be regarded as adequate sources for the knowledge of the breastplate used in Prussia since the second half of the 15th century.

In Prussia, as in Latin Europe and Poland<sup>405</sup>, breastplates were very popular. They are often represented in iconographic sources from Teutonic Prussia. The earliest representation is in the parish church at Chelmo and dates from about mid-14th century (Fig. 39). It depicts a knight wearing a mail shirt, a convex breastplate and an ornamented surcoat. Armour of this type is shown on the fresco at Juditten (Figs. 50-54), in Königsberg Cathedral (Figs. 42, 43), and in the castle at Lochstedt (Figs. 47, 48), or on the tombstone of Kunon von Liebenstein from about 1391 (Fig. 49). Under the monkish surcoat worn by the Teutonic Knight a globular breastplate worn over a mail shirt is outlined. The breastplate is supplemented by closed leg-harness.

Breastplates are often mentioned in written records from Prussia, which suggest that since about 1350 breastplates were frequently worn by Teutonic troops<sup>406</sup>. This popularity was partly due to their simple construction, considerable serviceability and the fact that they could be repaired more easily and quickly than other types of armour. What also mattered, was the low price averaging 4-5 scotten: *item 198 m. und 4 1/2 scot vor 1057 brostblech, yo di brost vor 4 1/2 scot*<sup>407</sup>. *item 131 m. an 1 fird. vor 523 brostblech, die ouch unser homeister koufte*<sup>408</sup>. These mentions are evidence for the mass production of this type of armour which, at least when a considerable number was ordered, was not "made-to-measure"<sup>409</sup>.

Written sources provide evidence that the Teutonic warriors wore either full plate armour, i.e. a breastplate and a backplate, so-called *gancze brost*<sup>410</sup> or only breastplates *halue borste*<sup>411</sup>. The term *stelynne broste*<sup>412</sup> indicates that also steel breastplates were in use. In 1404 in the Marienburg armoury *genwiste broste*<sup>413</sup> were stored. These were probably Italian armours consisting of a breastplate and skirt riveted to its lower edge<sup>414</sup>.

As mentioned above, breastplates were popular in Prussia. They were bought by Order's authorities: in 1403-1404, for instance, at least 1580 examples for

<sup>398</sup> MAB, p. 2.

<sup>399</sup> Ibidem.

<sup>400</sup> A. Nowakowski, *Arsenały I*, table 2.

<sup>401</sup> Ibidem, p. 85.

<sup>402</sup> Z. Żygułski, *Broń w dawnej Polsce* ..., p. 104.

<sup>403</sup> C. Blair, *o.c.*, pp. 56-62.

<sup>404</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 88-89. Contemporary Polish sources use identical terms. Cf. A. Nowakowski, J. Szymczak, *o.c.*, p. 40

<sup>405</sup> A. Nowakowski, *Uzbrojenie ochrone* ..., pp. 66-68.

<sup>406</sup> Ibidem, p. 69.

<sup>407</sup> MTB, year 1404, p. 304.

<sup>408</sup> MTB, year 1403, p. 221.

<sup>409</sup> A. Nowakowski, *Arsenały II*, p. 82.

<sup>410</sup> GAB, year 1392, p. 7; year 1404, pp. 8, 10.

<sup>411</sup> NKRSME, pt. I, no 231.

<sup>412</sup> GAB, year 1392, p. 466.

<sup>413</sup> MAB, p. 2

<sup>414</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 88, Fig. 18.

nearly 200 marks were bought<sup>415</sup>. In 1404, 1099 breastplates were stored at Marienburg<sup>416</sup>. According to written sources, they were also used by burghers: *Item gegeben 4 1/2 sc. 6 den. vor dy bruste reyne czu machen, dy im Zomerhuse hengen*<sup>417</sup>. This reference shows that it was mobilization weapon stored in the townhall of Elblag. Sometimes it was necessary to conserve the armour by applying tallow: *item 1 sc. vor talch ysenhude unde borste mede to smerende*<sup>418</sup>.

The breastplate had started the era of full plate armour in Europe. Armour of this type, irrespective of differences in construction, which mainly concerned breastplates, consisted of body and limb defences made of plates. The warrior's arms were protected by arm defences, which consisted of pauldrons, rerebraces, cowters, vambraces, and were supplemented by gauntlets. Leg-harness consisted of cuisses, poleyns, greaves and sabatons.

Both written and iconographical sources confirm that in accordance with what was happening all over Europe, also in Teutonic Prussia the process of supplementing the breastplate by plate defences for limbs, not always full, began in the second half of the 15th century.

Was full plate armour popular among the Teutonic troops in the years preceding the battle of Grunwald? It seems that rather not, as its owners were mostly Teutonic Knights and outstanding feudal lords, thus persons shown in coeval iconographic material. It is true that they are shown wearing helmets, breastplates with skirts and closed leg-harness, yet it should be remembered that the character of armour worn by all the troops was not determined by the knights, as they were the least numerous category of combatants. The members of knightly retinue only rarely wore arm defences and closed leg-harness. This is confirmed by the inventories of armouries where mobilization weapons were stored. Thus in the early 15th century the stores of the armoury at Ragnit included 29 helmets, 18 body defences, 15 pairs of leg-harness, 3 pairs of arm defences and 10 pairs of gauntlets<sup>419</sup>. From all these weapons only 3 near-complete armours could be made up. References to weapons used by sergeants show that they wore helmets, mail-shirts, breastplates, incomplete arm defences but no leg-harness<sup>420</sup>. Members of municipal units were similarly armed<sup>421</sup>.

Soon after 1410 an era began when no part of armour was covered with cloth or leather. The first white armour appeared in Italy. The style created by the Italian armourers had influenced whole Europe<sup>422</sup>. The armour was characterized

by gentle contours, smooth polished surface and tendency towards asymmetry. In the last quarter of the 15th century the armour, now called "Gothic", appeared in armourers' centres of South Germany. Its contours were expressive, its particular elements, separate, it was fluted and had brass borders, which formed ornaments not only on the breastplate but also on cowters and poleyns. The breastplate consisted of two overlapping plates, the skirt was very short, while the pauldrons, cowters and poleyns increased in size.

The discussion of the latest types of armour used in Prussia during the last century of the Order's State is very difficult because of the scarcity of relevant sources. Only two original examples of armour have survived: fragments of a breastplate from the castle of Wielka Nieszawka, and the parade breastplate which once belonged to the Grand Master Albrecht Hohenzollern. Iconographic sources, too, are limited, while written records are virtually confined to the lists of stores in castle armouries<sup>423</sup>.

The early twenties of the 15th century witnessed the appearance of white globular breastplates, composed of two or more welded plates, called in written source *blanke broste*<sup>424</sup>. Parts of such a breastplate were discovered in the castle at Mała Nieszawka in the Toruń province<sup>425</sup>. Small holes visible in the breastplate (Fig. 11) probably held rivets of non-ferrous metals, which formed an ornamental pattern.

White globular breastplates are shown in iconographic material. They are worn by Teutonic warriors fighting on the Grunwald battlefield, they are represented on the miniature of the Schilling's Chronicle (Fig. 60), and are probably worn also by warriors emerging from behind the walls on the picture "*The Siege of Marienburg*" of about 1480-1488 (Fig. 68).

The evidence for field breastplates used by Teutonic troops in the early 16th century is provided by inventories of castle armouries. In the inventories mere names of these parts of armour are recorded and therefore their identification with original contemporary European breastplates can be hypothetical only.

In the inventories, examples of complete armour are mentioned several times. Three terms occur of which the most frequently used are: *harnisch uf man*, and *blechharnisch uf man*<sup>426</sup>. In 1518 the Paślęk armoury stored armour called *drabharnisch* and *knechtsharnisch*<sup>427</sup>. There is no doubt that they included breastplates.

Body defences stored in armouries included breastplates constructed of large plates joined by straps and buckles<sup>428</sup>. The breastplate was called *forderteil*,

<sup>415</sup> A. Nowakowski, *Arsenady I*, p. 82.

<sup>416</sup> Ibidem, table 2.

<sup>417</sup> *NKRSME*, pt. I, no 427.

<sup>418</sup> *NKRSME*, pt. I, no 1045.

<sup>419</sup> A. Nowakowski, *O wojskach ...*, p. 150.

<sup>420</sup> *GAB*, p. 18.

<sup>421</sup> E. Hirsch, *Danzigs Handels- und Gewerbeschichte unter der Herrschaft des Deutschen Ordens*, Leipzig 1858, p. 343.

<sup>422</sup> Z. Żygulski, *Broń w dawnej Polsce ...*, p. 101.

<sup>423</sup> A. Nowakowski, *O wojskach ...*, p. 101.

<sup>424</sup> *GAB*, year 1451, p. 106.

<sup>425</sup> R. Franczuk, T. Horbacz, *o.c.*, p. 229. The authors think that the find is part of a breastplate. The end of the first quarter of the 15th century seems the most likely date of the find.

<sup>426</sup> *GAB*, year 1518, p. 11.

<sup>427</sup> Ibidem.

<sup>428</sup> W. Boehem, *o.c.*, p. 88, Fig. 87.

and the backplate, *rucke*, *umbeghede brust* or *hinderteil*<sup>429</sup>. That incomplete body-defences and even incomplete backplates were occasionally worn is shown by a mention telling us that in 1507 the armoury of Pašek had *14 gantze rucke, 1/2 rucke ... 29 furderteil*<sup>430</sup>. Apart from breastplates, the armouries kept also laminated cuirasses reminiscent of earlier types. However, these links do not seem to be direct. Because of their similarity to anthropods the cuirasses were called *krebs*, *krebis* or *glider*<sup>431</sup>. They were composed of two parts. The width of the lames used in their construction was probably considerable, decreasing in the upper part of the armour. The cuirass had no separate collar. These types are only briefly mentioned: *1 glider, 27 crebis gut und bose*<sup>432</sup>.

Another type of armour defined as *choris* or *koris* is listed in inventories of armouries from the first quarter of the 16th century. However, the type of the breastplate thus named is unknown to us. In present-day German terminology the "Kürass" denotes an oriental armour made of small plates, as well as a 16th century armour worn by cuirassiers<sup>433</sup>. This term seems to have been used to denote breastplates joined with backplates, as there are references to *gancze choris*<sup>434</sup> or *2 koris mit aller zubehorung*<sup>435</sup>. However, no details of their appearance can be ascertained<sup>436</sup>.

Yet another term used in sources, namely *brustlein*<sup>437</sup>, should be discussed. In all probability it was a breastplate of the so-called pikeman armour or half-armour popular in Latin Europe since the end of the 15th century<sup>438</sup>.

To end the discussion of breastplates, a ceremonial armour, in all probability the property of Albrecht Hohenzollern, made in south German workshops about 1510 (Fig. 23), should be mentioned. The breastplate is globular with a slim waist, elongated by a skirt composed of several lames, and by tassets. The so-called "Ordenskreuz" and signature GVDMTE standing for "Gratia Verbumque Domini Manet Tibi Eternum"<sup>439</sup> are etched on the surface. Similar armour is worn by the Grand Master Friedrich of Saxony, represented on the tombstone in Meissen Cathedral and on a portrait which up to 1945 was in Königsberg Cathedral (Fig. 62).

The next category to be discussed includes defences of abdomen and limbs. They are dealt with only now because in relevant sources, such as inventories of

arsenals and account books, which provide most information, these parts of armour are mentioned separately, and thus we do not know with which kinds of body defences they formed a whole<sup>440</sup>. Information from written sources will be supplemented by the analysis of iconographic material. We think that this procedure is justified by tendencies observable in armourer's craft in the Middle Ages when the breastplate was the most important part in the development of plate armour whose style it determined<sup>441</sup>.

The defence of the upper part of the body, worn over mail shirt and over the breast of plates or lames, is called the collar. Collars were made of mail or of a combination of lames and plates.

As follows from written sources, collars were used throughout the period in question. Mail defences were called *kolner* or *colnyr*<sup>442</sup>, for instance: *Item 2 1/2 m. dem sarewechter vor 6 panzer zu wyten und colnyr doran zu machen*<sup>443</sup>. Examples of this kind were kept in certain castles still in the early 16th century<sup>444</sup>. They are also mentioned in the records of the inspection of the Ostróda armoury: *13 gesellencolnir*<sup>445</sup>.

Collars composed of lames are several times shown in iconographic material. The predella of the altar in the All Saints' chapel in St. Mary's Basilica in Gdańsk shows two types of collar: of lames and of scales (Figs. 55, 56). Similar defences are worn by knights on the reliquary(?) in Kwidzyń Cathedral (Fig. 57). Another type is represented by collars called *spankrige*, made of lames and much in use in the early 16th century nearly all over Western Europe<sup>446</sup>. We are unable to identify the term *krige*<sup>447</sup>, that occurs in inventories, with a definite type of collar. That they probably were plate collars is suggested by a reference of 1513 telling about *stelyn kragen*<sup>448</sup>. Attention should be called to the fact that collars are the only part of armour known to have been imported from Bohemia to Prussia in the early 16th century, as is unmistakably indicated by references to *bemische krige*<sup>449</sup>.

Lame skirts are recorded fairly frequently in written sources and in pictorial representations. The cuirass of Albrecht Hohenzollern has survived with its skirt. In written records they are called *schorze* — *schurze*<sup>450</sup>. In the 14th and the first half of the 15th century they were made of mail or lames. The first type is

<sup>429</sup> A. Nowakowski, *Arsenady II*, p. 50.

<sup>430</sup> *GAB*, p. 109.

<sup>431</sup> A. Nowakowski, *Arsenady II*, p. 50.

<sup>432</sup> *GAB*, year 1508, p. 110.

<sup>433</sup> "Glosarium Armorum", *Schutzwaffen*, Graz 1972, p. 27, pl. 58.

<sup>434</sup> *GAB*, pp. 146, 344.

<sup>435</sup> *GAB*, p. 297.

<sup>436</sup> A. Nowakowski, *Arsenady II*, p. 50.

<sup>437</sup> *GAB*, pp. 149, 204, 297, 352.

<sup>438</sup> Z. Żygulski, *Broń w dawnej Polsce* ..., p. 151.

<sup>439</sup> J. Schöbel, *o.c.*, pp. 27, 37.

<sup>440</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 90.

<sup>441</sup> Z. Żygulski, *Broń w dawnej Polsce* ..., p. 104.

<sup>442</sup> Terms *collarium*, *colners* or *oboczek* are used in Polish medieval written sources to denote the collar. Cf. A. Nowakowski, *Uzbrojenie ochronne* ..., p. 77.

<sup>443</sup> *MTB*, year 1404, p. 311.

<sup>444</sup> A. Nowakowski, *Arsenady II*, p. 51.

<sup>445</sup> *GAB*, p. 318.

<sup>446</sup> A. Nowakowski, *Arsenady II*, pp. 51-52. Cf. also W. Boehem, *o.c.*, pp. 62-63.

<sup>447</sup> *GAB*, p. 113.

<sup>448</sup> *GAB*, p. 297.

<sup>449</sup> *GAB*, pp. 105, 147.

<sup>450</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 91.

referred to in sources, according to which they were bought from mail-makers: *item 6 1/2 m. vor 2 schorze dy der groskompthur koufte vom sarewachter zu Marienburg*<sup>451</sup>. Skirts made of lames were cheaper: *item 1 1/2 m. vor 2 schurze, dy der steynmeister koufte*<sup>452</sup>. They can be seen at the breastplates worn by knights on the reliquary(?) from Kwidzyń (Fig. 57) or on the figure of St. George at Marienburg dating from the close of the 14th century (Fig. 41). From about 1470 the skirt was attached to the breastplate for good, and its length was reduced. A skirt composed of narrow lames is seen at the cuirass of Albrecht Hohenzollern (Fig. 23) and the armour of Friedrich of Saxony (Fig. 62).

In the second half of the 15th century skirts were occasionally replaced by tassets or small plates fixed to the lower edge of the breastplate by a strap and buckle. They protected the upper part of the thigh. In available sources they appear only once. In 1516 they were at Ostróda where *blech ader teschleyn* were recorded<sup>453</sup>.

Let us turn now to arm-defences. In earlier records (up to the mid-15th century) complete defences for the arms were called *armgewant*, or *armwopen*<sup>454</sup>, and in the later, *armharnisch*, *armschinen*, *armzewge*, *ermel*, and *panzerermel*<sup>455</sup>. It is not possible to determine their types on the basis of the names alone. Only *panzerermel* can be identified with mail arm-defence<sup>456</sup>.

In the 14th-15th century written sources pauldrons were called *armedler*<sup>457</sup>, and in later records, *schulderblech*, *achseln*, *exszel*, and *spanneorl*<sup>458</sup>.

We know little about the construction of pauldrons, as they are rarely illustrated. They were probably small, hemispherical, sometimes accompanied by rerebraces. Defences of this type are worn by Teutonic Knights on the miniature in Schilling's Chronicle (Fig. 60). Warriors might also have used laminated pauldrons like those worn by the Grand Commander on the fresco at Lochstedt (Fig. 47). Examples called *spanneorl* are long incomplete laminated pauldrons protecting the outer part of the arm nearly to the elbow, thus making the rerebraces redundant. Defences of this type were used in Germany since the turn of the 15th and 16th centuries and were called *spannegröll*<sup>459</sup>.

In the early 15th century pauldrons for the Teutonic troops were imported from Old Russia or produced locally on the Old Russian model. Written sources repeatedly mention *rusche armedler*<sup>460</sup> kept at Elbląg, which conducted trade with north Russian towns. Iron pauldrons in the shape of a triangular convex

plate fixed to the breastplate by a hinge, and dated to the end of the 14th century, were discovered at Velikiy Novgorod<sup>461</sup>. This construction was none too firm so perhaps such a pauldron is mentioned in a record telling about spending 2 scotten on *dy Rusche armedler zu bessern*<sup>462</sup>.

Other parts of arm defences mentioned in sources include rerebraces called *vorstollen*, cowters — *elpuckel* and vambraces — *musysen*, *mauwschischen*<sup>463</sup>. Iconographic sources show that rerebraces and vambraces were cylindrical in shape and consisted of two plates joined by straps and buckles. They are shown on the armour of Kunon von Liebenstein (Fig. 49), they are worn by knights on the predella of the altar in St. Mary's Basilica in Gdańsk (Figs. 55, 56), and by other warriors represented in the art of the whole period in question.

Cowters worn by the warriors of the Order's State did not differ from those used by knights from all over Latin Europe. Pictorial representations show cowters with single ailettes: such cowters are worn by Kuno von Liebenstein (Fig. 49) and other knights as well (Fig. 56). Fine cowters of this variant are shown on the armour of Friedrich of Saxony (Fig. 62). Cowters with open wings are another type of elbow defence (Fig. 56).

The hands of a knight were protected by gauntlets, for which in written records such terms as *hanczken*, *wopenhanczken* and *blechhanczken*<sup>464</sup> are used. The only information we can obtain from these records is that the gauntlets were made both of iron or steel: *item 18 par geswerczte hanczken*, *item 236 par blangke hanczken*<sup>465</sup>. The prices of the gauntlets were low and did not exceed 10 scotten<sup>466</sup>.

Iconographical materials show that the "hour-glass" gauntlets were the most popular. The metacarpus and wrist were protected by iron cuffs, and the fingers, by mail or leather with metal plates sewn on the outer side<sup>467</sup>. Examples are shown on the stained-glass window at Chełmno (Fig. 39), on the fresco at Juditten (Figs. 50-54) and on the tombstone of Kunon von Liebestein (Fig. 49).

The thighs and shins were protected by quilted trousers of linen or cotton called *bruch* or *strichhosen*, or of mail, called *harnoschhosen*<sup>468</sup>.

The words used for closed leg-harness are: *beyngewand*, *beynwopen* or *beynharnasch*<sup>469</sup>. Occasionally, notably from inventories of armouries, we learn about

<sup>451</sup> MTB, year 1409, p. 527.

<sup>452</sup> MTB, year 1404, p. 100.

<sup>453</sup> GAB, p. 348.

<sup>454</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 91.

<sup>455</sup> A. Nowakowski, *Arsenały II*, p. 52.

<sup>456</sup> Ibidem.

<sup>457</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 91.

<sup>458</sup> A. Nowakowski, *Arsenały II*, p. 52.

<sup>459</sup> W. Boehem, *o.c.*, p. 71, Fig. 68.

<sup>460</sup> GAB, year 1396, p. 80; year 1402, p. 81.

<sup>461</sup> A. F. Medvedev, *o.c.*, pp. 119-134.

<sup>462</sup> MTB, year 1401, p. 101.

<sup>463</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 92.

<sup>464</sup> Ibidem, p. 93.

<sup>465</sup> MAB, year 1448, p. 159.

<sup>466</sup> MTB, year 1402, p. 147.

<sup>467</sup> Fragments of such a gauntlet have been discovered during the excavations of the chapel on the Grunwald battlefield. However, we do not know whether it belonged to a Teutonic warrior. Cf. R. Odoj, [in:] *Badania na Polach Grunwaldu*, "Rocznik Olsztynski", IV, 1964, p. 60.

<sup>468</sup> A. Nowakowski, *Arsenały I*, p. 68.

<sup>469</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 94.

incomplete leg-harness. If it protected only the thigh and knee, the word *obirbeyngewand* was used, and when it protected the knee and shin it was called *underbeynwopen*<sup>470</sup>.

For the cuisse such words as *diechharnisch*, *grusener* and *dylinge* were used<sup>471</sup>. That certain cuisses were joined to poleyns is shown by such passages as *30 par dylinge ane pokeln* or *70 par dyharnisch mit pockeln*<sup>472</sup>. Unfortunately, later sources do not mention these parts of leg-harness. How the cuisses looked like is shown by iconographic material. Whichever period it comes from, it shows typical defences consisting of two parts joined by buckles (Fig. 39, 44).

Poleyns are the earliest elements of leg-harness. Primitive poleyns shaped as shallow bowls put over mail hose are worn by knights on the capital at Kwidzyń, dated to the second quarter of the 14th century (Fig. 37). Poleyns frequently shown in later pictorial representations have side-wings identical with those known from all parts of Europe (Figs. 42, 44). Regardless of the period the written sources date from, the terms used there include *schosse*, *pockel* or *knypokel*<sup>473</sup>.

Two versions of greaves, to describe which the word *roren* was used, are represented in pictorial art: fully closed (these fully deserve the name given in written sources) or covering only the shin and calf — they occur only in the 14th century (Figs. 45, 46).

The feet were protected by sabatons made of mail or lames. They are rarely mentioned in relevant sources. In 1404 the Gotland armoury had *ein par wopenschu*<sup>474</sup>, and in 1448 *9 par stelin schuw*<sup>475</sup> were stored in the armoury of the Grand Master.

From the above considerations it follows that in the period in question different versions of leg-harness were worn in Prussia. This is understandable, as the 14th century is a period of searching for the best technical solutions and thus older forms were worn together with the improved ones. In Latin Europe the 15th and 16th centuries are marked by a great variety of leg-harness, frequently made to order. It seems feasible to assume that the same type included finer examples worn by knights as well as ordinary forms used by servants or Knechts. This is confirmed by references to *stelyn beynwopen* and to *gesellenbeynwopen* or *gesellenschosen*<sup>476</sup>. That leg-harness was also worn by burghers is shown by the following records: *2 ganz bynharnsch bouen unde nenende, unde 1/2 binharnsch alle reyne to maken*<sup>477</sup>.

<sup>470</sup> GAB, year 1402, pp. 81, 264.

<sup>471</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 94.

<sup>472</sup> GAB, year 1410, p. 154.

<sup>473</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 95.

<sup>474</sup> GAB, p. 762.

<sup>475</sup> MAB, p. 159.

<sup>476</sup> GAB, pp. 317-318, 466.

<sup>477</sup> NKRSME, pt. I, no 783.

In summing up the remarks on the Teutonic armour in Prussia from the second half of the 13th to the first quarter of the 16th century several important facts should be emphasized. One of this is that in the light of the analysis of all available sources there is no doubt that the development of armour in Prussia followed the same lines as in Latin Europe.

New types of armour appeared in Prussia roughly at the same time as in other countries, including Poland. All types of body and limb defences used in Prussia originated at about the same time as in the rest of Europe.

There is no reason to think that all examples of armour worn by the Teutonic warriors, especially the Knights, represented the latest in the chivalrous fashion of the West. Even in the case of the Order's dignitaries it is an oversimplification to maintain that the armour worn by them is an element of the chivalrous culture of the Order as has sometimes been written<sup>478</sup>. In my opinion, it is not feasible to speak about the Order's culture as far as the production of armour is concerned

Even if we accept the opinion — in my view quite erroneous — that the armour worn by the Monks. Knights was distinguished by its excellence, we should remember that it was not dominant in the Teutonic troops, as the Knights constituted numerically only a small force in the units that took part in campaigns. The mention of the raid on Grodno in 1311 throws light on the composition of these units, which included *frater Otto de Berge et V fratres cum CCC equitibus de Natangia*<sup>479</sup>. In 1405 the Voigt of Königsberg in Central Samogitia had 252 armed men at his disposal: 31 knights, 1 monk-knight, 60 servants, 60 wittings, 60 "freie" and 40 retainers<sup>480</sup>. Since mid-15th century, especially after the Thirteen Years' War, a decisive role in the Teutonic troops was played by mercenaries, who arrived armed with their own weapon.

Obviously the full plate armour was worn by knights in the Order's State, yet not by all, as is shown by the discoveries at Plemięta. In the early 15th century the small land owner living there still had no closed leg-harness. Interesting information about full plate armour worn by sergeants is provided by the following passage: *die czwene dyner ... hat iczlicher ... 1 panczir, 1 kolner, 1 brostblech, 1 schorcz, 1 par vorstoln*<sup>481</sup>. Defensive armour of the Teutonic Knights seems to have been identical. This supposition is confirmed by the order of 1387, according to which the troops raised by Gdańsk had to have *eyn Brust, eyn par musisen, und eyn par forstollen und eyn par blechanczeken*<sup>482</sup>.

Since the second half of the 14th century important information about defensive weapons is provided by inventories of castle arsenals, where the simplest,

<sup>478</sup> H. Nickel, *Die Messinggrabplatte des Grosskomturs Cuno v. Liebenstein zu Neumark Westpreussen*, [in:] *Edwin Redslob zum 70-jährigen Geburtstag*, Berlin 1957, pp. 290-291.

<sup>479</sup> Dusburg, p. 175.

<sup>480</sup> F. Benninghoven, *Die Burgen ...*, p. 577.

<sup>481</sup> GAB, year 1422, p. 18.

<sup>482</sup> E. Hirsch, *o.c.*, p. 343.

cheapest and easy to make armours were numerically superior. This was mobilization armour and thus mass produced and popular. This seems to reflect general tendencies prevailing at that period all over Europe. That arms and armour amassed in Teutonic castles throughout the period in question were average and not very modern is understandable and natural if one remembers that they were not used by people at the top of the Order's hierarchy.

## THE SHIELD

That the shields used by Teutonic troops are a fairly well known element of arms is due to two reasons. The first is the survival of several original examples of which one, associated with the Grand Master Karl of Trier<sup>483</sup>, has provoked discussion as to its date and character<sup>484</sup>. Another reason is their frequent appearance in iconographic and written sources. It is worthwhile to recall that the shield with a black cross has become the symbol of the Teutonic Order.

Shields occur in all categories of sources. For us, of particular value are account books, inventories, registers and direct mentions in narrative records. The last group can be used in the reconstruction of the shield and its decoration, but is less useful as far as its use in battle is concerned. Shields carried by warriors are fairly frequently shown in pictorial representations. Coins and seals depict shields in a schematic way only, yet their representations in art are of great interest for shield study, as they enable us not only to determine the shape and size of a shield but also occasionally to identify the type and observe constructional details and decorations.

Even a preliminary analysis shows the variety of shields used in Prussia. This seems to be typical for contemporary Europe, especially because of the increasing importance of shields used by infantry, and the consequent creation of special versions different from the equestrian shields<sup>485</sup>.

Whichever their type, shields were made of wooden slats, animal tendons and veins, layers of linen cloth glued together or occasionally of leather. As is shown by original examples: the shield of Konrad of Thüringen from the fourth decade of the 13th century (Fig. 1), the shield of Karl of Trier, made about 1320 (Fig. 4) and the equestrian pavise from Nürnberg (Fig. 12), the frame was made of various kinds of wood: lime, larch or willow. It was covered with parchment

(the shield of Konrad of Thüringen), oxhide (the shield of Karl of Trier) or with hemp or flaxen cloth (the Nürnberg pavise). At least three artisans were involved in the production: the carpenter who made the frame from "wagenschot", the smith who provided nails, and the saddle-maker who covered the frame with leather: *item dedi Iohannes Dresler vor 15 schilde to maken. Item dem kystenmaker vor 1 1/2 schok schilde 4 mr. minus 1 f. Item vor 150 wagenschot 3 mr. Bolhagen, darut schilde to maken. Item dem smede vor negele 1/2 mr. 1 sol. to den schilden. Item dedi dem seteler 6 1/2 f. vor 13 schilde to vatende*<sup>486</sup>. The same source reveals that shields were covered with thick colourful fabric: *item stockbreit czu den schilden, weis unde rot. 1/2 f.*<sup>487</sup> Inside the shield were two straps for passing the forearm, and fittings to fasten the main strap, which was thrown over the neck or back thus freeing the hands during a march or ride.

The shield was painted with chalk paints or covered with gesso in which designs, usually heraldic devices, were impressed (Fig. 1). The shields of the Teutonic Knights and sergeants had a black cross on a white field such as can be seen on the shield from Marienburg (Fig. 8). That the sign became the symbol of the Teutonic Order already in the 13th century is testified by the endowment of land in the Vistula basin, granted by the Gdańsk Prince, Sambor: *nos siquidem nostrique succesores fidelitatis sinceritatem circa nominates fratres et eorum ordinem inconcussam illibatamque independentes in recognitionem domini ordini eorundem singulis annis duos clipeos albos cum cruce nigra exsolvemus, quibus iidem fratres uti dinoscuntur*<sup>488</sup>.

The Order's crosses are on all shields of Teutonic dignitaries shown in iconographic material. Crosses can also be seen on many municipal seals (Figs. 30, 31). Moreover, they are mentioned in written records, e.g. the testimony of Jan of Kalisz given during the process of 1339: *dixit, quia habebant crucem nigram in scutis eorum*<sup>489</sup> or in those given by other witnesses who had recognized the Teutonic Knights who *habebant super arma et vestem superiorem albam cum nigra cruce*<sup>490</sup>.

The Order's regulations forbade to decorate shields: *schilde mit golde ade mit silbere adir mit anderen weltlicher varbe gemalet, ane notdurft ich vure*<sup>491</sup>. However, these prohibitions were not observed, notably by dignitaries, like the Grand Commander: *item 1 1/2 m. 1 sc. der molem czu molen einen schilt mit silber und 1 tartsche dem groskomphur*<sup>492</sup>.

The Marienburg cash-book repeatedly tells us about painting shields, e.g. in

<sup>483</sup> B. E n g e l, *Ein Original Deutschordens-Hochmeistersschild*, "Zeitschrift für Historische Waffenkunde", I, 1900-1902, p. 94.

<sup>484</sup> B. E n g e l, *Nochmals ...*, "Zeitschrift für Historische Waffenkunde", I, 1900-1902, pp. 214-217.

<sup>485</sup> The same can be observed in medieval Poland. Cf. A. N o w a k o w s k i, *Uzbrojenie ochrone ...*, pp. 93-97.

<sup>486</sup> NKRSME, pt. I, no 1124.

<sup>487</sup> NKRSME, pt. II, no 1420.

<sup>488</sup> *Pom. Urkb.*, no 159.

<sup>489</sup> *Lites*, I, p. 313.

<sup>490</sup> *Lites* I, p. 228.

<sup>491</sup> *Statuten*, rule XXIV, p. 48.

<sup>492</sup> *Ausgabebuch*, year 1419, p. 336.



1402: *item 9 m Peter moler vor 200 schilde zu molen*<sup>493</sup>. The same Peter ornamented the shield of Konrad von Jungingen for which he received 1/2 mark. It was a considerable sum, being 11 times as much as that for painting ordinary shields<sup>494</sup>. This is perhaps understandable, as the shields of Grand Masters bore the so-called "Ordenskreuz", which was far more complicated than that painted on the shields of ordinary knights, and to paint which probably silver or golden paint was used. The coat of arms of the Grand Master can be seen on the shield of Karl of Trier (Fig. 4) and on the ducat of Heinrich von Plauen (Fig. 34).

Written sources repeatedly tell us about shields used by Teutonic troops. Under the Chełmno law warriors were obliged to carry shields as part of military duties<sup>495</sup>. Sometimes, as during the raid on Gotland in 1404, the Grand Master ordered: *die fryen und dinste sollen iclicher synen harnasch haben ... eynen schild*<sup>496</sup>. That the shield was also widely used by municipal units is shown by the references to raising troops, armed with shields, by Toruń, Elbląg, Gdańsk or Königsberg<sup>497</sup>. Waggon sent by towns should be provided not only with food but also with arms, including *eynen guten schilt*<sup>498</sup>.

Triangular shields, characteristic of Western and Central Europe, dominated in Prussia throughout the 13th and the first half of the 14th century. They can be seen on the seal of the Prussian convent of 1230-1323, the earliest of the known iconographic sources (Fig. 24), and on the bracteates from the close of the 13th century (Fig. 33). Triangular shields with slightly rounded sides appeared in Prussia in the early 14th century and were in use throughout the 15th century. They are frequently shown in pictorial representations, being carried both by foot warriors and horsemen. Shields of this type are carried by the Teutonic Knights in the scene of combat with the Prussians shown on the column from Kwidzyń (Fig. 37).

The words applied to them in written records are *schild* or *scutum*. Wigand of Marburg, describing the raid of 1364, tells us about shields used in combat: *sed prefectus cum 12 equis in Nordenburg venit habentes scuta et lanceas*<sup>499</sup>. In this case, equestrian shields were in use.

The small quadrangular shield with rounded corners and with a characteristic notch, which served as a support for the couched lance, was introduced about the mid-14th century. That lances were propped on shields just before the charge is recorded in the *Cronica conflictus* describing the battle of Grunwald during which the Teutonic Knights *lanceas hastaque depositas scutis iunxerunt*<sup>500</sup>.

<sup>493</sup> MTB, p. 179.

<sup>494</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 105.

<sup>495</sup> Ibidem, p. 100.

<sup>496</sup> *Cod. Dipl. Pruss.*, VI, no 163.

<sup>497</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 100.

<sup>498</sup> *Acten SP*, year 1433, no 448.

<sup>499</sup> Wigand, p. 162.

<sup>500</sup> *Cronica conflictus*, p. 5.

Shields are depicted on the earlier fresco in Königsberg Cathedral (Fig. 42).

The terms for these shields used in written records include *tarcze*, *tartsche*, etc.<sup>501</sup> Knightly shields were also called *herrenschild*, and *rynnertartsche*, *rennetarcze*<sup>502</sup>.

Another form of the chivalrous shield is represented by the equestrian pavise known also as the small pavise. It occurs in iconographic and written sources. Also an original shield from Nürnberg has survived.

This shield, whose name derives from the Italian town of Pavia, is roughly rectangular in shape with a characteristic ridge along its axis of symmetry, which protected the hand of the warrior. Sometimes the ridge widens downwards. Pavises were not large: their sizes did not exceed 50 cm in width and 70 cm in height. The pavise from Nürnberg is 64.5 cm high and 33 cm wide (Fig. 12).

Shields of this type occur frequently in iconographic material, notably in the 14th and early 15th century. They are represented on the capital of the column at Marienburg from about 1300 (Figs. 35, 36), on the tombstones of Kunon von Liebenstein (Fig. 49) and Heinrich von Dusemer (Fig. 40), on the portal of the castle at Bierzłowo, and on the ducat of Heinrich von Plauen (Fig. 34).

Small pavises were popular in Europe. The terms applied to them in Polish sources include *scutum Pruthenicum*, *littische schild* or *clipeus Litwanicus*; in Bohemian sources they were called *paveska*, *paveska litevska*, in German, *ritterpavese* and *kleine Pavese*, in Italian, *palvesetto*<sup>503</sup>.

The origin of the shield, its destination, and ways by which it had reached Teutonic Prussia have been discussed in relevant literature<sup>504</sup>. In the discussion, the association of the small pavise with the Baltic culture area, where it probably had originated, has been stressed.

In our written sources this shield is called *prusche schild* or *scutum Pruthenicum*. The latter name appears in the acts of the Polish-Teutonic process of 1339, in the testimony of Czesław Wojassa who, when asked how he had recognized the Order's units which were robbing Sieradz, answered: *sed bene scit quod essent Cruciferi et ipse testis ... qui logitur habuit unum scutum Pruthenicum ab eis quando obviaverunt eis in campo*<sup>505</sup>.

The presence of the Baltic small pavise in the military equipment of the Teutonic troops is another argument for rejecting the thesis on the typically West European character of their arms and armour.

<sup>501</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 102. In Polish sources the terms used to denote these shields are similar: *tartsche*, *tartschin*, or in Latin: *clipeus sive scutum*. Cf. A. Nowakowski, *Uzbrojenie ochronne* ..., p. 93.

<sup>502</sup> GAB, pp. 129, 317 and many other.

<sup>503</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., pp. 94-95.

<sup>504</sup> The survey of findings on this subject in: A. Nowakowski, *Przyczynki* ..., pp. 104-104; *idem*, *Jeszcze o genezie pawęzy* ..., pp. 111-115.

<sup>505</sup> *Lites*, I, p. 371.

Apart from equestrian shields, also infantry shields were in use. They are repeatedly mentioned in the inventories of castle armouries and in the Order's and municipal account books. In 1385 there were 16 *knechtsschilde* in Gdańsk<sup>506</sup>, and in 1399 there were 2 *schog lauschilde* at Dzierzgoń<sup>507</sup>. Specimens called "schilde" were probably also used by infantry. This is suggested by single purchases of and orders for considerable quantities of that weapon, of which 112 examples were bought in 1402, and 122 in 1404<sup>508</sup>. Great quantities of these shields were stored in castles: 600 examples at Königsberg in 1374, and as many as 2360 shields at Marienburg in 1391<sup>509</sup>. The pavise made of wood, covered with leather and chalk paint, once housed in the Marienburg collection, and dated to about 1380, was the shield of foot warriors (Fig. 8).

A large and heavy pavise that fully protected the warrior was constructed in Western Europe at the end of the 14th century. It was being improved during the 15th century, and was often provided with a spike that could be driven into the ground, and occasionally had a small grille for observation in the right top part. In western sources these examples are called *grand pavois*, *grosse Pavese*, *setzschild*, and particularly large ones — *sturmwand* or *taras*<sup>510</sup>.

Great pavises appeared in Prussia in the early 15th century. In written sources they are called *stormtarczen*. The following record provides valuable and detailed information about their construction: *item vor 2 stormtarczen to ouertyn und to malen 1 1/2 mr. Item dy 2 stormtarczen to beslan, von krampen, unden und blech vor dy venster und dullen*<sup>511</sup>. That Order's authorities bought such pavises and took care of them is shown by the following record: *item 2 1/2 m vor 23 stormtarczen zu besseren, die zum Gotland gewest woren*<sup>512</sup> or *item 10 m an 8 scot vor 150 stormtarczen zu besseren*<sup>513</sup>.

About 1450 the term *stormtarcze* was replaced by *pafoise*, *pafose*, etc.<sup>514</sup> Yet their construction did not change. Great pavises were frequently and willingly used by Teutonic infantry. They were stored in castle armouries until the secularization of the Order. Their use in the field is shown in a scene depicting the Order's warriors sheltering behind them during the siege of Marienburg in 1460, represented in the picture of about 1480 from the former Artus' Hall in Gdańsk (Fig. 68).

Since the close of the 15th century the equestrian shields were being discarded. This was due to the constant improvement of other elements of defensive arms. Only uncharacteristic mentions of equestrian shields occur in relevant writ-

<sup>506</sup> GAB, p. 684.

<sup>507</sup> GAB, p. 129.

<sup>508</sup> MTB, pp. 149, 447.

<sup>509</sup> GAB, p. 2; MAB, p. 2.

<sup>510</sup> A. N o w a k o w s k i, *Uzbrojenie ochronne* ..., p. 94.

<sup>511</sup> NKRSME, pt. I, no 67.

<sup>512</sup> MTB, year 1404, p. 349.

<sup>513</sup> MTB, year 1406, p. 405.

<sup>514</sup> MAB, year 1448, p. 159.

ten sources. The records of the early 16th century mention *schildechen*, *kleine tarczschon* and *kleine schildechen*<sup>515</sup>. The last two names may refer to specimens known in Italy as *brochiero*, in France as *bocete*, and in Germany as *Faustschild*. These were small circular shields used in duels, and popular in Western Europe since the 14th century and still in use in the early 18th century. The mention about 2 *stelen schilde*<sup>516</sup> kept in 1507 at Przewmark might refer to such examples.

Ceremonial shields probably include the specimen from Innsbruck attributed to Karl of Trier<sup>517</sup>. The coat of arms of the Grand Master, with the shield, the helmet and the crest, and the inscription . + . *Clippeus . cum galea . Magistri / Ordi / nis . Fratrum Thevtonicorum* painted on the shield indicate that it was made for the purpose of parade (Fig. 4). Also special shields, exceptionally lavishly decorated, were made in Prussia for gifts. For instance, Ulrich von Jungingen, whose taste for decorated weapon was well known, paid 5 *m. vor 2 schilde zu molen, dy unser homeyster dem herzoge vor Birgundya sante*<sup>518</sup>. Cheaper shields, though more valuable than usual, were given to the Grand Duke of Lithuania Swidrygiello: *item 2 1/2 m. vor 30 schilde zu molen herzog Switirgal*<sup>519</sup>.

There is no doubt that many shield-makers were active in Prussia. There are many references to craftsmen who produced, repaired and painted shields. They were certainly working at the Marienburg castle where in the early 15th century masters Peter and Paul Bartenstein, and possibly also other craftsmen, had their workshops. Shield-makers were also active in Prussian towns, such as Elbląg, Gdańsk, Toruń and others<sup>520</sup>.

Prices of shields from only the early 15th century are known. From these data only two kinds of shields can be deduced: those which cost 1/4 mark and those which cost twice as much<sup>521</sup>. The cheaper shields were used by infantry, and the more valuable ones were probably used by knights.

<sup>515</sup> GAB, pp. 119, 122, 148.

<sup>516</sup> GAB, p. 147.

<sup>517</sup> B. E n g e l, *Ein Original* ..., p. 97.

<sup>518</sup> MTB, year 1409, p. 535.

<sup>519</sup> MTB, year 1404, p. 318.

<sup>520</sup> A. N o w a k o w s k i, *Uzbrojenie wojsk krzyżackich* ..., p. 105.

<sup>521</sup> MTB, pp. 148, 403 and others.

## OFFENSIVE ARMS

### THE SWORD

The sword played a tremendously important role in the life of medieval knighthood, especially in that of the chivalrous orders. It was not only a weapon "sensu stricto" but also an indicator of the social status of its owner. It was almost identified with him, was given a name, and was used in lay and ecclesiastical rites<sup>522</sup>. After all, the Teutonic cavalry, which in addition to knights included feudal lords and certain burghers as well, was chivalrous in character. Thus it is not surprising that the sword held a specific position among arms and armour. This position is well illustrated by the order given by the Grand Master Winrich von Kniprode: *Die Brud' e sullen ouch mit vleise tragen ir sw't. Mann sal ouch keinen fremden Man gestatten, sin Swert zczu tragen ouch in Huz*<sup>523</sup>. From this it follows that each Teutonic Knight possessed a sword which he should take care of. The important role played by the sword in the society of Prussia is indicated by the order forbidding to carry it on the street: *Item das nymand in den steten sal tragen swerth*<sup>524</sup>. The purpose of this order was to prevent bloody disputes, which apparently broke out in towns and were resolved by the sword.

The total absence in documents of any references to swords is quite striking. They are not referred to even in those few documents which mention weapons in detail; for instance, the record of 1332 commands the warrior to be armed with *eysern hut ader eyn preusch helm, Schilt, sper und Platen ... ader an der Platen stad ein gut panzer oder brunie*<sup>525</sup>, or the endowment of 1348 which instructs to

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<sup>522</sup> A. N a d o l s k i, *Polska broń. Broń biała*, Wrocław 1974, pp. 11-12.

<sup>523</sup> *Statuten*, p. 154.

<sup>524</sup> *Acten SP*, I, no. 239.

<sup>525</sup> J. V o i g t, o.c., VI, p. 675.

turn up *cum equo, brunea, galea ceterisque armis*<sup>526</sup>. Those who imposed military duties occasionally felt it necessary to mention a helmet, a shield, armour or spear, but failed to remind about the duty of taking a sword for a campaign, since it was self-evident. Military duties imposed on land owners in Poland or Bohemia were similarly worded. This seems to explain the lack of references to swords in inventories of castle arsenals. The sword was the personal property of the members of the convent, and therefore was not included in any register.

Teutonic territories have yielded several swords, only one of which has been tentatively associated with a historic person. The sword which was found in the Pregoła river was regarded as belonging to Konrad of Thüringen<sup>527</sup>. Yet in light of recent studies the sword, which represents type XIIIa, II, 1a<sup>528</sup>, cannot be dated earlier than the second half of the 14th-first half of the 15th century, and thus cannot be associated in any way with this Grand Master. This is also argued for by the mark on its hilt. The sword could be the property either of Władysław of Opole or of Jodok or Sigismund, both of Luxemburg<sup>529</sup>.

The swords found in Prussia represent interregional types. Those dating from the turn of the 13th and 14th centuries should be attributed to types: XIII, XIIIa, XVIa, XVII and XII. Sword II from Elbląg (Fig. 3) has been assigned to type XIII, I, 11, sword II from Gdańsk, to type XIIIa, I, 5, and the sword from Przydatki, to type XIII, I,2 (Fig. 2). Swords of types XIII and XIIIa are called "great". Owing to their mass and considerable strength of the blow inflicted by them, they were suitable for combat with an armoured opponent.

Swords of type XVIa appeared in Prussia in the 14th century, e.g. the sword from Rządź; the example from Gdynia of type XVIa, T1; sword I from Gdańsk of type XVIa, I 1, 5, with the mark of the "wolf" (Fig. 5). They are a version of the "great sword", adjusted to thrusting. Their blades are wide at the hilt and narrow at the point, and are quadrilateral in section. Another link in the development of swords starting with type XIIIa is type XVII, e.g. the example from Rządź. Its blade, quadrilateral in section, is long and rather narrow, and its point is sharp. Swords of this type occur in Europe around the years 1360-1420. The latest specimens are classified as type XX, e.g. the sword from Marienburg (in the Czartoryski collection in Kraków). Its blade is wide and flat, with a fuller, its grip is of the two-handed variety, and its long and narrow guard often curves downwards. The dating of the sword from the motte at Plemięta presents a problem. The analysis indicates that it represents type XII, E, 6. Swords of this type were particularly popular in the 13th century. If we are right to assign the de-

<sup>526</sup> *Pr.Urb.*, VI, no 365.

<sup>527</sup> H. Müller, H. Kölling, *Europäische Hieb- und Stichwaffen aus dem Sammlungen des Museums für Deutsche Geschichte*, Berlin 1981, pp. 159, 362.

<sup>528</sup> The classification of the swords is based on the typology worked out by R.E. Oakeshot, *The Sword in the Age of Chivalry*, NY-Washington 1965, pp. 25 ff.

<sup>529</sup> M. Głosek, *Miecze środkowoeuropejskie X-XV w.*, Warszawa 1984, p. 153.

struction of the motte to the early 15th century, the sword would have been out-dated at that time.

Swords often occur in iconographic material. In the scene from the *Apocalypse* (Fig. 38) the Teutonic Knights are shown fighting with swords assignable to type XIII. The sword held by the Teutonic Knight on the capital of the Marienburg column can be classified as type XVI, G, 2, and that carried by Kunon von Liebenstein should be assigned to type XVII, T, 6 (Fig. 49). The specimens depicted on the frescoes at Juditten are similar to types XVII, F and XVII, H. The latest specimens classified as type XVII are depicted in the scene of the battle of Grunwald in the Schilling's Chronicle (Figs. 60, 61), and the sword held by Friedrich of Saxony belongs to type XX (Fig. 62).

All that has been written above relating to the swords from Prussia shows that they varied considerably not only in blades but also in pommels and guards. This is typical for medieval Europe.

That it is difficult to speak about the standardization of the Teutonic swords is also argued for by the fact that their owners (leaving aside Prussian or Slavonic knights) came from various German lands.

It is a well known fact that the side-arms producing centres active in medieval Germany, of which those at Passau, Nürnberg and Solingen are the most famous, supplied knights of several European countries with weapons. Thus the candidates for the Order arrived in Prussia armed with swords made in various centres and differing in the shape and size of the blade, the guard and in other constructional details. Another argument for the variety of swords used by the Prussian troops is the import of swords from centres outside Prussia: *item 20 ungerische guldin vor 18 swert, dy Samuel dem meister koufte zu Wynen*<sup>530</sup>. This is also confirmed by the mark of a Hungarian smith on the blade of the sword from the Marienburg armoury<sup>531</sup>.

That swords were also made in Prussia is shown by such references as: *item 1/2 m. Elyan vor eyn swert*<sup>532</sup>, *item 1 fird. Nwnoken ... und 2 scot vor eyn swert zu machen*<sup>533</sup> or *item 9 sc. nuwes geldes vor 3 swert czu fassen, 2 her Paul, 1 her Johan*<sup>534</sup>. The two last mentions seem to tell about mounting the already finished blades, as the sum paid for the service is very low. The prices of swords recorded in sources oscillate around 1/2 mark, as in addition to the sum paid to the mentioned Elias, also *15 scot vor swert*<sup>535</sup> were spent in 1408. That sword-makers were active in Prussia is shown by marks on two swords from the first half of the 15th century (from the Czartoryski collection in Kraków), which in all probability were the signature of Prussian smith's workshops.

<sup>530</sup> *MTB*, year 1401, p. 112.

<sup>531</sup> M. Głosek, *Miecze ...*, p. 162.

<sup>532</sup> *MTB*, year 1399, p. 19.

<sup>533</sup> *MTB*, year 1401, p. 118.

<sup>534</sup> *Ausgabebuch*, 1420, p. 358.

<sup>535</sup> *MTB*, p. 514.

Some information about the way the swords were carried can be gleaned from available sources. The sword carried by Kunon von Liebenstein is attached to the breastplate by a chain, whose other end is joined to the pommel (Fig. 49). It differs from other representations on tombstones, since the artist had placed the sword at the right side of the bearer and the dagger at his left side, indicating perhaps by this reverse position the left-handedness of the Commander.

The use of leather sword-straps attached to the scabbard by a suspension-ring, or a leather pendant, and of ornamental chains fastened to the breastplate is documented by written sources. Sometimes the straps were ornamented with bosses of noble metals: *item 5 1/2 m 4 scot logitis silbirs ... zu 16 swerten zu rincken pockeln und senckelen zu den swerten zu machen, des woren die rincke und pockel senckelen halb vorgult und halb schlecht silbir*<sup>536</sup>. To wear ornamental or even metal straps, not to mention gilded ones, was forbidden by the Order, e.g. by Dietrich von Altenburg (1335-1341) who ordered *ouch sullen sein die swertvessele schlecht geryme ane spangen*<sup>537</sup>.

However, this prohibition was often disregarded even by the highest Order's dignitaries, whose swords were ornamented with silver and gold. This is indicated by the reference to the sword of Ulrich von Jungingen who soon after having taken up the office of the Grand Master ordered to spend *3 m. 7 sc. und 6 den. vor 1 m 10 scot logitis silbirs zu eyne swerte unserm homeyster zu beslohen*<sup>538</sup>. The silversmith seems to have covered the scabbard and grip with silver, as the quantity of silver used exceeded 250 grammes.

Yet another mention of considerable interest tells us about the sword of this dignitary: on 24th June 1410 his sword, which he used in the battle of Grunwald, was being prepared by cleaning and polishing: *item 1 fird. vor unsers homeysters swert czu fegen ouch of dy reyse*<sup>539</sup>. The sword did not help much, as barely 3 weeks later the Grand Master met his death on the battlefield of Grunwald.

That swords were private property of the Teutonic Knights is distinctly documented by the repeatedly quoted records of the Order. The commissions given to craftsmen, and the records of purchase always say who the weapon is made for: *item 15 sc. vor eyn swert, das unser homeyster Jokusch Dobriske koufte, item 1 f. Passken ... vor eyn swert*<sup>540</sup>, or *item 2 sc. vor her Hartman swert zu machen*<sup>541</sup>. It is obvious that each made or repaired sword had its owner. The records show that many Teutonic Knights had several swords each: *item 3 swert unserm homeyster zczuczumachin* or *item 16 sc. deme swertfeger vor 6 swert und vor 4 messer unserm homeyster zczuczumachen*<sup>542</sup>. In 1412 the Grand Commander had

<sup>536</sup> MTB, year 1406, p. 385.

<sup>537</sup> F.A. V o s s b e r g, *Geschichte ...*, p. 13.

<sup>538</sup> MTB, year 1408, p. 484.

<sup>539</sup> AMH, p. 5.

<sup>540</sup> MTB, pp. 514, 265.

<sup>541</sup> AMH, p. 80.

<sup>542</sup> AMH, pp. 34, 68.

his 5 swords sharpened and polished<sup>543</sup>.

Swords were used by Teutonic warriors throughout the existence of the Order's State in Prussia. Still in the early 16th century they were kept in a number of castle armouries<sup>544</sup>. The stores of swords kept there, doubtless of mobilization character, suggest that these were hand-and-a-half and two-handed swords used by infantry. The sword as a typical equestrian weapon of that time was not recorded in earlier inventories. From the fact that they appeared in the armouries when they were no longer used by cavalry alone it follows that they could have served only as infantry weapon.

Information about the use of sword on battlefields is sparse. Such references as *alli gladio trucidati sunt*<sup>545</sup> or *et jam disponent gladios suos*<sup>546</sup> are useless from our point of view. Very rare are descriptions such as that concerning the raid on Samogitia in 1305 during which a Teutonic Knight surrounded by enemies took *daz swert in beide hende*<sup>547</sup>, or the testimony of Mateusz, castellan of Bydgoszcz, which reads: *unus Crucifer cum cruce nigra occidit unum cum ense suo*<sup>548</sup>. Such pieces of information provide no subject matter for our considerations, as the use of a two-handed sword in battle in the early 14th century is obvious.

Warriors fighting with swords are shown, though rarely, in iconographic material. The capital of the column at Kwidzyń (Fig. 37) shows a knight who, with his arm slightly bent, is about to strike his opponent with the sword raised above his head. A similar way of striking blows can be seen on the miniature of the *Apocalypse* (Fig. 38). The warrior made a sweeping motion from behind his head, and straightening the arm that held the sword, hit the opponent, striking the so-called cutting blow, thus using the simplest of the possible fighting techniques. The miniature in the Schilling's Chronicle indicates that the way of wielding swords did not change in comparison with earlier periods. The Teutonic warrior struck the blow with his arm fully extended (Fig. 60).

## OTHER TYPES OF SIDE-ARMS

In the Order's State, as in other European countries, in addition to swords also other types of side-arms were in use.

Let us first turn to daggers. The dagger has a rather short blade unfit for cutting but adapted to thrusting. Two types are distinguished: daggers with a two-edged symmetrical blade and battle-knives with an asymmetric and one--

<sup>543</sup> AMH, p. 82.

<sup>544</sup> A. N o w a k o w s k i, *Arsenady II*, p. 56.

<sup>545</sup> D u s b u r g, p. 176.

<sup>546</sup> D u s b u r g, p. 191.

<sup>547</sup> *Die atlere Hochmeisterchronik*, SRP, III, p. 586.

<sup>548</sup> *Lites*, I, p. 358.

edged blade. Daggers were suitable for thrusting between the rings of the mail hauberk and between the joints of plate armour. The dagger, particularly in the 14th century, was usually carried together with the sword. It was suspended from the belt or attached to the breastplate by a chain or strap.

Though daggers were in common use as early as the 13th century, they rarely occur in available sources. They are mentioned only once in written records, namely in the description of killing the Grand Master Werner von Orseln by one of the knights<sup>549</sup>. A dagger with a boat-shaped guard, attached by a strap to the breastplate, can be seen on the tombstone of Kunon von Liebenstein (Fig. 49).

A battle-knife with a massive blade and a short tang with copper elements of the grip was discovered at Plemięta, and another specimen comes from the ruins of the motte at Słoszewy near Brodnica.

Different versions of side-arms with a one-edged blade were doubtless carried in Prussia. The cutlass, a big knife with a straight and slightly thickened grip, was certainly popular. It was a plebeian weapon used by burghers, as is indicated by the prohibition to carry *lange messir* in the street<sup>550</sup>, and by peasants or knights' servants as well. Knights might have carried it during a journey or on weekdays.

The falchion was a similar weapon. Its blade was one-edged, straight or slightly curved, sometimes with an obliquely cut point. The grip, particularly in the 14th and 15th centuries, was symmetrical, similar to the sword blade. Falchions were used all over Europe.

Only one falchion found at Dąbrówno, Olsztyn province, and dated to the 15th century, comes from Prussian territory (Fig. 22). The weapon with a curved blade, seen on the seal of the Commander of Tuchola (Fig. 29), is probably a falchion, though the 19th-century copy might have deformed the original drawing of the weapon.

Estocs represent long side-arms. Their blades are narrow and stiff, near-square in section. They served only for thrusting and were very effective against plate armour and mail hauberks.

Estocs are neither mentioned in written sources nor depicted in iconographic material. However, according to tradition, an estoc probably dating from the second half of the 15th century<sup>551</sup>, removed from the Marienburg armoury in the second half of the 18th century and deposited in the Wawel Treasury, should be associated with the Teutonic Order. The estoc has a short guard and a heavy polygonal blade. The pommel and blade bear the sword-maker's mark in the shape of a star and crescent.

The inventory of the Labiawa armoury, made in 1513, provides a very interesting piece of information. Among other arms, the inventory mentions a *tartari-*

*sche schebel*<sup>552</sup> that is a Tartarian sabre. This record shows that also oriental weapons arrived in Prussian territory. Sabres might have arrived there via Poland or Lithuania, yet oriental weapons may have been also captured in battle. The campaign of the Polish King, Jan Olbracht, undertaken in 1497 against the Turks and the Moldavian voivode Stephen, in which Teutonic units also took part, may be taken into account.

## STAFF WEAPONS

Spears and lances were the most common types of staff weapons used in Prussia throughout the Middle Ages.

The spear is of ancient origin. It consists of an iron or steel head and a shaft about 2 m long. It was used in hand-to-hand fighting, and because of its moderate length and weight it could be freely wielded in almost every direction. It was particularly useful for light armoured horsemen and infantry. The lance, which is the typical weapon of heavy armoured cavalry, appeared in Europe in the 12th century and was adapted to piercing the plate armour. Its head is short and massive, and its socket is provided with vertical projections, owing to which it is securely mounted on the shaft up to 4 m long. It was too heavy and too long to be wielded freely. During attack, the lance was firmly held under the arm and rested on a hook fixed to the breastplate or on a special notch in the shield. The *Cronica conflictus* tells us that the Teutonic Knights when getting ready for the charge at Grunwald *lanceas hastaque ex humeris depositas scutis iunxerunt*<sup>553</sup>.

It is difficult to distinguish between the spear and the lance, particularly between specimens from the 13th and early 14th century when the two kinds of weapon were in use and when the spear was also the weapon of foot warriors.

Information about spears and lances is fairly abundant in available sources. They are mentioned in written records and depicted in iconographic materials. Besides, original examples have survived.

This weapon occurs fairly frequently in narrative sources. It figures prominently in descriptions of battles, notably of the encounters between horsemen when the opponents tried to unhorse each other. In his description of the Lithuanian raid of 1361 Wigand of Marburg writes: *Conradus Hoberg vibrata lancea sua eundem detrusit de equo in terram, or In quo conflictu frater Werherus de Windeyken regem trusit de equo, qui resurgens accepto scuto et lancea equum prefecti transfixit*<sup>554</sup>. The stressing of the role played by this weapon seems to indicate a certain "ennoblement" of the lance, particularly as in the Middle Ages a lancer was synonymous with a knight.

This weapon gave its name to the smallest cavalry unit: "lancea". The numeri-

<sup>549</sup> *Kronika Oliwska Starsza*, Monumenta Poloniae Historica, VI, pp. 328-329.

<sup>550</sup> Cf. footnote 528.

<sup>551</sup> M. G ł o s e k, *Koncerze*, [in:] *Uzbrojenie w Polsce ...*, p. 121.

<sup>552</sup> *AMH*, p. 207.

<sup>553</sup> *Cronica Conflictus ...*, p. 27.

<sup>554</sup> *W i g a n d*, pp. 528, 530.

cal force of a detachment was calculated by this unit, while its other participants were ignored. Evidence for this is also provided by our sources. For instance, in 1311 the Grand Master Karl of Trier promised to send to the Polish King Władysław Łokietek (the Short) *quadraginta lanceis suis damnis et expensis*<sup>555</sup> or *Item her Jorge Czeteres sustulit 1023 m. off 93 spyse*<sup>556</sup>, *soldener zu entrichten zur Konicz ... of 263 glefeyen*<sup>557</sup>.

The above quotations show that in written sources various terms for staff weapon are used. In addition to those cited above, also *sper*<sup>558</sup> and *hasta*<sup>559</sup> occur.

The use of lances and spears in medieval Prussia is well documented by iconographic sources, while surviving examples reveal their construction.

The spearheads used by Teutonic warriors seem to represent types popular all over Europe. The finds from Plemięta indicate that spearheads included those of general use and those adapted to piercing the mail hauberk (Fig. 18). The painting from Bunge in Gotland suggests that winged lanceheads were also known (Fig. 58). The single surviving lancehead comes from Gdańsk and is dated to the Late Middle Ages. It has a narrow blade and a long socket with vertical projections.

The spears shown on the seal of the Gdańsk Commandery (Fig. 30), on the convent seal of the Order (Fig. 24), and in the scene of combat on the capital of the Marienburg column (Figs. 35, 36) are typical examples of infantry weapon. The shafts are not very long, not exceeding 150 cm, the heads seem to be rhomboidal, rather massive, with a rib on the blade.

An interesting instance showing the use of the spear in battle is represented on the mentioned capital. One of the Teutonic Knights, striking a fallen Prussian with his sword, holds a pennoned spear in his left hand (Fig. 35). This shows that both kinds of weapon were used when fighting not only on horseback but also on foot.

The use of spears by Teutonic cavalry is confirmed by the seal of Chełmno and by successive seals of grand marshalls. The spear shafts are not very long, the heads are rhomboid with a pennon. Spears of this type survived in Prussia at least to the early 15th century, though in Western Europe and in Poland lances were then in use<sup>560</sup>. The use of this light weapon by the Teutonic Knights and other Teutonic units seems to be due to Baltic influences. Jan Długosz's description of the battle of Grunwald contains two very interesting pieces of information. Namely, the Teutonic reserve units were mistaken by the Poles for Lithu-

anians because in their lines they saw the *sulice* — light lances of oriental origin — projecting above horses' heads: *milites autem regi, viso exercitu ... plerique hostilem rati Lithuanicum exercitum propter versalites lanceas alias Sulicze, quorum in eo frequens numerus habebatur*<sup>561</sup>. Differences in arms are also seen in the description of the combat between Ulrich von Jungingen, who fought with a spear, and the Polish knight Dobiesław of Oleśnica, who carried a lance: *Crucifer ... vibratam hastam Dobeslai sua vibratili lancea in sublime exceptam per caput submitit*<sup>562</sup>. These quotations show that oriental weapon was used at Grunwald not only by Lithuanian-Russian troops but also by Teutonic warriors, who not so long ago were regarded as representatives of the latest chivalrous fashion of the West.

The lance is represented in art: on the frescoes in Königsberg Cathedral, and on the miniatures in Schilling's Chronicles. The frescoes show fully armed knights holding lances with pennons (Figs. 42, 44). Since the frescoes have survived in poor state and have been repainted, in their analysis caution is enjoined. Nevertheless there is no doubt, at least as far as the earlier frescoes are concerned, that the lances are about 2.5 m long, have massive shafts painted in spiral stripes, and solid rhomboid heads. Neither the grip nor differences in the shaft thickness can be observed. Thus the lances represent an earlier type not yet fully formed, this being consistent with their dating to the second half of the 14th century. Though the miniatures illustrating the battle of Grunwald show warriors armed with lances, the drawings are schematic. However, in accordance with the realities of the period when the miniature was painted (the 80s of the 15th century), the weapon seems to conform fully to the image of a lance: it has a long shaft with a narrowing for grasp, and a small spike-like head.

Small amounts of lances were kept in certain castle armouries: 45 examples were at Kowalewo in 1415<sup>563</sup>, and in the early 16th century they were stored in a few other castles as well. Very small numbers of lances, called *reitspiss*, have also been recorded at Szestno and Morag<sup>564</sup>.

That during marches lances were transported in casing is shown by written records: *item 12 sol. vor ... glefenyefuter zu machen*<sup>565</sup>, and by the description of the raid on Masovia in 1324, during which the Teutonic Knights had *lanceas in falces*<sup>566</sup>. The Order's regulations required that lances should be well cared for: *sperisen die geveigt sint di moge si mit halften decken, durch das si dester scherfter sint zcu viende wunden*<sup>567</sup>.

Other records tell us about repairing lances. Surprisingly, this was done by

<sup>555</sup> Długosz, lib. IX, p. 55.

<sup>556</sup> *Soldbuch* ..., p. 31.

<sup>557</sup> *MTB*, year 1409, p. 564.

<sup>558</sup> *Cad. Dipl. Pruss.*, VI, no 163.

<sup>559</sup> *Cronica Conflictus* ..., p. 59.

<sup>560</sup> A. Nowakowski, *Uzbrojenie średniowieczne* ..., p. 67.

<sup>561</sup> Długosz, lib. XII, p. 59.

<sup>562</sup> *Ibidem*.

<sup>563</sup> *GAB*, p. 415.

<sup>564</sup> A. Nowakowski, *Arsenały II*, p. 55.

<sup>565</sup> *MTB*, year 1409, p. 546.

<sup>566</sup> *Dusbürg*, p. 191.

<sup>567</sup> *Statuten*, Rule 14, p. 32.

sword-makers: *item 4 sc. dem swetfeger vor unsers homeysters spys reyne zu machen*<sup>568</sup>.

Sometimes Teutonic authorities ordered to take on a raid a spear or a lance, frequently 2 examples: *Die fryen und dinst sollen iclicher synen harnasch haben II sper*<sup>569</sup>. Lances were also used by burghers, particularly those who when mobilized appeared clad in full equestrian armour. For instance, in 1414 the burghers of Elbląg bought several lances each: *item gegeben 14 sc. und 1 sol. Lemken vor 6 glevenien, das stucke vor 6 sol., dy her Arnd Rouber kouffte. Item gegeben 8 mr. 10 sc. 24 pen. Peter Vrondenberge vor 9 lange glevenien, das stucke vor 7 sol.*<sup>570</sup>.

In summing up the observations on spears and lances used in Prussia, it should be stressed that the light staff weapon called *sulica* was used by horsemen still during the Great War (1409-1411) doubtless under the influence of the Balts. Contemporary Teutonic cavalry did not consist of heavy armoured lancers alone. This is understandable, since a long and heavy lance was of little use in combat with the light and mobile Prussian, and later also with Lithuanian and Samogitian cavalry, which avoided a face to face encounter. Moreover, most riders were of local origin obliged to serve *cum armis pruthenicalibus*, part of which, at least until the turn of the 14th and 15th centuries, was a light spear.

Long pikes, called "Swiss" in relevant literature, were from 4.8 to 5.3 m long, had a small leaf or spike-shaped head, and a socket with two long vertical projections which prevented the head from being cut off or broken. Pikes, which continued to be constructed still in the 15th century, were an important and dangerous weapon of foot warriors used against cavalry or infantry. When the enemy attacked, the pikemen stuck the butt of the weapon into the ground, and couching it forward formed a "needle-like wall" extremely difficult to break. When the pikemen themselves attacked, they held the pike with both hands and thrust.

In armoury registers this weapon is called *lange spiss*<sup>571</sup>. In 1507 there were about 750 pikes stored in Prussia. In 1516 there were 150 pikes, called *knecht-spiss*, in the castle at Wystruć<sup>572</sup>. These were probably the so-called Lancknecht pikes introduced into infantry at the close of the 15th century. Units of Lancknechts owed their military reputation just to that weapon, whose shaft was somewhat shorter and more massive than that of the Swiss pike, being up to 4.5 m long. The pikes were spindle-like in shape, being thicker in the middle and thinner towards the ends. Pikes, called *feltspiss* and *thorspiss*<sup>573</sup>, may have also been used by infantry. We do not know, however, how they looked like.

<sup>568</sup> AMH, year 1411, p. 32.

<sup>569</sup> J. V o i g t, o.c., VI, p. 671]

<sup>570</sup> NKRSME, pt. II, no 1435.

<sup>571</sup> A. N o w a k o w s k i, *Arsenaly II*, p. 54.

<sup>572</sup> GAB, p. 65.

<sup>573</sup> GAB, p. 314.

Another type of weapon used in Prussia in the 16th century is the "langue de boeuf" — *schefflin*<sup>574</sup>. It is a spear with a long and massive head, and a rather short shaft often covered with leather and painted. Yet it did not become popular and was used mostly by sailors.

Staff weapon with a composite head is represented by halberds and ronchas, the latter known only from written records.

The halberd was invented by the Swiss and became popular among foot warriors already in the 14th century. Two representations of this weapon depicted on the so-called Grudziądz altar date from that century. In the course of time, the blade changed its shape and became less massive. In the mid-15th century it had already a fairly large point, and a sizable hook on the side opposite the blade. The socket mounted on a polygonal shaft had long vertical projections. When skilfully used, halberds were a dangerous weapon even for an armoured warrior, as owing to the mass of the blade and considerable strength of the blow, its effects surpassed those of the blow inflicted by the battle-axe or sword.

In the early 16th century, that is in the period which provides information about the few halberds kept in Teutonic castles<sup>575</sup>, the halberd lost its importance and became the weapon of guards, notably municipal. It seems that neither in Poland nor among Teutonic troops halberds gained as much popularity as in Switzerland, Germany and Bohemia.

The roncha, i.e. a weapon with three-pointed head, the middle point being distinctly longer than the side ones, was very rare in the units of "Prussian lords". Its shaft was up to 3.5 m long. Ronchas, called *wolfseisen*<sup>576</sup>, were popular in Spain, England, Italy and Germany. In Central Europe, including Poland, they were practically of no importance.

Staff weapons with composite heads, such as partisans, gleaves or guisarmes, about which no information is available, were unpopular both in Prussia and Poland. They may have been used by mercenaries from Germany or other West European countries, who came to Prussia to take part in the 16th century wars waged with Poland.

## BUTT WEAPONS

The battle-axe is by far the most popular butt weapon. The blow could be struck both by the butt and the blade. As the shape of the blade is fairly universal, it is not always easy to distinguish the battle-axe from the working axe, which could without any change be used in battle, while the battle-axe could serve as a tool.

Battle-axes were in common use in early medieval Europe. In the period in question, battle-axes were predominantly used by plebeians, though Jan Długosz

<sup>574</sup> GAB, pp. 297, 314.

<sup>575</sup> GAB, pp. 11, 314, 349.

<sup>576</sup> GAB, p. 112.



says that in the battle of Grunwald they were also used by knights, either Teutonic or Polish, who when the lance split reached for *mucronibus et securibus longius ligno extensis*<sup>577</sup>.

The excavations at Plemięta have yielded axes of various shapes, of which the big examples with a long socket for hafting or with a hammer (Fig. 14) may have served as weapon<sup>578</sup>.

In the period in question, notably in the 15th century, battle-flails were used by Teutonic troops. This is a typical infantry weapon consisting of a handle and a beater attached to the handle by a strap or chain. The popularity of the flails in Europe is due to the Hussites.

The beater of a battle-flail was found at Rękownica, Olsztyn province. It is polygonal, with 12 spikes, among which equal-armed crosses occur. Flails are depicted in the picture "The Siege of Marienburg" from about 1485 (Fig. 68). However, they are shown lying on the ground so we do not know by whom they were used: the Teutonic or Gdańsk warriors.

Maces, called *kolben*<sup>579</sup>, are the last kind of butt weapons known only from written sources. In 1513 the Labiawa castle armoury had 11 iron specimens, probably used by cavalry, while at Klaypeda (Memel) there were 15 maces of undetermined type, perhaps made of wood<sup>580</sup>.

## THE SHOOTING WEAPON

This is a weapon which by means of mechanical energy discharges arrows and missiles with a sharp head capable of penetrating deeply the hit target. In medieval Prussia two kinds of this weapon were in use: bows and crossbows. Especially the later played an important role in the Order's warfare till the close of the 15th century.

The bow, a popular weapon of the European Middle Ages, used by foot warriors or lightly armoured horsemen, is poorly represented in available sources. Bows carried by Teutonic warriors do not appear in iconographic material, they are hardly mentioned in written records, while finds of arrowheads are extremely rare. This does not seem to reflect the reality, as it seems hardly possible for Prussia to have been an exception when bows were in common use in neighbouring countries: Poland, Lithuania and Old Russia, not to mention England and France where they were of considerable importance.

That bows were used by Teutonic troops is indicated by the prohibition to export yew-wood used in the production of bow shafts: *das man von deser czeit nymande gestaten sal bogenholz uszufuren*<sup>581</sup> or by the Order's injunction to

shoot birds with the bow for the sake of practice<sup>582</sup>.

Inventories show that bows were kept in castle armouries, for instance in 1382 there were 10 bows at Radzyń, and in 1390 their number grew to 15<sup>583</sup>. Unfortunately, we do not know whether the bows were simple or composite (reflexive). In 1396 6 *rusche bogen* were in the Grand Marshall's armoury. Since they were probably imported from Pskov or Novgorod, they were of oriental, that is composite type. Other records show that bows were also imported from Hungary, though probably on a small scale only<sup>584</sup>.

There is more information about the crossbow. It is often mentioned in written records, is occasionally shown in iconographic material, and — this being most important — numerous boltheads and fragments of crossbows have been yielded by archaeological excavations.

Crossbows were the most popular offensive weapon in Prussia. As in other European armies, units of crossbowmen played a prominent role in the Teutonic troops throughout the Middle Ages. Towns were allotted the duty to raise units of crossbowmen, the Teutonic Knights recruited them abroad, and formed detachments of crossbowmen from castle garrisons — the Knechts. Crossbow workshops were active in many Prussian fortresses, and in the early 15th century they were located in at least 16 centres<sup>585</sup>. They were called *sniczhus* or *snyczhus*, and in addition to producing crossbows, they also kept them in store.

The crossbow first occurs in available sources at the close of the 13th century, and is recorded throughout the period in question. The same can be observed in Europe with the exception of Old Russia where the crossbow was second in importance to the bow. Crossbows were used on battlefields (heavy specimens for infantry, lighter for horsemen), in hunting and in ambush (self-acting examples) and were mounted on walls or ramparts. They were predominantly used for firing bolts, which were occasionally replaced by bullets of stone, iron or lead. The crossbow consists of a bow, a cord, a trigger and a stock. In the 14th century various devices for spanning were in use.

In addition to iconographic material, also written records tell us about crossbow elements. The bow is called *bogen*, the cord made from animal sinews or from hemp yarn, often waxed, is called *senwe*, *seimen*, etc. That it was fastened to the bow is indicated by the mentions: *item gegeben czu vorarbeiten vor 1/2 schok unde 8 schiben garnes ... unde 19 seimen ... vor 20 armbroste inczubinden ... item 4 sc. czu wachse, item gegeben 7 sc. vor rymen, mete czu binden*<sup>586</sup>. The fastening of the cord was done on special benches, and the contrivance for stranding the cord from hemp threads or guts was called *usleget*<sup>587</sup>. The principal part

<sup>577</sup> D ł u g o s z, lib. XIII, p. 54.

<sup>578</sup> M. G ł o s e k, *Broń sieczna, drzewcowa i obuchowa* ..., p. 103.

<sup>579</sup> GAB, p. 297.

<sup>580</sup> A. N o w a k o w s k i, *Arsenały II*, p. 56.

<sup>581</sup> ASP, I, no 70.

<sup>582</sup> K. G ó r s k i, *Zakon krzyżacki* ..., p. 86.

<sup>583</sup> GAB, pp. 559-560.

<sup>584</sup> A. N o w a k o w s k i, *Uzbrojenie wojsk krzyżackich* ..., p. 121.

<sup>585</sup> F. B e n n i n g h o v e n, *Die Burgen* ..., p. 596.

<sup>586</sup> NKRSME, part II, no 1432.

<sup>587</sup> MAB, year 1393, p. 143.

of the trigger — the nut called *nux* — was made of bone or horn. The stock for mounting the bow was of wood: *item 1 m. 2 scot. dem tischer vor 6 wippen zu armbrosten zu machen*<sup>588</sup>.

Finished crossbows were kept in boxes: *5 ruckambrost ym kasten*<sup>589</sup>, sometimes they were put on stands called *setzstocke czu armbrost*<sup>590</sup> or suspended by stirrups: *stegereyffarmbrost dy do hengen*<sup>591</sup>.

Crossbow workshops made also coverings for bows and cords to protect them from damp and dust. These coverings were made of leather: *item vor 8 par led-deren hulfften ... 1 mr 4 sol*<sup>592</sup>. They were often dyed. In 1409 Marienburg had *14 armbrosten mit schonen dachen, 4 mit swarzen dachen, 42 mit groen dache*<sup>593</sup>.

According to written records, there were several kinds of crossbows in Prussia. The most common and the simplest in construction and use was the crossbow with stirrup, called *stegereyffarmbrost*<sup>594</sup>. The stirrup fixed to the upper part of the stock served for spanning the bow. Two stirrups of this kind were found in the ruins of the motte at Plemięta (Fig. 19). The crossbowman had a special spanning-belt with hooks (*spangortel mit den krapen*<sup>595</sup>), and with one foot in the stirrup, he stooped, engaged the hook on the cord, and straightened, thus drawing the cord to the nut. This method was also used on horseback. The bows with stirrups were not hard to span. They were called *bogen czu stegereyffarmbroste*<sup>596</sup>.

Excellent representations of the crossbow with a stirrup are shown on the so-called Grudziądz altar from about 1380 (Figs. 45, 46) and on the miniature in the Schilling's Chronicle (Figs. 60, 61). The latter is of special interest, since the crossbow is carried by a rider in full armour, that is a lancer who should not use a crossbow. These examples were possibly called *rytarmbrost* or *geringe armbrost*<sup>597</sup>.

Another type of crossbow known from sources was spanned by means of a gaffle, called *geissfussspanne*. It was fastened to both sides of the stock called *sule*<sup>598</sup>. Bows of these specimens were hard to span, and were called *ruckarmbrostbogen* and *beynen bogen*<sup>599</sup>. For this version of the crossbow the term

*ruckarmbrost* was used in written records.

An improved version is represented by crossbows with a cranequin, termed in sources *windearmbrost*<sup>600</sup>. The cranequins called *winde*<sup>601</sup> were fairly complicated, but owing to them it was possible to use steel bows, which greatly improved the ballistic performance of the crossbow and the piercing capability of the bolt-head. Two kinds of these crossbows were used by the Teuthonic troops; perhaps those called *grosse wyndearmbroste*<sup>602</sup> were heavy crossbows operated from walls or ramparts.

Several other terms can be found in written sources. The term *husarmbrost*<sup>603</sup>, still occurring in the early 16th century, in all probability denotes either a crossbow mounted on ramparts, or a ballista<sup>604</sup>. The term *fuerarmbrost*<sup>605</sup> seems to suggest that these crossbows discharged fire bolts. We are not able to guess the meaning of such terms as *schutzenarmbrost*, *knottelarmbrost* and *zylarmbrost*. They seem to have been used for the "crossbow"<sup>606</sup>. It is interesting to note that the armouries which kept these undetermined versions did not have any other kinds (Ragneta, Ostróda, Altenburg). The men responsible for listing the crossbows were probably unfamiliar with their terminology and so described them as a shooting crossbow *schutzenarmbrost*, ordinary crossbow *knottelarmbrost*, or light crossbow *zylarmbrost*. We do not think that the quoted terms may have denoted other versions of crossbows than those already recognized.

Information about boltheads is provided both by written sources and archaeological discoveries. That in medieval Prussia tanged boltheads were predominant is shown by the finds from Słozzewy and Plemięta in the Chełmno Land. The motte at Słozzewy has yielded 784 boltheads, and that at Plemięta, 370<sup>607</sup> (Fig. 18). Boltheads were mass produced not only in specialized workshops but also in local smithies, and therefore it is hard to speak about the standardization of their size and weight. Evidence for this is yielded by the comparison of the boltheads from Słozzewy and Plemięta; those from Słozzewy being nearly twice as heavy as the Plemięta examples<sup>608</sup>.

The Prussian craftsmen called *pfylschefter*<sup>609</sup> mounted the heads on shafts, made fletchings and also mended old bolts. This is indicated but such passages as *item 33 m 13 sc. und 10 pf. vor 100 schog und 30 pfhile und 12 1/2 vor die*

<sup>588</sup> MAB, year 1409, p. 556. The technological aspects of the crossbow production have recently been discussed by S. E k d a h l, *Die Armbrust ...*, pp. 23-30.

<sup>589</sup> MAB, year 1393, p. 143.

<sup>590</sup> Ibidem.

<sup>591</sup> Ibidem.

<sup>592</sup> NKRSME, part I, no 67.

<sup>593</sup> MAB, year 1409, p. 145.

<sup>594</sup> Repeatedly, e.g. GAB, p. 79; MAB, p. 143.

<sup>595</sup> NKRSME, pt. I, no 967.

<sup>596</sup> GAB, year 1393, p. 143.

<sup>597</sup> GAB, year 1392, p. 210.

<sup>598</sup> MAB, p. 148.

<sup>599</sup> GAB, p. 210; MAB, p. 145.

<sup>600</sup> For instance GAB, p. 79; NKRSME, part I, no 1044.

<sup>601</sup> GAB, year 1404, p. 673.

<sup>602</sup> GAB, year 1408, p. 83.

<sup>603</sup> GAB, pp. 65, 526.

<sup>604</sup> A. N o w a k o w s k i, *Arsenały II*, p. 57.

<sup>605</sup> GAB, p. 204.

<sup>606</sup> A. N o w a k o w s k i, *Uzbrojenie wojsk krzyżackich ...*, p. 123.

<sup>607</sup> A. K o l a, G. W i l k e, *Zespół grotów ...*, pp. 81-123; and *Broń strzelcza, ...* pp. 109-111.

<sup>608</sup> A. K o l a, G. W i l k e, *Broń strzelcza ...*, p. 110.

<sup>609</sup> For instance: AMH, p. 19.

selben pfile zu scheften<sup>610</sup> or 100 schog alder pfile zu federn<sup>611</sup>. That bolts were produced on a big scale is indicated by mass purchases: in 1411 the Marienburg House Commander bought as many as 37440 examples<sup>612</sup>.

Other versions of bolts also occur in written sources, which say about *windearmbrostpfile*, *ruckarmbrostpfile*, *stegeryffarmbrostpfile*<sup>613</sup> or *pfile cleyne und gros*<sup>614</sup>. Attention is claimed by mentions of fire bolts *fuerpfile*<sup>615</sup>. These bolts, which had heads with barbs beneath which a skein of tarred oakum was placed on the shaft, were fired after having been ignited. Other boltheads in use had a container for powder fixed just below the blade. The powder, too, was ignited before firing. These bolts were far more expensive than the ordinary specimens, and they were made not by a smith but, and this is interesting, by a powder-maker: *item 1 1/2 m ... Sweczor vor 39 voyerpfyle*<sup>616</sup>. They were mostly used during a siege of fortresses when the besiegers wanted to burn down fortifications or buildings. Jan Długosz writes about them in his relation of the siege of the Friedborg castle in 1307: *Erant inter Prussiae ... unus Crucifer ... qui igneis sagittis barbaros vexans*<sup>617</sup>. In his description of the raid on Lithuania in 1337 Wigand of Marburg informs that *frater Tilemanus de Sunpach ... telo igneo vexillum combussit*<sup>618</sup>.

Quivers, which could hold about 20 bolts, were made of wood covered with leather or of leather. The quivers called *kocher* varied in size and shape and were cheap costing about 4 scotten each<sup>619</sup>.

Crossbows were of considerable value: the price of one example exceeded 1 mark, that is more than the value of a sword or helmet<sup>620</sup>.

Despite high prices, crossbows were popular among Teutonic troops. They were used both by knights, as indicated by the rules of the Order's Statutes: *der marschalc mac nemen von dem snithuse ... arenbrust ... zu lihene den bruderen*<sup>621</sup>, and by the highest dignitaries, Grand Masters including: *item 4 m. vor 4 armbroste, die unser homeyster selben koufte*<sup>622</sup>. The castle armouries, especially at the close of the 14th and in the early 15th century, kept enormous quantities of crossbows and bolts. In 1392 there were 1736 crossbows at Königsberg (*11 win-*

*dearmbrost, 8 schog stegereiffarmbrost, 20 schog und 25 nuwer ruckearmbrost, 20 armbrost*<sup>623</sup>). At least 4167 crossbows were stored in Prussian castles in the early 15th century, those with a stirrup predominating in number: 1496, and those with a cranequin being the least numerous: 66 examples<sup>624</sup>. According to estimates, at least 600 000 bolts were in store at the same period, of which 156 000 examples were stored in Elblag castle<sup>625</sup>.

Prussian towns recruited large number of crossbowmen for campaign. In 1405 Gdańsk sent 60 armed men against Samogitia, including 30 crossbowmen who *sollen alle die helfte armbrost haben mit, dem das dorczu gehorel*<sup>626</sup>. Before the Gotland campaign of 1404 Teutonic authorities ordered that *iclicher dyner sal man usrichten ... eyn gut armbrost und ein schog pfile*<sup>627</sup> or *item dy hellfte des volkes sullen gute schutzen syn mit guten geschos und des genuk*<sup>628</sup>. Crossbowmen were quite often recruited by the Teutonic Knights, sometimes in distant countries. They had served in Teutonic troops already in the 14th century. In 1394 Wigand of Marburg says about Swiss crossbowmen *vocaverunt magister sagittarios de Genevel 150 ... alii eorum nati de Francia, major pars de Genevel*<sup>629</sup>. According to Johannes of Posilge, 200 Burgundian crossbowmen took part in the raid on Lithuania<sup>630</sup>.

The participation of crossbowmen units in the wars conducted by the Order with its Baltic neighbours is repeatedly confirmed by written sources, for instance by the record of the Lithuanian campaign of 1363: *et magister ibidem comendatorem statuit Kun de Hattenstein cum 20 fratribus et aliis sagittariis*<sup>631</sup>. Sometimes the names of the commander of crossbowmen, called *magister sagittariorum* are given, for instance the already mentioned knight Tilemanus de Sunpach. On other occasions no names are quoted<sup>632</sup>.

By the end of the 15th century crossbows were replaced by hand firearms. This fact, observed throughout Europe, manifests itself in the inventories of castle arsenals, which no longer kept crossbows with stirrups or examples adapted to the use of gaffle, storing in the early 16th century only crossbows with cranequins.

In concluding the remarks about crossbows, it seems worthwhile to mention two cases when they were used in combat, and the subsequent results. During the

<sup>610</sup> MTB, year 1402, p. 183.

<sup>611</sup> AMH, year 1411, p. 19.

<sup>612</sup> A. Nowakowski, *Arsenały I*, p. 80.

<sup>613</sup> GAB, year 1380, p. 126.

<sup>614</sup> GAB, year 1396, p. 79.

<sup>615</sup> GAB, year 1402, p. 673.

<sup>616</sup> MTB, p. 587. Powder-maker named Sweczor worked at Marienburg (MTB, pp. 574, 580).

<sup>617</sup> Długosz, lib. IX, p. 37.

<sup>618</sup> Wigand, p. 493.

<sup>619</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 125.

<sup>620</sup> Ibidem. Similar prices were paid for crossbows in Poland. Cf. J. Szymczak, *Organizacja produkcji ...*, pp. 279-280.

<sup>621</sup> Statuten, p. 106.

<sup>622</sup> MTB, year 1408, p. 581.

<sup>623</sup> GAB, p. 7.

<sup>624</sup> A. Nowakowski, *Arsenały I*, table 3.

<sup>625</sup> Ibidem, table 4. The number of crossbows stored in Teutonic castles in 1407-1434 is quoted by S. Eckardt, *Die Armbrust ...*, pp. 38-43.

<sup>626</sup> M. Baltzer, *Zur Geschichte des Danziger Kriegswesens im 14. und 15. Jahrhunderts*, Danzig 1893, p. 17.

<sup>627</sup> *Cod. Dipl. Prus.*, VI, no 163.

<sup>628</sup> *Die Recesse und andere Acten ...*, VI, no 175.

<sup>629</sup> Wigand, p. 655.

<sup>630</sup> *Chronik des Landes Preussen*, ed. E. Strehlke, SRP, III, Leipzig 1866, p. 196.

<sup>631</sup> Wigand, p. 561.

<sup>632</sup> Długosz, lib. IX, p. 79; Dusburg, p. 179.

Polish-Teutonic process, a witness, knight Żyra of Krupocin, who in 1309 had participated in the defence of Świecie against the Teutonic Knights, complained that he had been hit by a bolt: *ita quod adhuc cycatrix in facie mea apparet*<sup>633</sup>. No less dramatic experience was endured by a Teutonic Knight nearly 100 years later: *Item I m. her Egelof eyne herren von der Swecze gegeben, der hatte eynen phil ym houpte und zoch zum Elbinge zu den arzten*<sup>634</sup>. Żyra of Krupocin pulled through, yet the fate of the knight hit in the head by a bolt is unknown to us.

## THE HAND FIREARM

Information, given only by written sources, about hand firearms used by Teutonic troops is scanty. The terminology used there, notably in the 15th century, is far from precise. The earlier records often mentioned *buchse*, which term seems to denote all kinds of firearms: cannons and hand guns. Thus when we encounter this term, even if accompanied by the word *kleine*, we do not know what it is: a small cannon or a hand firearm.

The earliest European examples of hand firearms date from the mid-14th century<sup>635</sup>. Hand firearms were cast in bronze or brass. Already at the close of the 14th century their barrels were fixed on to a straight wooden stock provided on the underside with a metal hook, owing to which it was possible to rest the weapon on a wall or on another support, and which diminished the recoil. About 1400 the hook had already been directly linked with the barrel. Weapon of this kind was called hook-gun, and is regarded as a hand weapon, though some examples may have been considerable in size, especially those mounted on ramparts and operated by two men, one of which aimed and the other fired.

In Teutonic sources, the earliest hand firearms are called *lotbuchsen*<sup>636</sup>. The term derives from lead missiles used for firing. Typical hand examples might have been called *cleine lotbuchsen*<sup>637</sup>, and those fired from ramparts, *grose lotbuchsen*<sup>638</sup>. The use of such types in Prussia in the early 15th century seems to be indicated by references, e.g. *item 9 I/2 m und 6 sch vor 4 koperynne lotbuchsen die wegen 8 steyne ... item I/2 m. den cleynsmeden vor 3 laden zu lotbochsen zu beslohen*<sup>639</sup> and *item I f. vor 15 laden, lotbussen darin to leggende*<sup>640</sup>. There is no doubt that the mentioned examples were fixed on a wooden stock.

That in the early 15th century hand firearms were used in Prussia is shown by

the relation of Jan Długosz concerning the siege of Radzyń laid by the Poles in 1410, during which a Polish knight Dobiesław of Oleśnica, storming the gate *bombardae minoris seu fistulae ictum, qui scutum perforavit, exceperat*<sup>641</sup>. The missile that injured the knight might have been fired from a matchlock. Perhaps the 16 *handbochsen* kept in 1416 in the Nieszawa castle were matchlocks<sup>642</sup>.

There is more information on the hand firearms used by Teutonic troops at the close of the 15th and in the early 16th century. The inventories of arsenals and the registers of firearms kept in certain Teutonic castles and towns in 1523<sup>643</sup> indicate that at that time both hook-guns and matchlocks were in use. Hook-guns called *hacken*<sup>644</sup> had barrels several dozen cm long, with a 20-30 mm bore, a slightly bent stock and an ordinary fuse lock. In the years 1507-1508 there were at least 183 hook-guns in Prussian castles<sup>645</sup>. Hook-guns were produced in Prussia, and small numbers were imported from Bohemia. In 1524 9 *boemische hocken* were stored in the Ryn castle<sup>646</sup>. Matchlocks, called *handrord*<sup>647</sup>, did not differ much from hook-guns. They had a polygonal stock, and when aimed were put against the cheek. They were loaded with granulated powder which increased the range of the shot.

In the early 16th century matchlocks were in several castle armouries, the store at Balga with its 36 examples being the richest. Some years later the Paśleka store with 100 matchlocks was the richest<sup>648</sup>.

Since the mid-15th century both hook-guns and matchlocks had a better fuse-lock than that used at the close of the 14th century. It was released by means of a device with a lever or a trigger.

In concluding the remarks about hand firearms, it should be added that the Teutonic Knights made efforts to have fairly large stores of modern examples. Yet the effects of firing were not always satisfactory. The dispersion of shots fired from these weapons was so considerable that no efforts were made to aim precisely, and the gun-shooter confined himself to pointing the barrel towards the target. Yet the effect of a volley fired by several hundred men was damaging enough.

<sup>633</sup> *Lites*, I, p. 35.

<sup>634</sup> *MTB*, year 1404, p. 305.

<sup>635</sup> *Z. Żygułski, Broń w dawnej Polsce* ..., p. 122, Fig. 64, b.

<sup>636</sup> For instance: *NKRSME*, part I, no 67.

<sup>637</sup> *NKRSME*, part II, no 1429.

<sup>638</sup> *Ibidem*.

<sup>639</sup> *MTB*, pp. 339, 571.

<sup>640</sup> *NKRSME*, pt II, no 1429.

<sup>641</sup> *Długosz*, lib. XIII, p. 92.

<sup>642</sup> *A. Nowakowski, O wojskach* ..., p. 117.

<sup>643</sup> Cf. *M. Biskup, Wykaz sprzętu* ..., pp. 100-103.

<sup>644</sup> For instance *GAB*, p. 204; *M. Biskup, Wykaz sprzętu* ..., p. 101.

<sup>645</sup> *A. Nowakowski, O wojskach* ..., p. 117.

<sup>646</sup> *GAB*, p. 204.

<sup>647</sup> *M. Biskup, Wykaz sprzętu* ..., p. 101.

<sup>648</sup> *A. Nowakowski, O wojskach* ..., p. 117.

## THE KNIGHTLY BELT

The belt was undoubtedly an important element of the knightly dress. At least to the mid-15th century it not only had a practical purpose, serving as it did for suspending a sword or dagger, but also was the symbol of its owner's status indicating that he was the member of the special group of dubbed knights.

Iconographic materials show that certain belts were richly ornamented, occasionally with noble metals, being sometimes of great artistic value. They were worn, especially in the 14th century, fairly slackly round the hips (Figs. 39, 55).

The monks who joined the Order occasionally as dubbed knights doubtless wore these symbols of their status. It is true that strict regulations required modesty, and the Grand Master Paul von Rusdorf forbade *gortele beslagen mit silber*<sup>649</sup>, yet the reality was quite different. Written sources reveal that even the highest dignitaries broke the rules, for instance the Grand Master Konrad von Jungingen, who had *eynen sylberyn gurtel*<sup>650</sup>. The value of such a belt exceeded 3 marks<sup>651</sup>. Yet also simpler and much cheaper belts were worn: *item 10 scot ... vor eynen gortel zu beslon*<sup>652</sup>.

<sup>649</sup> J. Voigt, *o.c.*, VI, p. 297.

<sup>650</sup> *MTB*, year 1400, p. 64.

<sup>651</sup> *MTB*, year 1407, p. 428.

<sup>652</sup> *MTB*, year 1404, p. 285.

## HORSE HARNESS, HORSE ARMOUR AND EQUESTRIAN EQUIPMENT

To the Teutonic troops, as to other European armies, in which cavalry played a prominent role, the high quality of horse harness and horse protection in the shape of a more or less full armour was of cardinal importance.

Medieval craftsmen devoted much effort to construct the most effective elements of the harness. The period in question witnessed an evolution in construction and technology caused by the need to adapt the harness to the demands of mounted heavy armoured lancers.

The organization by the Order's authorities of their own productions of harness has no parallels in neighbouring countries. Saddler's workshops, called *satelhus*<sup>653</sup> were set up at several Teutonic castles, where finished examples were kept and repaired, and new ones constructed. Saddler's workshops were active at Marienburg, Königsberg, Elbląg and Toruń, and even in such a small castle as that at Grabiny near Marienburg<sup>654</sup>. The workshops were financed by the House Commander or by the convent.

In Prussia, as in other European countries, horse armour was introduced in the second half of the 14th century, yet the number of its owners was very limited. Only the horses of the highest dignitaries, of whom but two are mentioned in sources: the Grand Master and the Grand Commander, were provided with armour. Even if a certain number of dignitaries has been left out, they accounted in any case for only a very low percentage of horsemen fighting in the Teutonic troops.

Since information about horse armour is provided by few and very general mentions only, we know very little about its construction. References show that

<sup>653</sup> For instance *AMH*, p. 207ff.

<sup>654</sup> W. Świątosławski, *Zamkowe siodlarnie ...*, p. 650.

horse armour was made of mail or plates, and sometimes mail was combined with steel plates: *item 4 m. dem pletener of eyn stelyn rosgezug*<sup>655</sup>, *item 9 m. vor 3 rosgezug unserm homeyster zu machen of dy reyse*<sup>656</sup>. That elements of harness were joined by means of hinges or straps is indicated by such mentions as: *item 10 sc. vor das groskompthurs rosgezug zu beslohen*<sup>657</sup> or *dedit 5 m. am rosgezuge abgesehen*<sup>658</sup>. Plate armour was sometimes ornamented: *item 4 m. vor eyn rosgezug unserm homeyster ... mit silber gemalet*<sup>659</sup>.

Judging by prices, horse armours were of high quality, though they certainly varied, being more or less complete. Certain examples were worth 4 marks, while for others only 12 or even 7 scotten were paid<sup>660</sup>.

Elements of horse armour kept in armouries in the early 16th century included crinets called *roskop* and crupper protection called *stroftaschen*<sup>661</sup>. In 1507 the Pašek armoury had 2 *roskop* und 2 *par stroftaschen*, while Szestno and Ostróda had a crinet and a pair of *stroftaschen* each<sup>662</sup>. The latter were made of leather. They might have been parts of tournament armour, since in 1515 the inventory of the Szczytno armoury included 2 *par steryffarzin*<sup>663</sup> or small lame defences that protected the rider's thighs in a German joust<sup>664</sup>.

In the 14th and early 15th century certain Teutonic rider covered their horses with housings. These are shown in the *Apocalypse* (Fig. 38), on the seal of the Grand Master (Fig. 32) and in few other iconographic sources. Quilted housings are referred to in written sources: *item 5 m. vor dy rosdecke* or *item 3 fird. und 3 sol. vor ... gewant dem meyster under eyne rosdecke zu futer*<sup>665</sup>.

In the Middle Ages a complete horse harness consisted of a bridle, a saddle with stirrups on stirrup leather, a girth, a shabrack, a peytral and breeching. According to the Order's Statutes, the harness used by the Teutonic Knights should be uniform, simple, without any decoration or metal ornaments: *nyemant habe gevlochtin noch gespaldene vorbuge adir afirreife an synen setelen, sunder si sullen sein schlecht ane oberig geryme unde ane knoufe*<sup>666</sup>, *un ouch sullin d'brudere czoume sein mit rincken und schlecht geryme*<sup>667</sup>.

Horse harness and other elements of equestrian equipment are fairly well represented in available sources: written, iconographic and archaeological. Despite

<sup>655</sup> MTB, year 1409, p. 385.

<sup>656</sup> MTB, year 1409, p. 588.

<sup>657</sup> AMH, year 1410, p. 10.

<sup>658</sup> *Das Marienburger Konventsbuch der Jahre 1399-1412*, ed. W. Ziesemer, Danzig 1913, p. 232.

<sup>659</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich ...*, p. 129.

<sup>660</sup> *Ibidem*, o. 128.

<sup>661</sup> GAB, pp. 109, 189, 344.

<sup>662</sup> A. Nowakowski, *Arsenady II*, p. 57.

<sup>663</sup> GAB, pp. 120-121.

<sup>664</sup> W. Boehem, *o.c.*, p. 559, Fig. 647.

<sup>665</sup> MTB, pp. 504, 586.

<sup>666</sup> *Statuten*, p. 148.

<sup>667</sup> *Statuten*, p. 150.

this, little can be said about the appearance of the harness and its element. On the other hand, much can be deduced about its construction, occasionally about its ornament, and also about prices, which show that equestrian equipment was considerably differentiated.

The saddle is an essential part of horse harness. In the period in question field and ordinary saddles were in use. According to pictorial evidence (Fig. 41) and West European parallels, the knightly late medieval saddle was used by lancers. The basic part of the saddle is the saddle-tree composed of two transverse boards. A high front saddle-bow, often covered with plates, protected the knight's abdomen, and the rear bow gave him a firm support, particularly useful to him at the moment of thrusting the lance. The rider was thus deeply seated, with his legs straight and supported on stirrups suspended from long stirrup leather. If in the 13th century the rider's legs were turned forwards, in the 15th century they were turned downwards and sideways<sup>668</sup>.

The terms found in written sources to describe the saddle used in battles include *streitsetel*, *rittersetel*, *stechsettel*, *hengistesetel* and *conventssetil*<sup>669</sup>. The inventories of the castle saddle-workshops show that the frames of these saddles, the *streytbouwme*<sup>670</sup>, were made of birch-tree, sometimes covered with birch bark to prevent them from getting wet: 2 *schog satelboume gedakt mit taver*<sup>671</sup>. The saddle-trees of field saddles were 2 1/2 times more expensive than those of the ordinary saddles<sup>672</sup>. The saddle-tree was usually covered with cattle-hide<sup>673</sup>, sometimes dyed: *item 7 sol. vor eyne grune hut czu des groskompthurs strytsatelen*<sup>674</sup>.

Stirrups were suspended from the saddle by means of stirrup leather. Owing to them, it was easier to mount and to control the horse; moreover, they gave support for the feet of the rider when he rose in the saddle to strike a powerful blow. Stirrups, called *stegerexfen* in written sources, were made of iron, and sometimes were tin- or brass-plaited, as is shown by the record: *item 4 sol. vor czwey par stegerexffe obir zu czinnen*<sup>675</sup>, and *1 m. ane 18 den. vor 3 par messingis stegerexfen*<sup>676</sup>.

The finds from Plemięta provide information on the appearance and construction of stirrups. The ruins of the motte have yielded 9 stirrups<sup>677</sup> representing

<sup>668</sup> H. Müller-Hickler, *Sitz und Sattel im Laufe der Jahrhunderte*, Berlin 1923-1925, pp. 9-11.

<sup>669</sup> MAB, pp. 2, 37, 6.

<sup>670</sup> AMH, p. 89ff.

<sup>671</sup> GAB, year 1402, p. 7.

<sup>672</sup> W. Świętosławski, *o.c.*, p. 654.

<sup>673</sup> *Ibidem*, p. 655.

<sup>674</sup> AMH, p. 2.

<sup>675</sup> AMH, p. 208.

<sup>676</sup> AMH, p. 2.

<sup>677</sup> A. Nowakowski, *Elementy rzędu końskiego ...*, pl. XV, XVI.

two types<sup>678</sup>. All have flat sticks, while the hole for stirrup leather is in the upper part of the bow. They differ, however, in the shape of the bow, either circular, or near-triangular or oval (Fig. 19). Prussia has yielded several other stirrups, e.g. from the castle at Mała Nieszawka. The stirrup, dated to the first half of the 15th century, has a diagonally profiled stick and a cross-piece for coiling the stirrup leather<sup>679</sup>. Mentions should also be made about stirrups called *conventstegereyfen*<sup>680</sup>, probably used in the field by members of the convent, and about those used by lancers and called *stegereyfen czu strytsateln*<sup>681</sup>. Unfortunately, nothing is known about their construction.

The saddle was put over the shabrack called *gewand under satil*<sup>682</sup> made of felt or another thick fabric, perhaps from several layers of linen: *item 10 sc. 1 sol vor rot filcz of dy satel* or *item 7 fird, vor 70 elen lywant czu setelen*<sup>683</sup>.

The saddle was fastened to the horseback by means of straps, such as peytral, crupper and girth, this being indicated by such references as *item 1 fird. zum vorboge und afterboge*<sup>684</sup> and *item 3 m. vor rittersatel und 3 afterreyfen*<sup>685</sup>.

The bridle consisted of headgear and bit, reins and straps or a chain for tying the horse. The headgear is called *zom* or *zowm*. Occasionally its straps were decorated with mounts of bronze, copper or brass. This is revealed by such records as *item 10 sc.8 czome inczuneen* or *item 22 scot vor 2 messingis zoume*<sup>686</sup>.

The bit called *gebis* was the most popular in Prussia. Archaeological finds, including those from Plemięta, indicate that bits were of iron, with rings instead of cheeks<sup>687</sup>, while the section put into the horse's mouth consisted of two parts (Fig. 20). In all probability curb-bits were used for battle-horses. This is suggested by the mention: *item 2 breketome und 2 slichte tome 15 sc. in dy reyse*<sup>688</sup>. This record seems to confirm the custom prevailing in West European countries, of putting into the horse's mouth a set consisting of a curb-bit (*breketome*) and bit (*slichte tome*). The term *konventgebis*<sup>689</sup> might also denote the curb-bit.

Leather reins are called *halsen* and *halfertogel*. Occasionally they were made of a chain with figure-of-eight links<sup>690</sup>. The strap for tying the horse is called *rosstrenge* or *strycken*<sup>691</sup>.

<sup>678</sup> They represent types IV and V after W. Ś w i ę t o s ł a w s k i, *Strzemiona średniowieczne z ziem Polski*, Łódź 1990, catalogue nos 108-110, 117-118, 141-144.

<sup>679</sup> Type VI after W. Ś w i ę t o s ł a w s k i, *Strzemiona ...*, catalogue no 159.

<sup>680</sup> *AMH*, p. 2.

<sup>681</sup> *AMH*, p. 134.

<sup>682</sup> *AMH*, p. 326.

<sup>683</sup> *AMH*, p. 1.

<sup>684</sup> *MTB*, year 1408, p. 504.

<sup>685</sup> *MTB*, year 1408, p. 489.

<sup>686</sup> *AMH*, pp. 1-2.

<sup>687</sup> A. N o w a k o w s k i, *Elementy rzędu końskiego ...*, p. 142.

<sup>688</sup> *NKRSME*, pt. I, no 206.

<sup>689</sup> *MTB*, year 1408, p. 363.

<sup>690</sup> A. N o w a k o w s k i, *Elementy rzędu końskiego ...*, p. 131, pl. XIV.

<sup>691</sup> W. Ś w i ę t o s ł a w s k i, *Zamkowe siodlarnie ...*, p. 659.

As mentioned above, the saddle and other parts of the harness were kept in saddle-workshops attached to castles. A record listing saddles at Marienburg is of considerable interest. In 1386 there were 53 saddles, in 1387 - 304, in 1388 - 427, in 1398 - 272, in 1402 - 298, in 1408 - 480, in 1411 - 120, in 1414 - 227, and in 1437 - 225<sup>692</sup>. The number of saddles diminished strikingly after the Grunwald campaign, totalling only 1/4 of the stores before the Great War.

Spurs, the typical knightly attribute of the Middle Ages, are mentioned in written records, depicted in iconographic material, and represented by original finds. In Prussia, as all over Europe, the rowel spurs had been in use since the end of the 13th century. The rowel was first fitted to a short shank, which tended to get longer since the mid-14th century. Spurs datable to the first half of the 15th century have been discovered in the Toruń castle (Fig. 21) and at Plemięta. Parallel specimens can be seen on the frescoes at Juditten (Figs. 50-54).

The Order's Statutes forbade to wear decorated spurs: *Unde das brudere sporne sint slecht an rincken unde senckelen un rade noch der alden gewonheit*<sup>693</sup>. That the rules were broken is shown by the mention: *item 2 m ... goltsmede vor 2 par sporn, die der meister von im koufte*<sup>694</sup>. The Grand Master, Ulrich von Jungingen, himself broke the rules. Characteristically, the spurs were bought from a goldsmith for a considerable sum: 1 mark for a pair. It is worthwhile to add that ordinary spurs were worth from 2 to 3 scotten.

<sup>692</sup> *Ibidem*, table 2.

<sup>693</sup> F.A. V o s s b e r g, *Geschichte ...*, p. 13.

<sup>694</sup> *MTB*, year 1399, p. 14.

## ARMS AND ARMOUR IN TEUTONIC PRUSSIA AND IN ADJACENT COUNTRIES

The arms and armour used by Teutonic troops and discussed in preceding chapters should now be compared with those used by the armies of other countries, notably those neighbouring with the Order's State. As a result, it will be possible to assess properly the Teutonic weapons and to find out whether their development followed the same lines as those in Central Europe or whether their history was different.

It is difficult to compare Teutonic weapons with those of Lithuania and Old Russia. The fact that studies on Lithuanian arms and armour are practically non-existent is due to the lack of original military objects and of iconographic material, while the surviving records on this subject are of alien origin, and are regarded as biased and based on poor knowledge of Lithuanian realities.

Nevertheless, it seems feasible to assume that Lithuanian arms and armour were more similar to those from Eastern Europe than to the West European examples, particularly since the second half of the 14th century when the territorial expansion of the Lithuanian State was mostly directed against Old Russia, while the influence of the Old Russian culture affected the territories on the rivers Neman and Nevazha<sup>695</sup>.

In those years the East European military forces underwent fundamental changes. Fighting with the Golden Horde, the rulers of the Old Russian principalities, if they wanted combat to be effective, had to adopt Mongolian and Tartarian military models. Certain traditionally national elements of arms and armour were preserved, yet Western elements, quite prominent in the pre-Mongolian period,

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<sup>695</sup> A. Nowakowski, *Wojownicy pod Grunwaldem*, Warszawa 1988, p. 5.



such as Rhenish swords, battle-axes made on Scandinavian models, or high knightly saddles<sup>696</sup> were discarded. The troops of Eastern states differed distinctly from the chivalrous armies of Latin Europe. They did not use great helmets, large and heavy shields, crossbows and full plate armour, so characteristic of the Western world. Their absence was due not to the lack of skill of the local craftsmen but to the inadequacy of heavy and stiff weapons in the areas of military activity of the Eastern peoples, where manoeuvrability of troops and the speed of assault or retreat were vital. For this reason, bows, sabres and mail hauberks were far more useful than crossbows, swords or plate armour.

Therefore we cannot speak about the superiority of West European weapons over those of the nomadic people, when only the amount of iron used in their production is taken into account. Lighter arms do not automatically mean inferior arms. This was found out by the nomadic Magyars who, settling on the conquered Pannonian Plain, not only changed their political system and way of life but also discarded their light arms. When in the 13th century they had to repulse Mongolian invasions, they pitted the Western arms against the Asiatic arms and tactics, with disastrous results.

Thus, a direct comparison of the Teutonic arms is possible only with the Polish ones, which had close links with the West both in the Early and in the Late Middle Ages. These links became stronger through changes in the organization and structure of the Polish armed forces, which led to the replacement of the princely warband by knightly levy in mass. This led not only to the adoption of Western tactics but also to the spread of weapons typical of the knighthood of Latin Europe<sup>697</sup>.

According to the historians of arms and armour, two great provinces of war industry, whose products differed in construction and style, existed in Western Europe. Poland had closer contacts with the North-Eastern province which comprised Scandinavia, Germany and Bohemia as well<sup>698</sup>. Moreover, this province included territories ruled by the Teutonic Order, if only on account of the Polish or German origin of most knights (the participation of the Prussian element diminished in the course of time).

There is consensus of opinion that military equipment used by Polish knights is characteristic and typical of the period in question, being neither better nor worse than that used by warriors of most European countries<sup>699</sup>. These remarks are made not without reason, as the Polish arms and armour are to provide a model by which the qualities of the Teutonic arms can be properly assessed. Only on the basis of such comparison we shall be able to decide whether in their

combat with the "Ordensherren" Poles had inferior equipment at their disposal and whether their military successes were due — as has been maintained by some German and Polish historians both in the past and today — only to their overwhelming numerical superiority, which neutralized the superior military drill and equipment of the Teutonic troops<sup>700</sup>.

Let us now turn to comparisons. As stated above, in the 13th century the Teutonic troops wore open near-conical helmets. Similar headpieces were also worn in Poland<sup>701</sup>. These were helmets with a nasal or not, and frequently with a mail aventail. Great helmets, quite frequent in Prussia since the close of the 13th century, were also fairly popular in Poland, and were very similar to the West European examples. On the other hand, Polish warriors did not wear "prusche helme", and this is the only difference observable in the early headpieces worn in Prussia nad Poland. In the 13th century kettle-hats, very common in later years, were used by troops of the two countries, both by foot warriors and riders. Nor did Polish and Teutonic armours, worn in 13th and the first part of the 14th century, differ in typology or construction. Down to 1350 these included mail hauberks, armour of lames and coats of plates. At that time armours of these types were worn all over Europe<sup>702</sup>. In Poland, as in Prussia, coats of plates were worn over mail hauberks, and occasionally were covered with a long sleeveless gown that protected against dust or sun. The difference between a Polish and a Teutonic knight consisted therein that the latter had a black cross sewn on the garment instead of a heraldic device. Everything seems to indicate that both in Poland and Prussia metal body defences were worn by the same categories of warriors. In the 13th century they were commanders of units, though certain members of the unit might have worn them too. Foot warriors rarely wore armour. It would be difficult to distinguish the 13th-century Polish warriors from the Teutonic ones on the basis of shields, though the task would be easier than in the case of helmets and armour. Traditional knightly triangular shields were usually carried in Prussia, especially by the Teutonic Knights and by landowners. Poles used similar shields. Yet with the exception of the Masovian warriors, the Polish knights did not carry small pavises, which were of Baltic origin and which were called "Prussian" or "Lithuanian". The essential difference between the defensive arms of the Teutonic troops and the Polish knights consisted just in this shield so non-typical of the West European arms of the 13th century. It is true that small pavises were in use in Masovia, yet this can be explained by its proximity to Prussia, Yatvingia and Lithuania<sup>703</sup>.

In the 13th century swords were the weapon of knightly cavalry both in Prus-

<sup>696</sup> A.N. Kirpičnikov, *Russische Waffen des 9. - 15. Jahrhunderts*, "Waffen- und Kostümkunde", XXVII, 1986, pp. 1-22.

<sup>697</sup> A. Nadolski, [in:] *Broń średniowieczna .... Katalog*, Łódź 1978, p. 14.

<sup>698</sup> Ibidem.

<sup>699</sup> A. Nowakowski, *Uzbrojenie średniowieczne ....*, pp. 115-122.

<sup>700</sup> The literature is quoted by A. Nowakowski, *Uzbrojenie wojsk krzyżackich ....*, p. 16; A. Nadolski, *Die Forschungen ....*, pp. 51-52.

<sup>701</sup> A. Nowakowski, *Uzbrojenie ochronne ....*, pp. 82-87.

<sup>702</sup> Ibidem, pp. 94-96.

<sup>703</sup> Ibidem, pp. 94-96.

sia and Poland. There was no difference, either, as far as their types were concerned. "Great swords" were dominant throughout Central Europe and in Germany and Scandinavia as well<sup>704</sup>. Also identical was the staff weapon: spears and lances, used in combat by the respective troops, though spears seem to have been used more frequently by the Teutonic troops, notably the cavalry. This is due to the fact that many Teutonic subjects served *cum armis pruthenicalibus* which included a light spear<sup>705</sup>. Both in Poland and Prussia the crossbow played a more important role than the bow, especially in regular units. Crossbows with a stirrup, spanned by the muscular force of the crossbowman, were then in use.

Horse harness and equestrian equipment, used in Poland in the 13th century, were very similar to those popular among Teutonic troops. The knights rode in high saddles, covered their horses with housings, and controlled them by means of a bridle consisting of headgear, bit and reins.

These comparisons show a close similarity of arms used in the field by warriors of the two armies. The differences consist in details of no practical significance. Yet it should be stressed that in the 13th and the first half of the 14th century any standardization of arms and armour on a nation-wide scale was out of the question. All over Europe, medieval troops used weapons of different kinds, and warriors of particular armies were either well or poorly armed and equipped (Fig. 63). It would be wrong to speak about the superiority of the Teutonic arms over the Polish ones, since their development followed the same lines<sup>706</sup>.

Let us now turn to the early 15th century when the power of the Teutonic Order reached its zenith. This period is marked by essential changes in the Western and Central European arms and armour.

At that time conical helmets and great helms gave way to basnets and to an early version of the basnet with visor. They became popular among Polish and Teutonic troops at the same time<sup>707</sup>. The basnet won general approval in both countries. It is interesting to note that helmets of this kind were worn even by the highest dignitaries<sup>708</sup>. Basnets with a convex visor or "pig-faced" types were worn by outstanding knights of Prussia and Poland. In the Order's State some warriors covered their heads with helmets of a shape unknown in other European countries. These were the *pekilhuben* whose skull was of oriental origin and the visor of the West European type. They are the only helmets that cannot be included into the set of headpieces typical of Latin Europe<sup>709</sup>. The armour worn by Teutonic and Polish warriors was identical in the period in question. The full

<sup>704</sup> M. Głosek, A. Nadolski, o.c., pp. 26-29.

<sup>705</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., p. 145; idem, *O wojskach* ..., p. 170.

<sup>706</sup> A. Nowakowski, *O wojskach* ..., p. 180.

<sup>707</sup> A. Nowakowski, *Uzbrojenie ochronne* ..., pp. 43-52.

<sup>708</sup> J. Danka, A. Nowakowski, o.c., p. 25.

<sup>709</sup> A. Nowakowski, *Uzbrojenie wojsk krzyżackich* ..., pp. 73-75.

plate armour appeared in Prussia and Poland at the same time, i.e. in the last quarter of the 14th century. The ratio between the owners of full armour made of iron plates and those less heavily armed was similar in both armies. However, we should remember that in the early 15th century and in the later periods as well the members of all knightly armies of Western and Central Europe wore armour of both earlier and later type. The latter were gradually introduced, since a knight of medium wealth could not afford to discard at once a still usable, though not the latest, armour. Nor were there any essential differences in shields. Nevertheless we should stress that the small pavises of Baltic origin were more popular among the Teutonic troops. They were carried even by the highest dignitaries including the Grand Master.

The sources show that the same types of swords were widespread in Poland and Prussia<sup>710</sup>, and the universal types continued to dominate. Swords did not have any specific characteristics and though sword-makers were active in both countries, the swords they made conformed to all European canons. The staff weapon used in combat in Poland and in the Order's State did not differ from that used in earlier periods. That the Teutonic cavalry was not so very West European in character as has been assumed until now is shown by the presence in its ranks of warriors armed with the Lithuanian *sulice*, a kind of staff weapon unknown outside Lithuania and Old Russia.

In the early 15th century artillery was not yet as important as several decades later. The Teutonic Knights used cannons in the battle of Grunwald with poor effect. Also Polish troops had artillery, and cannon balls were intentionally dispersed to mislead Teutonic troops and to convince them about the ostensible flight of the Poles from their camps on the river Drwęca.

Horse armour, which according to some historians covered the enormous battle stallions of the Teutonic Knights and of western "hospices" with iron, was as rare in the Teutonic army as in the Polish one<sup>711</sup>.

The comparison of the Polish and Teutonic arms distinctly shows that there were practically no differences between the weapons used at Grunwald by warriors gathered under the Order's banners and those used by the units commanded by Władysław Jagiełło (Figs. 65-66). Apart from the arguments advanced in the preceding chapters of this study, the evidence for the lack of any differences in the arms of the two sides fighting at Grunwald on 15 July 1410 is to be found in the *Chronica conflictus*. We read there that the Polish monarch ordered his knights to wind straw bands round their armour in order to distinguish them from the enemy<sup>712</sup>. Would the order be given if there was no similarity in the arms of the Polish and the Teutonic warriors? The Teutonic Knights could be recognized without difficulty by the crosses on their mantles and shields. The remaining

<sup>710</sup> M. Głosek, *Broń biała*, [in:] *Uzbrojenie w Polsce* ..., pp. 112-118.

<sup>711</sup> A. Nowakowski, *O wojskach* ..., p. 158.

<sup>712</sup> *Cronica Conflictus*, p. 22.

warriors used the same arms as the Poles, and therefore in the tumult of battle it was easy to be mistaken as to the identity of a warrior. An error of this kind was barely avoided in the King's retinue when the Teutonic reserve units were at first mistaken for the Lithuanians thought to be rejoining the battle.

In the battle of Grunwald it was not possible to distinguish the fighting troops by arms alone. Apart from the signs on banners and the white surcoats with crosses worn by the Teutonic Knights, there were no noticeable differences. In the battle turmoil the long chivalrous lances were being broken on both sides. Blows were delivered with long *sulice* not only by the troops of the Grand Duke of Lithuania, Witold, but also by quite a number of the Teutonic Knights. Baltic small pavises served as protection against blows not only in the Lithuanian and Old Russian troops but also among the would-be representatives of the Western European chivalrous culture — the Teutonic Knights. The "pekilhube" was worn both by the warriors fighting under the banners of the Order and by their Lithuanian and Samogitian opponents.

Because of the scarcity of relevant sources, only a general comparison can be made between the military equipment of the Teutonic and Polish troops in the period of the decline of the Order's State in Prussia.

Though the Polish knights, even the most outstanding ones, wore sallets instead of armets, so common in Prussia, defensive arms were similar in both armies. Kettle-hats were popular both in Prussia and Poland, especially among foot warriors and municipal units. Nor were there any basic differences in body and limb defences, as West European models were dominant<sup>713</sup> both in the Order's State and in the Jagiellonian Monarchy.

However, the history of side arms presents a different picture. Swords continued to be dominant among the Teutonic Knights, whereas in Poland the sabre, which was lighter, more handy and equally effective, was gaining popularity since the early 16th century. The sabre, which was of oriental origin, reached Poland through Hungary, and in the period in question was mostly used by lightly armed cavalry and infantry. The sabre is one element of the progressing orientalization of the arms and armour in Poland, though in the early 15th century they were still mainly West European in character<sup>714</sup>. Other kinds of weapons carried in both countries did not differ (Fig. 67), though Prussian infantry seems to have used staff weapon more often than the Polish foot warriors. Also hand firearms played a similar role in both countries. Matlocks and hook-guns ousted almost completely the once popular crossbows.

So far, the military equipment of ordinary warriors, thus typical and mass produced, has been compared. Now an attempt shall be made to assess the military equipment of the highest dignitaries. This is possible only in the case of

<sup>713</sup> A. Nowakowski, *O wojskach ...*, pp. 161-162; Z. Żygulski, *Broń w dawnej Polsce ...*, p. 112.

<sup>714</sup> A. Nadolski, *Broń średniowieczna ...*, p. 22.

King Władysław Jagiełło and the Grand Master Ulrich von Jungingen, the leaders of the armies that met at Grunwald on 15th July 1410. Both the King and the Grand Master were not only statesmen and politicians but also commanders and practitioners of military activity. This attempt is possible thanks to the survival of relevant sources, mostly bills for the purchase and repair of the weapons of both the King and the Grand Master<sup>715</sup>.

King Władysław Jagiełło had several helmets, including basnets with mail aventail and with inside lining: *item pro szlom et geynk et pro ornatu dicto fassowane II I/marc*<sup>716</sup>, and also basnets with visor, of very high quality since the mail aventail alone was worth 1 mark: *item pro appendio dicto gehyнк ad calep-tram dno Regi ... I marc*<sup>717</sup>. Ulrich von Jungingen, too, wore a basnet with visor: *item 10 sc ... vor 4 elen zeter unseres homeysters hube*<sup>718</sup>.

Only mail hauberks worn by the King and the Grand Master are mentioned in sources. Ulrich von Jungingen had his hauberks brought from Nürnberg paying an enormous sum of over 12 marks for one example: *item 49 ung golden vor 3 panzer, dy Cunrad Swobe unserm homeyster koufte, als der borkgrofe von Noren-berg hy was*<sup>719</sup>. Also Władysław Jagiełło had several hauberks<sup>720</sup>. There is no doubt whatsoever that both possessed full plate armour of the highest quality, as the relation of Jan Długosz about the battle of Grunwald shows. That Ulrich von Jungingen took one or perhaps more mail hauberks to this battle is shown by a note of 24th June 1410 which tells us about providing the Grand Master with *I fird. von unsert homeysters rinkenarnasch czu fegen off dy reyse*<sup>721</sup>.

Władysław Jagiełło had at least three swords and a belt with silver mounts, which served for coiling around the scabbard and which in 1394 was repaired by a silversmith who mended: *fernusze et naconcze ad cingulum gladialem dni Regis*<sup>722</sup>. Ulrich von Jungingen, too, had several swords at his disposal, of which at least one had a rich silver mount<sup>723</sup>. Spears were kept in private armouries both of the King and the Grand Master. It is interesting to note that sources tell us only about spear-casings: *pro futris de cutte ad lanceas dni Regis XX sc*<sup>724</sup> and *item 12 sol. vor 4 speer und glefenyefuter zu machen unserm homeyster*<sup>725</sup>. Such

<sup>715</sup> The analysis of sources used in the reconstruction of the personal weapon of Władysław Jagiełło and Ulrich von Jungingen was carried out by J. Danka, A. Nowakowski, *o.c.*, pp. 24-25.

<sup>716</sup> *Rationes curiae Vladislai Jagellonis et Hedvigis regum Poloniae*, [in:] *Monumenta Poloniae Historica*, XV, Kraków 1869, p. 176 [further cited RC].

<sup>717</sup> RC, p. 156.

<sup>718</sup> MTB, p. 572.

<sup>719</sup> MTB, p. 586.

<sup>720</sup> RC, pp. 167, 200.

<sup>721</sup> AMH, p. 5.

<sup>722</sup> RC, p. 219.

<sup>723</sup> MTB, p. 484.

<sup>724</sup> RC, p. 170.

<sup>725</sup> MTB, p. 546.

casings do not appear in pictorial representations nor have any examples survived. Both the Polish King and the Grand Master had several crossbows each<sup>726</sup>. These were probably hunting specimens, as it is difficult to imagine that knights of such calibre would use such a plebeian weapon in combat.

The sources do not tell us about the harness for the Grand Master's horses, yet there is no doubt that they were of the highest quality. Władysław Jagiełło had at least a dozen specimens in his stable. Some had decorative bosses as well as silver and gilt plaquettes, which sometimes required mending *pro paracione attinenciarum ad sellam dni Regis de argento deauratum*<sup>727</sup>. In addition to ordinary stirrups, the King had also parade stirrups, which in 1393 were repaired by a goldsmith who received 3 marks<sup>728</sup> for *paracione strepparum duplicium argenteorum deauratur*. Ulrich von Jungingen covered his battle horses with plate armour with silver-painted ornaments<sup>729</sup>. In all probability, the King's horses were also covered with armour.

These data concerning the arms of the King and the Grand Master indicate that on the battlefield both appeared in splendid helmets and armour and rode the best horses. Yet no basic differences are observable in their equipment, while some elements are strikingly similar. As follows from sources, they were typical representatives of the highest social strata of the Middle Ages<sup>730</sup>.

Time has come to sum up our considerations on the arms and armour used in Prussia under the Order's rule. We seem not to be mistaken in thinking that this equipment was typical of Western and Central Europe in the medieval period (Figs. 63-67), being neither better nor worse than that used, for instance, by the Poles. Considering the wars and battles waged by the Teutonic Order, we should bear in mind that there never was, nor could be, a uniform equipment in the Teutonic troops, which after all consisted of both rich and poor people, of gentry, burghers and peasants, who had to turn up armed when summoned by the Teutonic authorities. They were equipped with their own weapons, which they kept at home and which not always was the most modern or of the highest quality.

The Teutonic troops were multilingual comprising as they did not only the Teutonic Knights and their respective units, but often also "hospites" from the West: Englishmen, Frenchmen, knights from Netherlands, Bohemia and numerous German lands. Moreover, they included the Prussians and the Teutonic subjects of Polish origin from the Chełmno Land or Gdańsk Pomerania. They wielded various arms, occasionally made in distant centres and showing local style. It would be wrong to underestimate the quality of these weapons, yet it would be equally wrong to regard them as superior in quality to those used by the Slavonic or Baltic opponents of the Order.

<sup>726</sup> J. Danka, A. Nowakowski, *o.c.*, pp. 29-30.

<sup>727</sup> *RC*, p. 219.

<sup>728</sup> *RC*, p. 165.

<sup>729</sup> *MTB*, p. 588.

<sup>730</sup> J. Danka, A. Nowakowski, *o.c.*, p. 33.

## UZBROJENIE WOJSK ZAKONU KRZYŻACKIEGO W PRUSACH

Literatura europejska poświęcona średniowiecznym zakonom rycerskim jest obfita i różnorodna. Wiele uwagi poświęcili badacze również dziejom zakonu krzyżackiego.

Do niedawna historia wojskowa krzyżaków poznana była nierównomiernie. Najlepiej zbadano dzieje wojen, daleko posunęła się znajomość architektury obronnej, podobnie jak struktury sił zbrojnych zakonu czy roli oddziałów zaciężnych. Natomiast poważne studia nad uzbrojeniem wojsk krzyżackich podjęto dopiero przed kilkunastu laty. Dawna literatura cechowała się okcydentalizmem poglądów. Uważano, że uzbrojenie zakonnych rycerzy górowało jakością i nowoczesnością nad orężem ich słowiańskich czy bałtyjskich rywali.

W książce tej autor omawia uzbrojenie wojsk krzyżackich w Prusach, czyli oręż wszystkich oddziałów pozostających w stałej dyspozycji zakonu, a więc braci-rycerzy, innych członków załóg zamkowych, miejscowych feudałów zobowiązanych do służby wojskowej oraz mieszczan i chłopów. Ramy chronologiczne rozważań obejmują lata od pojawienia się pierwszych zakonników w ziemi chełmińskiej (1226 r.) aż do sekularyzacji zakonu (1525 r.). Autor rekonstruuje rodzaje broni i oporządzenia, z pominięciem machin oblężniczych oraz artylerii ogniowej i uzbrojenia okrętów. Analizie poddano wszystkie kategorie źródeł: autentyczne militaria, przekazy pisane oraz wyobrażenia ikonograficzne. Tylko bowiem kompleksowe wykorzystanie źródeł umożliwia wszechstronną informację o badanym orężu i wielostronną jego ocenę.

Źródła pisane najcenniejsze dla studiów bronioznawczych to przekazy informujące bezpośrednio o orężu, bez fabularyzacji. Są to: księgi rachunkowe, spisy wydatków, lustracje arsenałów, księgi miejskie, niektóre dokumenty nadawcze. Dużo mniejszą przydatność mają źródła narracyjne — kroniki i roczniki, w których opis militariów bywa częstokroć schematyczny.

Do najważniejszych wśród interesujących na źródła pisanych zaliczamy *Das Marienburger Tresslerbuch der Jahre 1399-1409*, *Das Ausgabebuch des Marienburger Hauskomturs für die Jahre 1410-1420*, *Das Grosse Ämterbuch des Deutschen Ordens*, *Das Marienburger Ämterbuch*, statuty zakonne, rachunki wielkich szafarzy, miejską księgę Starego Miasta Elbląga, wykazy wydatków wojennych miast pruskich. Spośród źródeł narracyjnych istotne dla nas są kroniki Wiganda z Marburga i *Annales* Jana Długosza. Inne dzieła kronikarskie zawierają bardzo mało informacji o orężu.

Spośród wyobrażeń ikonograficznych najbardziej interesują nas dzieła przedstawiające oręż w rękach wojowników krzyżackich. Są to zabytki rzeźby (także architektonicznej), malarstwo ściennie i tablicowe oraz numizmaty i pieczęcie. Bardzo cenne są wyobrażenia batalistyczne — np. walka krzyżaków z Prusami z głowicy kolumny na zamku w Malborku, niektóre miniatury z tzw. *Apokalipsy krzyżackiej*, oraz *Oblężenie Malborka* z dawnego gdańskiego Dworu Artusa czy drzeworyty z kronik Diepolda Schillinga. Analizowane będą także płyty nagrobne, polichromie ściennie z Królewca, Judyt i Lochstedt, fragmenty ołtarzy z Gdańska, niektóre monety oraz pieczęcie miast i dostojników zakonnych.

Najważniejszą kategorią źródeł są jednak autentyczne militaria. Ilość zabytków uzbrojenia znacząco wzrosła ostatnimi laty w efekcie badań archeologicznych, zwłaszcza na tak zwanych grodziskach stożkowatych leżących w ziemi chełmińskiej. Szczególnie ważne okazały się odkrycia zespołów uzbrojenia w Plemiętach oraz w Słoszewach, a także w ruinach niektórych zamków — np. w Małej Nieszawce. Zabytki uzbrojenia należące niegdyś do wojowników krzyżackich znajdują się w kilku muzeach polskich i zagranicznych — tarcza Karola z Trewiru, kirys Albrechta Hohenzollerna, pawężę piechoty, kilka hełmów oraz mieczów.

W krzyżackich Prusach noszono rozmaite rodzaje uzbrojenia ochronnego. Zjawisko to jest typowe dla całej Europy łacińskiej.

W XIII w. przeważały hełmy otwarte, zbliżone kształtem do stożka lub półkuli (*storchhelm*, *spiczgehelm*). Noszono je także w XIV w. Bardzo interesującą odmianą takich ochron głowy są *prusche helme* o orientalnej konstrukcji, będące wynalazkiem bałtyjskim. Hełmy garnczkowate cieszyły się w Prusach pewnym powodzeniem i wyszły z bojowego użycia pod koniec XIV w. Przez cały interesujący nas okres używano kapalinów (*isenhut*), nader popularnych w średniowieczu w Europie łacińskiej. Wolno sądzić, że ze względu na znaczne walory bojowe oraz niską cenę były one w wojskach krzyżackich najpospolitsze i nosiła je zarówno rycerska jazda, jak i piechota. Znajdowały się niemal we wszystkich arsenałach zamkowych aż do początku XVI w. Dwa kapaliny odkryto w Plemiętach. Łebka (*hube*), powstała w wyniku ewolucji hełmu stożkowatego, rozpowszechniła się od 2. połowy XIV w. wśród rycerstwa europejskiego. Ze względu na duże walory łebka rychło stała się przeważającą na polach bitew odmianą hełmu. Podobnie było w krzyżackich Prusach. Łebki nosili nawet najwybitniejsi krzyżacy — poświadczają to freski z Lochstedt. Przyłbice pojawiły się w Europie

w XIV w. w efekcie dodania łebce ruchomej zastony chroniącej twarz. W naszych źródłach mamy informacje o wszystkich znanych rodzajach przyłbic. W Olsztynie odkryto datowaną na lata 1370-1380 przyłbicę z zastoną klapową. Z Torunia pochodzi przyłbica o cylindrycznej dolnej części dzwonu i kończącym szczycie. Hełm ten jest bałtyjskiego pochodzenia; zwany był *pekilhube* lub *prewsche hube* i nie występuje poza Prusami. Dowodzi to, że wśród krzyżaków noszono wschodniego typu hełmy. W 2. połowie XIV w. pojawiły się w Prusach przyłbice "psi pysk", zwane tak od kształtu zastony. Nie wykluczone, że w XV i na początku XVI w. wojownicy zakonni znali przyłbicę "armet" i salady. Te ostatnie były powszechne w Polsce. Ochroną głowy noszoną zamiast hełmu były kaptury kolecze (*hundiskogil*). Kapturów używano jeszcze na początku XVI w.

Widać więc, że w latach 1230-1525 używano w wojskach krzyżackich rozmaitych ochron głowy — nowoczesnych i nie najnowszych. W XIV i na początku XV w. popularne w Prusach były hełmy orientalnej genezy, zupełnie obce zachodniej Europie.

W średniowieczu zachodziły ogromne przemiany zbroi. Szczególnie ważne przekształcenia ich konstrukcji przypadają na 2. połowę XIV i na początek XV w.

W krzyżackich Prusach pospolite były, aż do XVI w., zbroje kolecze (*lorica*, *pancir*). Od połowy XIV w. noszono je wspólnie z różnorodnymi płytowymi ochronami tułowia. Używali ich wojownicy konni i piesi, rycerze i pachołkowie. W zakonnych siłach zbrojnych znane były także pancerze zbrojnikowe-lamelkowe i łuskowe (*bronge*, *bronye*). Dotarły one do Prus z kręgu wschodniostowiańskiego. Pod koniec XIII w. rozpowszechnił się nowy typ zbroi — płyty (*plate*), pospolite w Europie ze względu na prostotę budowy i niską cenę. O jej roli w Prusach świadczy nazwa obowiązku wojskowego — *platendienst*. Płyty przechowywano aż do połowy XV w. w większości zamków. Fragmenty takiej zbroi odkryto w Plemiętach. Zbudowana była ona z folg żelaznych nitowanych do skórzanego kaftana. Ewolucja płat doprowadziła do stworzenia kirysu płytowego mającego jednolitą płytę napierśną (*brust*, *brostblech*). Kirys uzupełniała folgowa szorca (*schurcz*), a powierzchnia blach ukryta była pod tkaniną. W Prusach kirys taki pojawił się około połowy XIV w. i używany był pospolicie do połowy XV w. Skonstruowanie kirysów rozpoczęło epokę całkowitej zbroi płytowej złożonej z wykonanych z blachy ochrony tułowia oraz ochron kończyn. Całkowity naręczak składał się z naramiennika (*armeder*), opachy (*vorstollen*), nałokicy (*el-puckel*) i zarękawia (*musysen*). Ochronę nogi tworzyły: nabiodrek (*grusener*), nakolanek (*knypockel*), nagolenica (*rore*) i trzewik (*wopenschu*). Na kirys wkładano obojczyk (*kolner*).

Całkowite zbroje płytowe nosili jedynie bracia-rycerze oraz bogaci feudałowie. Inni wojownicy mieli niepełny zestaw ochron z blachy. Około 1420 r. pojawiły się w Prusach tzw. kirysy białe (*koris*), a sto lat później kirysy folgowe zamknięte (*krebs*).

Podsumowując uwagi o zbrojach należy podkreślić, że w państwie krzyżac-

kim zachodziły typowe dla całej Europy łacińskiej procesy rozwoju ochron tulo-  
wia i kończyn. W wojskach zakonnych noszono zarówno nowoczesne, jak i nie-  
co przestarzałe zbroje. Nie było standaryzacji uzbrojenia ochronnego.

W państwie krzyżackim używano różnorodnych tarcz. W XIII i w 1. połowie  
XIV w. przeważały okazy trójkątne (*schild, scutum*). Około 1350 r. weszła w  
użycie tarcza czworokątna z wycięciem na złożenie kopii (*tartsche*) oraz pawęż-  
ka (*prusche schild*). Ten ostatni typ wywodzi się z kręgu bałtyjskiego. Pod koniec  
XV w. pojawiły się duże tarcze piechoty (*stormtarce*), używane jeszcze w XVI  
w. Od schyłku XV w. zarzucano z wolna używania tarcz jeździeckich.

Miecze odgrywały ważną rolę w uzbrojeniu wojsk krzyżackich. Z terenu Prus  
znamy kilkanaście mieczów. Należą one do typów o interregionalnym zasięgu.  
Różnorodność mieczów jest zjawiskiem typowym w Europie. Miecze służyły  
wojownikom aż do końca istnienia państwa zakonnego w Prusach. Inne rodzaje  
używanej broni białej to puginały, kordy, tasaki i niewykluczone, że pod koniec  
XV w., także szable (*schebel*).

Włócznie (*speer*) jako uniwersalna broń jeźdźca i piechura używane były w  
XIII w. Jako oręż jazdy ustąpiły w połowie XIV w. miejsca długiej kopii (*glefe-  
nye, hasta*). Niektórzy rycerze zakonnicy, dostojników nie wykluczając, używali na  
początku XV w. lekkich litewskich sulic (*sulicze*). Fakt ten jest w wyraźnej  
sprzeczności z obrazem krzyżaka jako reprezentanta najnowszej rycerskiej mody  
Zachodu.

W 2. połowie XV w. w rękach piechoty krzyżackiej pojawiły się długie piki  
(*lange spiss*), a od schyłku tego stulecia piki lancknechtowskie (*knechtspiss*).  
Używano też niektórych innych odmian broni drzewcowej — szefelinów (*schef-  
flin*), runek (*wolfeisen*) oraz halabard (*hallebarte*). Oręż ten, podobnie jak w Pol-  
sce, nie odgrywał istotnej roli na polach bitew.

Topory były w krzyżackich Prusach, tak jak w Polsce, bronią plebejską, ana-  
logicznie jak cepy czy maczugi.

W interesującym nas okresie w wojskach zakonnych używano dwóch rodza-  
jów broni strzelczej — łuków i kuszy. Łuki popularne były w XIII w., jednak  
rychło ustąpiły miejsca kuszy. Była ona najpowszechniejszym orężem zache-  
pnym. Pojawiła się w Prusach w końcu XIII i używano jej do XVI w. Najpospo-  
litsza była kusza ze strzemiączkiem (*stegereiffarmbrost*). Okazy z windą lub le-  
warem (*windearmbrost*) były używane rzadko. Na początku XV w. w zamkach  
krzyżackich przechowywano co najmniej 4167 kuszy, w tym 1496 ze strzemiącz-  
kiem. Liczby te najlepiej ilustrują wielkie znaczenie owej broni w Prusach.

Ręczna broń palna pojawiła się w wojskach zakonnych u schyłku XV w. Naj-  
starsze okazy to *lotbuchsen*. Na przełomie XV i XVI w. używano hakownic (*hoc-  
ken*) i rusznic (*handbochsen*). Strzelali z nich jedynie wojownicy piesi.

Wojownicy krzyżacy używali identycznych jak w innych krajach Europy ła-  
cińskiej rzędów końskich. Na potrzeby konwentów produkowano je w zamko-  
wych siodlarniach (*satelhus*). Siodła bojowe (*streitsattel, rittersattel*) miały wyso-  
kie łęki. Zbroje końskie były w Prusach nader rzadkie. Ladry zakładano bowiem

na konie dostojników zakonnych i najbogatszych rycerzy świeckich. Kropierza  
(*rosdecke*) używano w Prusach jedynie w XIV i na początku XV w. Przekazy  
pisane informują, że wbrew regule zakonnej, niektórzy krzyżacy zdobili wędzidła  
i strzemiona szlachetnymi metalami.

Na zakończenie autor podsumowuje rozważania o uzbrojeniu używanym w  
Prusach w latach, gdy władał tam zakon krzyżacki. Był to oręż typowy dla całej  
Europy zachodniej i środkowej. Ani lepszy, ani gorszy od używanego choćby  
przez rycerzy polskich. W armii krzyżackiej nigdy nie było, bo nie mogło być,  
jednorodności uzbrojenia. Tworzyli ją przecież ludzie zamożni i ubożsi, szlachta,  
mieszczanie i chłopci, którzy na wezwanie władz zakonnych stawali zbrojno. Za-  
bierali ze sobą własny, przechowywany w domach oręż. Nie zawsze więc był on  
najnowocześniejszy, nie zawsze też najwyższej jakości.

Działające w Prusach warsztaty zbrojeniowe produkowały broń i oporządze-  
nie typowe dla północnoeuropejskiej prowincji wytwórczości militariów. Wytwa-  
rzały też modele uzbrojenia wzorowane bądź na bałtyjskich, bądź orientalnych  
pierwowzorach.

Różnojęzyczne były krzyżackie siły zbrojne. W ich szeregach znajdowali się  
przecież nie tylko bracia-rycerze, ale wielokrotnie także “goście” z Zachodu —  
Anglicy, Francuzi, rycerze z Niderlandów, Czech i wielu krajów niemieckich.  
Służyli w nich również Prusowie i polscy poddani krzyżaków. Walczyli różnora-  
ką bronią, wykutą niekiedy bardzo daleko od Prus, noszącą piętno lokalnego sty-  
lu. Popęnilibyśmy omyłkę nie doceniając walorów tej broni, ale równym błędem  
stałoby się mniemanie o przewadze jej jakości nad orężem słowiańskich czy bał-  
tyjskich przeciwników zakonu.

**PLATES**

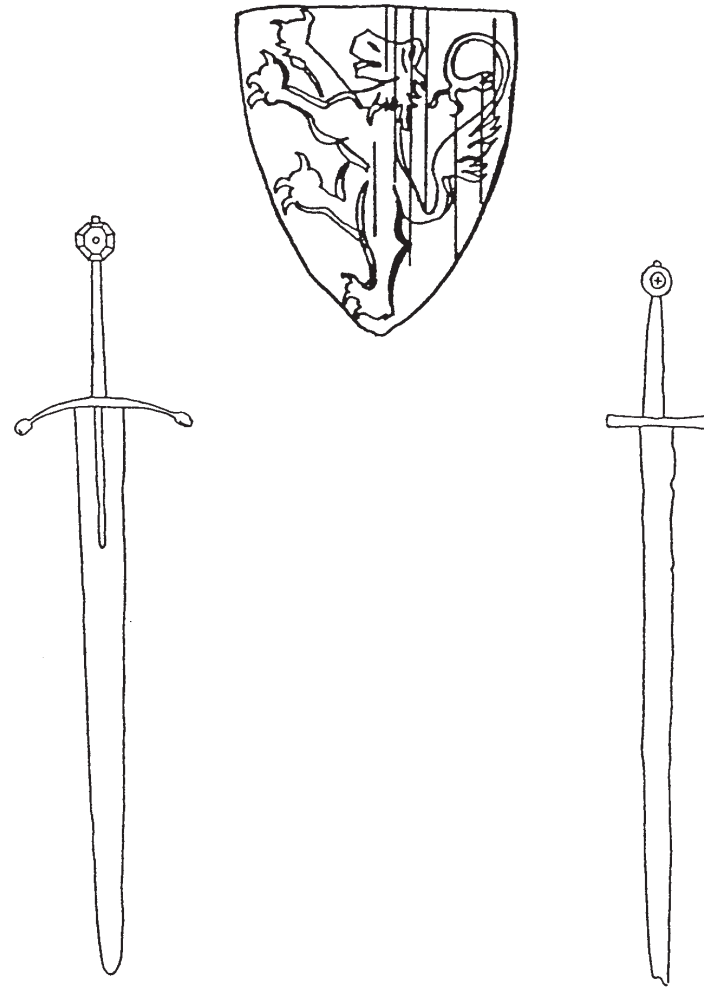


Fig. 1. Knightly triangular shield of Konrad of Thüringen (c. 1230-1240).

Fig. 2. Sword, type XIII, I, 2, end of 13th — early 14th century, Przydatki, province of Gdańsk.

Fig. 3. Sword, type XIII, I<sub>1</sub>, 11, end of 13th — early 14th century, Elbląg.



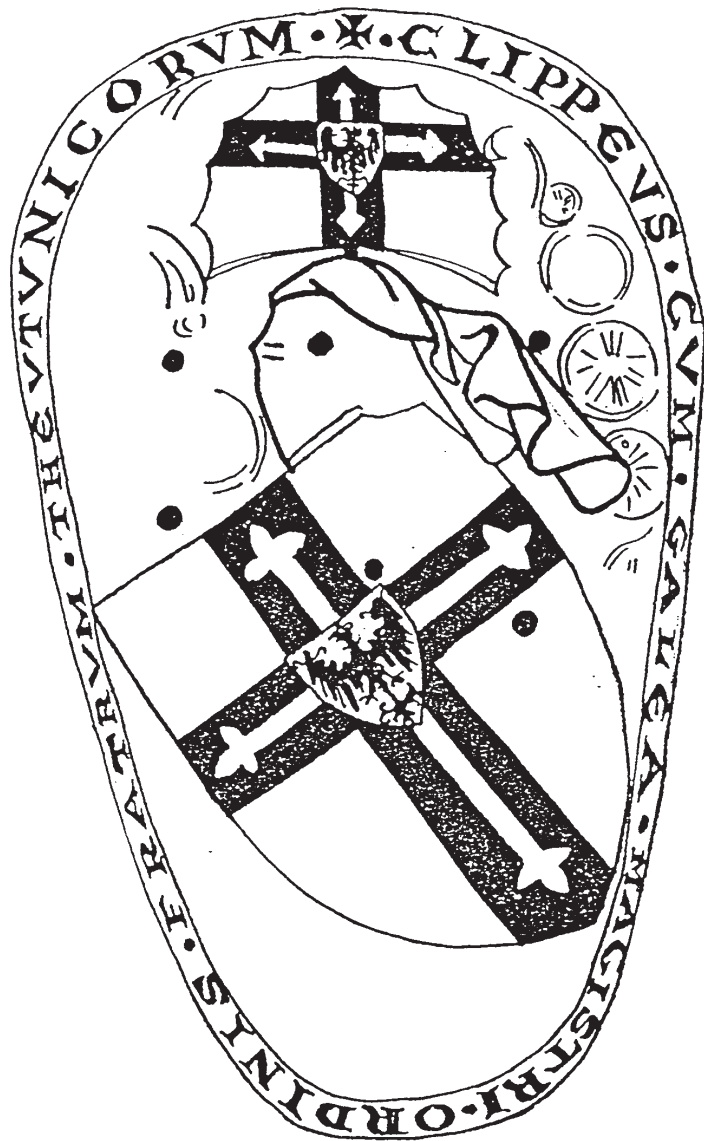


Fig. 4. Parade shield of the Grand Master of the Order, probably Karl of Trier, c. 1320, with an inscription: *Clippeus cum galea Magistri Ordinis Fratrum Teutonicorum.*

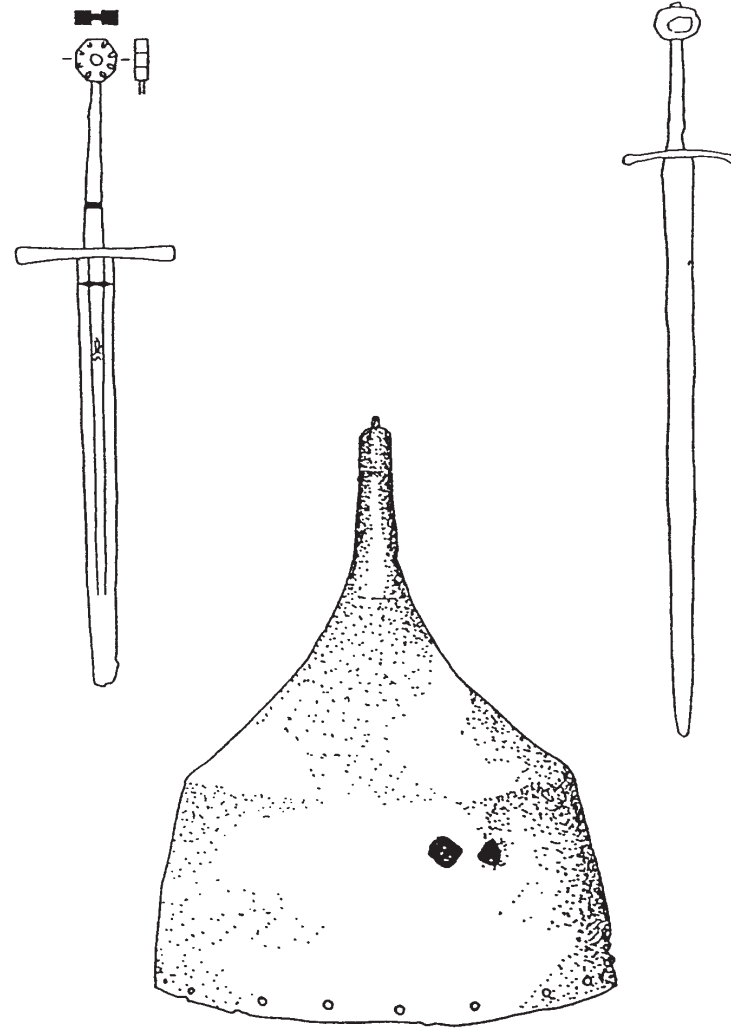


Fig. 5. Sword, type XVIa, I1, 5, first half of 14th century, Gdańsk.

Fig. 6. Sword, type XVII, I, 1, first half of 14th century, Rządź, province of Toruń.

Fig. 7. Helmet with a pointed skull (*storchhelm, spiczge helm*), second half of 14th century, Mielno, province of Olsztyn.

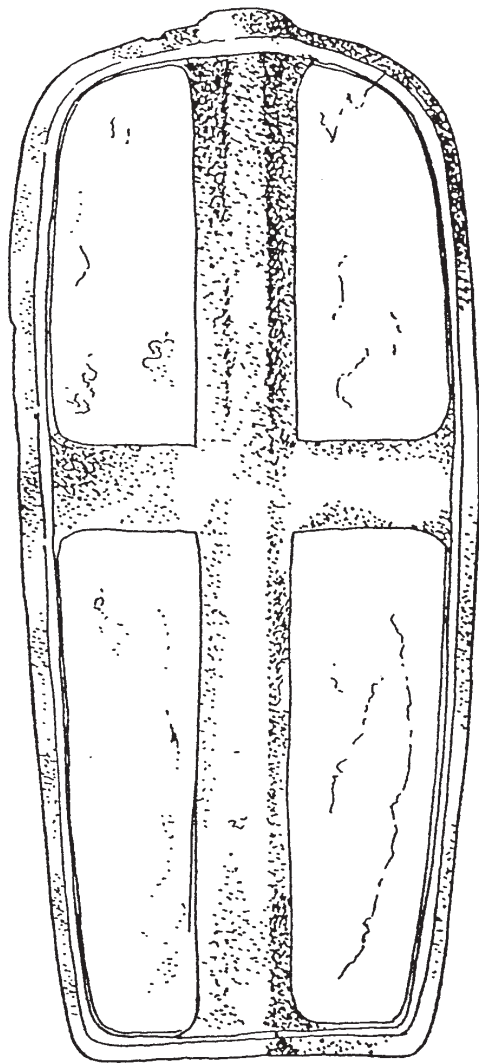


Fig. 8. Pavise (*scutum Pruthenicum, prusche schild*), c. 1380, Marienburg armoury (left).

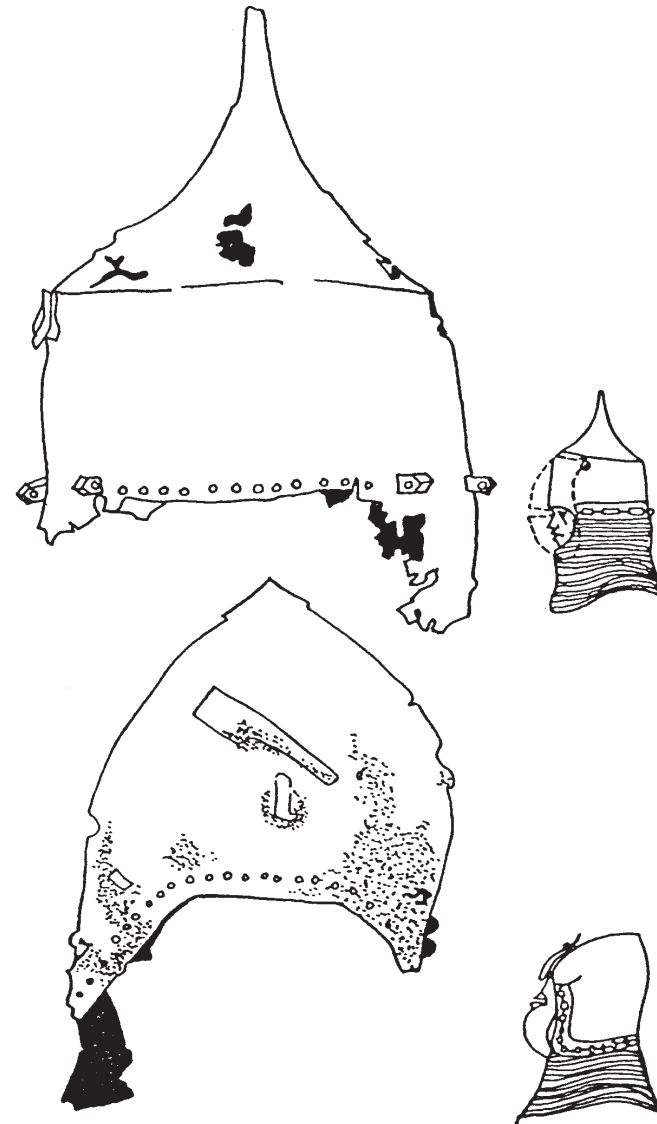


Fig. 9. Basnet with visor and with a pointed skull top (*pekilhube*), c. 1380, environs of Toruń.

Fig. 10. Basnet with visor, end of 14th century, Olsztyn.

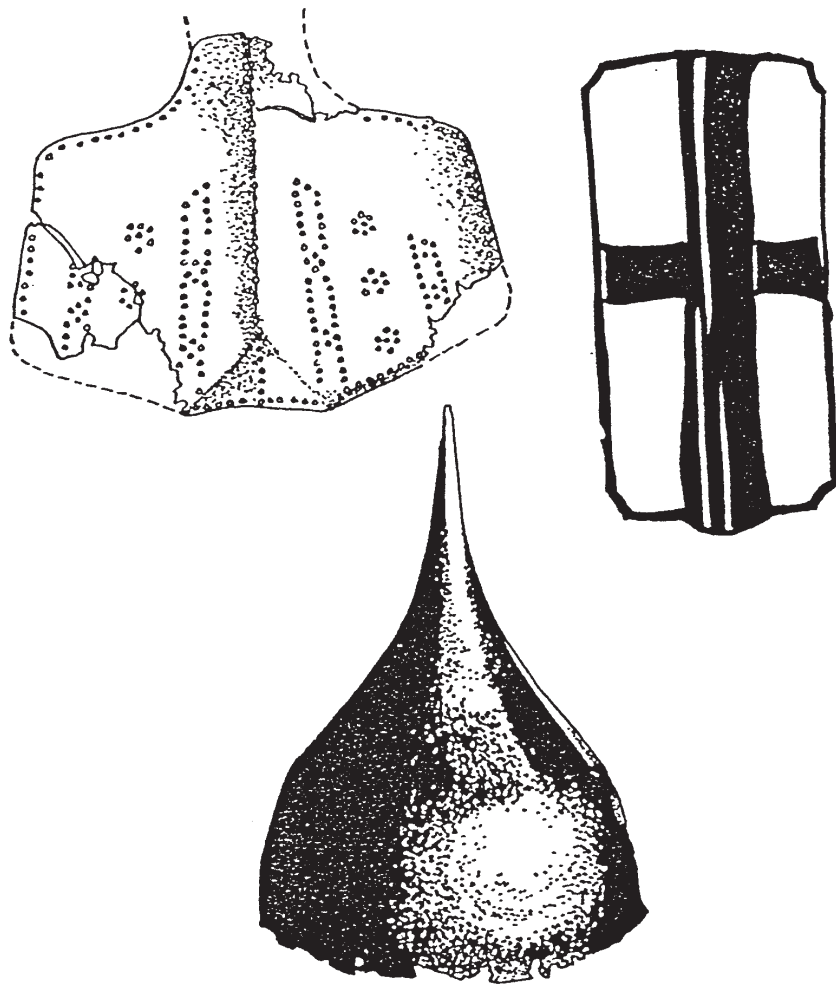


Fig. 11. Fragment of a breastplate (*brust*), end of 14th century, castle at Mała Nieszawka, province of Toruń. After Franczuk and Horbach.

Fig. 12. Small equestrian pavise, second half of 14th — early 15th century, Nürnberg, Germanisches Nationalmuseum.

Fig. 13. Pointed helmet of the oriental type, turn of 14th and 15th centuries, Wyszruć on the river Pregoła.

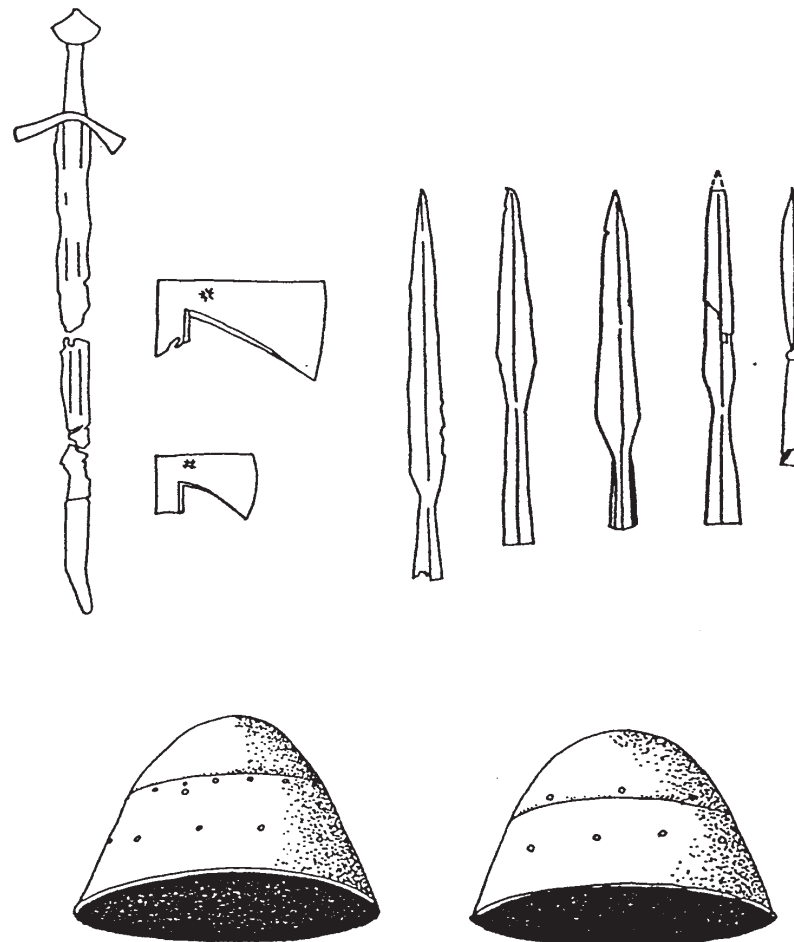


Fig. 14. Sword, type XIII, E, 6, still used in early 15th century, and battle-axes, early 15th century, Plemięta, province of Toruń, after Głosek.

Fig. 15. Spearheads, early 15th century, Plemięta, province of Toruń, after Głosek.

Fig. 16. Kettle-hats (*isenhut*, *ceplin*), early 15th century, Plemięta, province of Toruń. Reconstruction after Nadolski and Grabarczykova.

Fig. 17. Coats of plates (plate), early 15th century, Plemięta, province of Toruń. Reconstruction after Nadolski and Grabarczykowa.

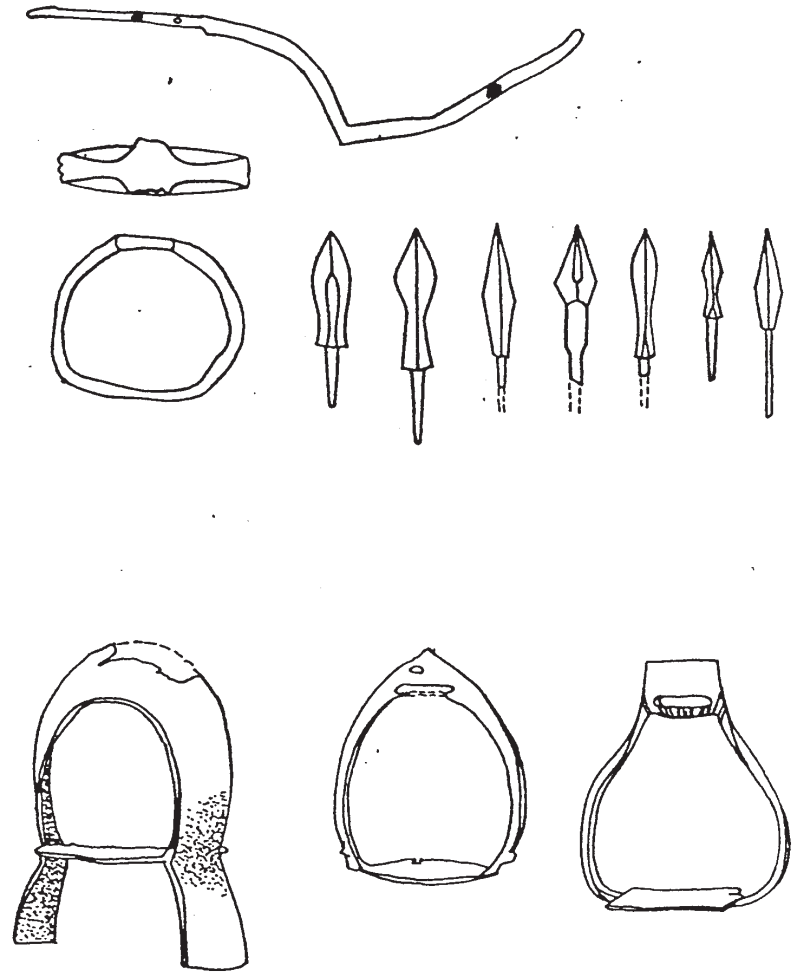
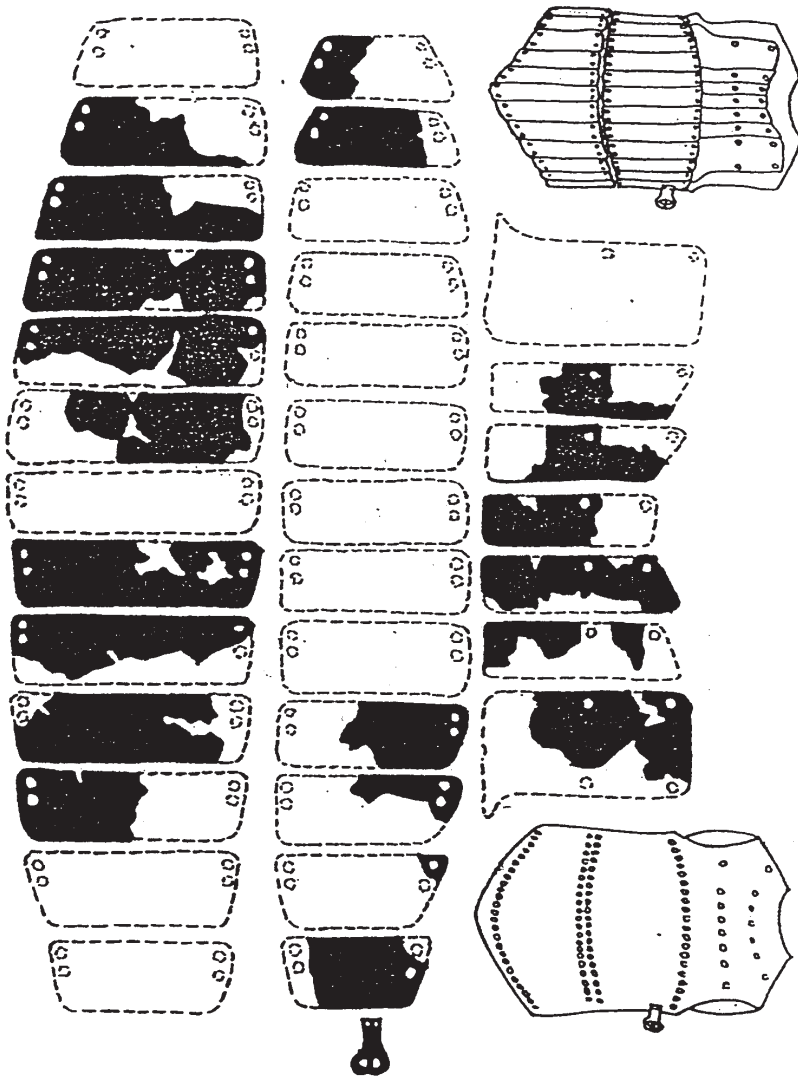


Fig. 18. Crossbow gaffle, stirrup and boltheads, early 15th century, Plemięta, province of Toruń. After Kola and Wilke.

Fig. 19. Various types of stirrups, early 15th century, Plemięta, province of Toruń. After Nowakowski.

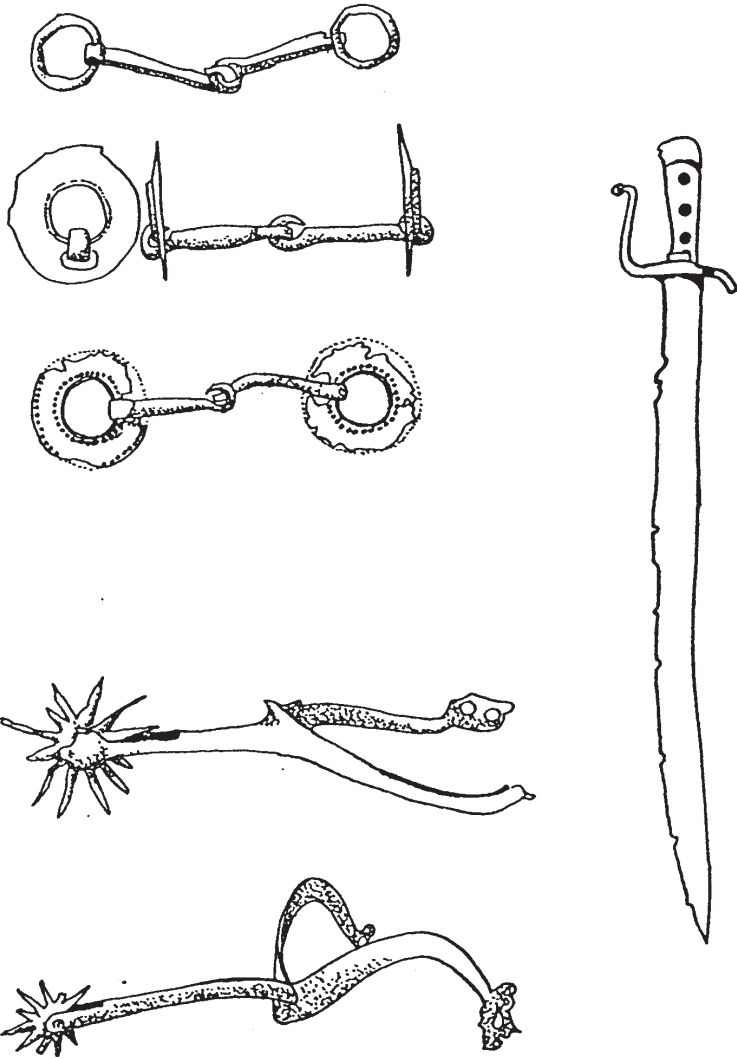


Fig. 20. Bits, early 15th century, Plemięta, province of Toruń. After Nowakowski.

Fig. 21. Rowel spurs, 15th century, Toruń — castle.

Fig. 22. Falchion, 15th century, Dąbrówno, province of Olsztyn.

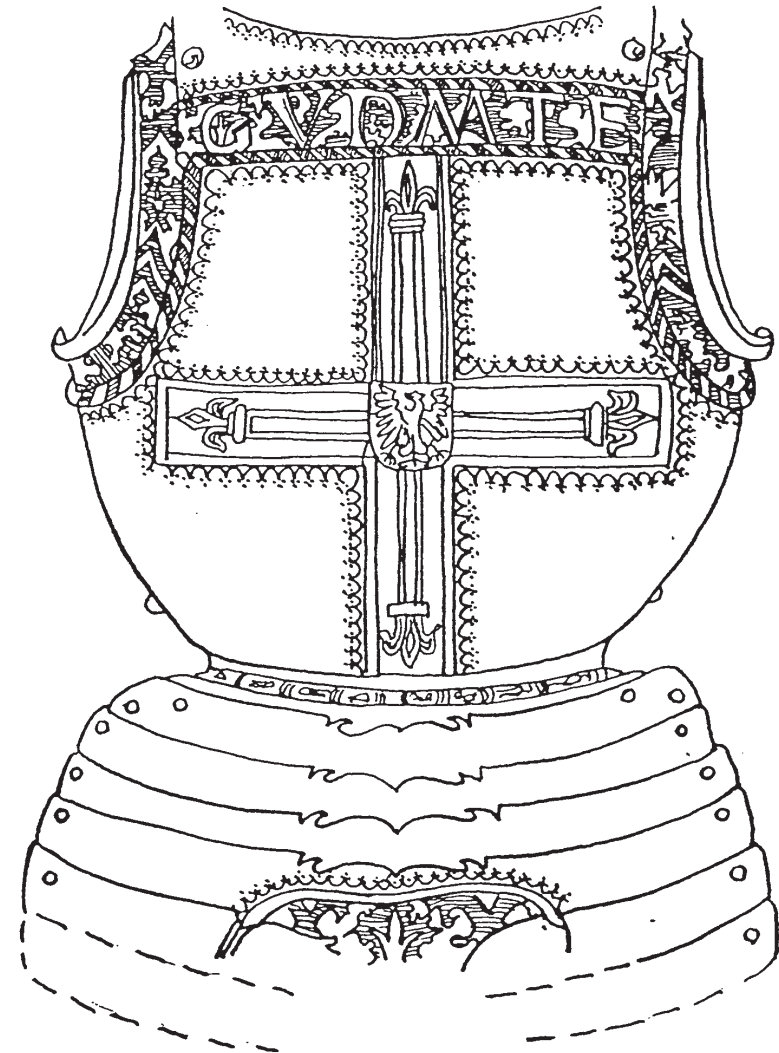


Fig. 23. Breastplate of the Grand Master Albrecht Hohenzollern, first quarter of 16th century, Berlin, Museum für Deutsche Geschichte.

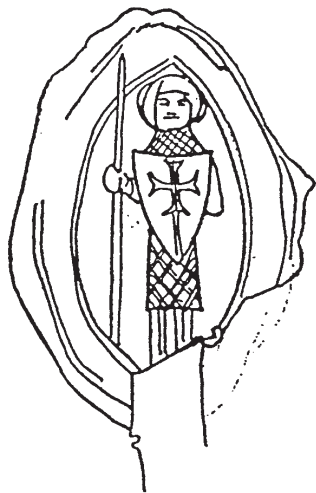


Fig. 24. Foot warrior in mail hauberk (*panczir, lorica*), with triangular shield. Seal of the convent in Prussia, 1230-1232.



Fig. 25. Prussian Land Marshall shown on the seal of 1282, wearing great helm with the Order's crest; the Order's cross is on the shield and spear pennon.

Fig. 26. Grand Marshall of the Order shown on the seal of 1344. Details of armour as in Fig. 25.

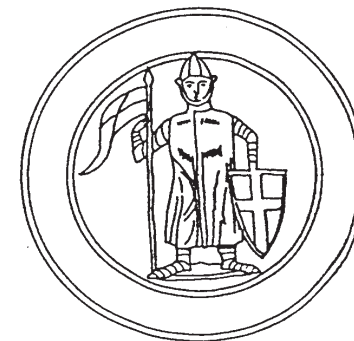
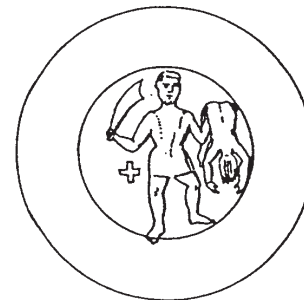
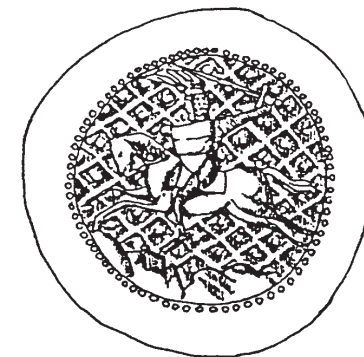


Fig. 27. Knight in conical helmet, with triangular shield and spear with a pennon. Municipal seal of Chełmno, 13th — first half of 14th century.

Fig. 28. Knight wearing mail hauberk, great helm, shield and sword. Municipal seal of Pasłęk, 13th — 14th centuries.

Fig. 29. Warrior with falchion (?). Seal of the Tuchola Commander, mid-14th century.

Fig. 30. Knight wearing conical helmet with mail aventail (*gehenge*) and surcoat worn over armour. Seal of the Gdańsk Commandery, mid-14th century.



Fig. 31. Knight wearing a “pig-faced” basnet, in a saddle with high bows. Municipal seal of Chelmno, second half of 14th century.

Fig. 32. Seal of the Grand Marshall, 1416. Details of armour as in Fig. 25.

Fig. 33. Teutonic Knight shown on the bracteate from the end of 13th century.

Fig. 34. Grand Master Heinrich von Plauen in full armour (without helmet) shown on a ducate of 1410-1411.



Fig. 35. Prussian warriors fighting with Teutonic Knights. The Prussian (E) wears *prusche helm*, the warrior (F) is armed with pavise (*prusche schild*) and mace(?). Fragment of the frieze on the capital of a column, c. 1300, in Marienburg castle. Drawn by A. Klein.

Fig. 36. Prussian warriors fighting with Teutonic Knights. The Knights, clad in full armour, carry shields, spears and swords. Prussian warriors, wearing conical helmets with mail aventails, are armed with pavises, spears, bows and battle-axes. Unrolled frieze from the capital of a column, c. 1300, in Marienburg castle. Drawn by A. Klein.

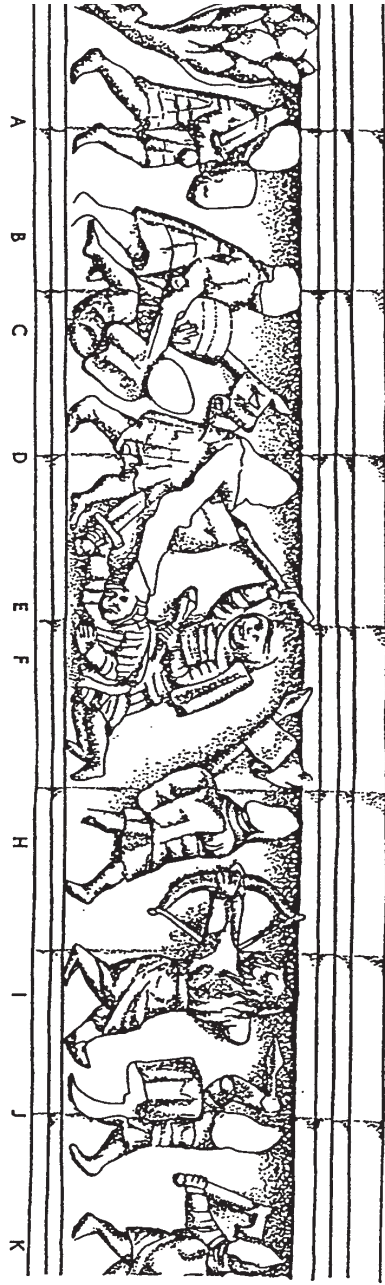


Fig. 37. Knightly duel showing two phases of the fight: the first with lances and the second with swords. Knights wear mail hauberks, greaves, helmets, shields and primitive poleyns (*krypokol*). Unrolled frieze from the capital of a column at Kwidzyn, second half of 14th century. Drawn by A. Klein.





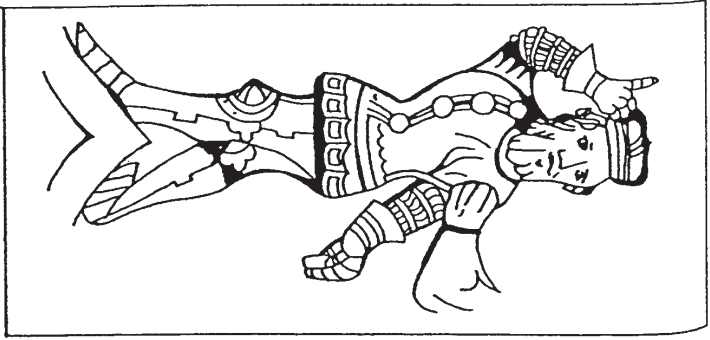


Fig. 38. Battle between Teutonic Knights and Poles (?). The oriental character of the Polish warriors (?) is emphasized. Miniature from the so-called *Teutonic Apocalypse*, first half of 14th century. Drawn by A. Klein.



Fig. 39. Knight wearing mail hauberk, globose breastplate (*brust*), closed leg harness (*beynharnisch*). Fragment of the stained-glass window, c. mid-14th century, in the parish church at Chelmo.

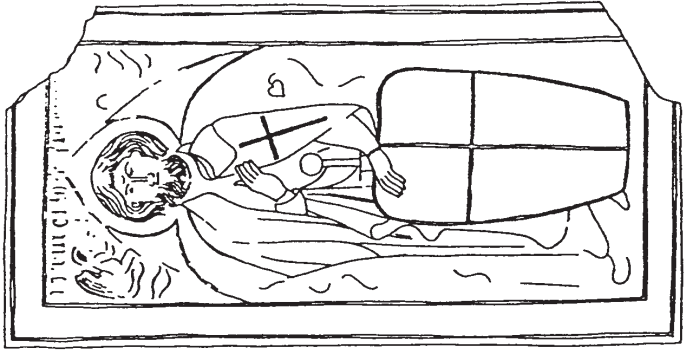


Fig. 40. Tombstone of the Grand Master Heinrich von Dusemer, c. 1351, showing mantle, pavise and sword.



Fig. 41. Knight in full plate armour, wearing basnet with mail aventail (*gelenge*), collar (*kolner*), breastplate lengthened by skirt (*schurcz*). Saddle with high bows. Figure from Marienburg castle, second half of 14th century (lost).

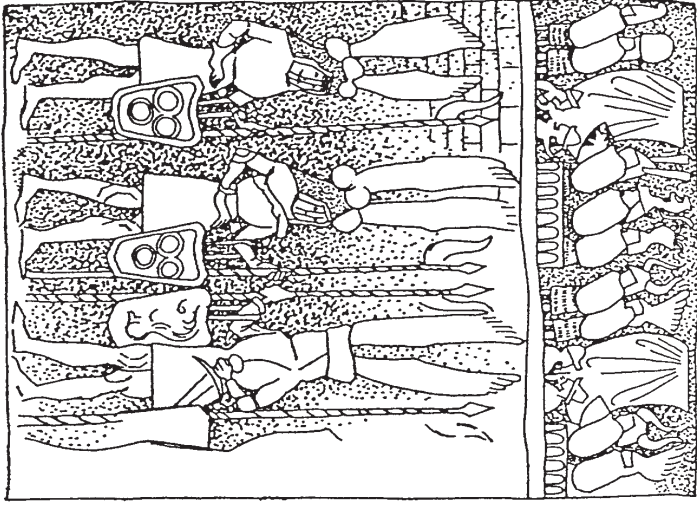


Fig. 42. Fragment of the fresco of c. 1340 in Königsberg Cathedral. The upper row shows knights wearing mail hauberks, helmets of undetermined type, and shields. The bottom row shows knights wearing great helmets with mantlings and crests, and holding lances (*hasta*, *gileverie*) and equestrian shields. The design of the figures was strongly deformed in 19th century.

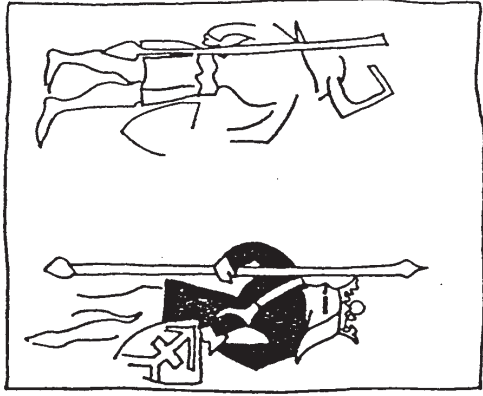


Fig. 43. Knights with shields and spears. Fragment of the fresco of c. 1370 in Königsberg Cathedral. Indistinct design.

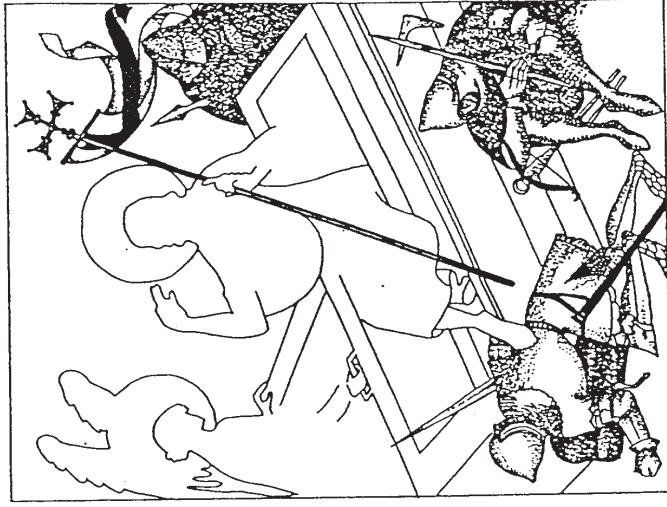


Fig. 44. Knights — “hospites” wearing great helmets with mantlings and crests, full mail armour, globose breasts, incomplete leg-harness. Fragment of the fresco of c. 1370 in Königsberg Cathedral.

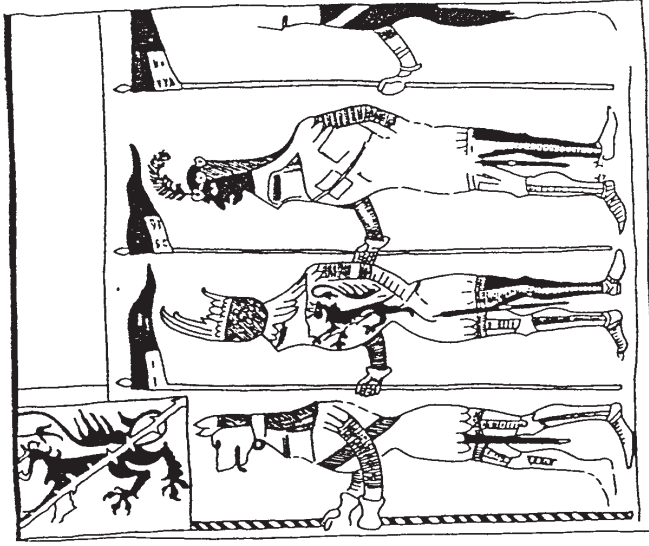


Fig. 45. Knights wearing full defensive armour. The knight in the right bottom corner has a crossbow with stirrup (*siegerfarnbrost*) and a halberd. Resurrection scene from the so-called Grudziądz altar of c. 1380.

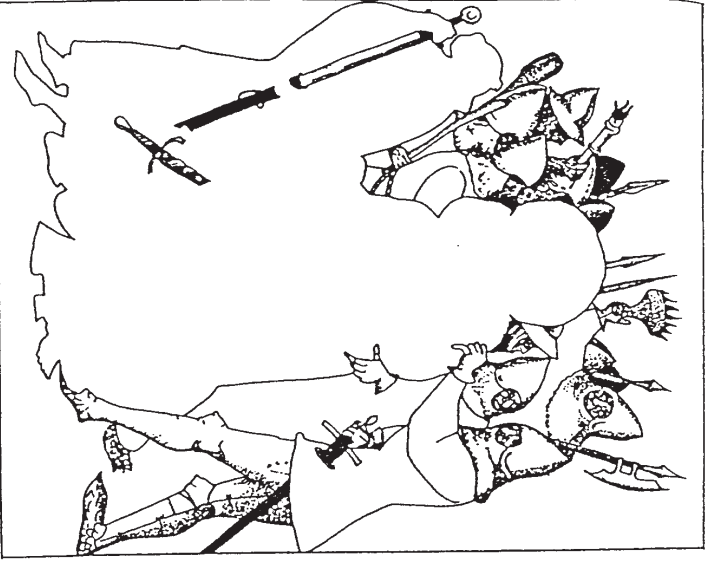


Fig. 46. Knights wearing defensive armour, basnets and kettle-hats with mail aventails. St. Peter (on the left) is unsheathing his sword. Scene of the Apprehension from the so-called Grundziqdz altar of c. 1380.

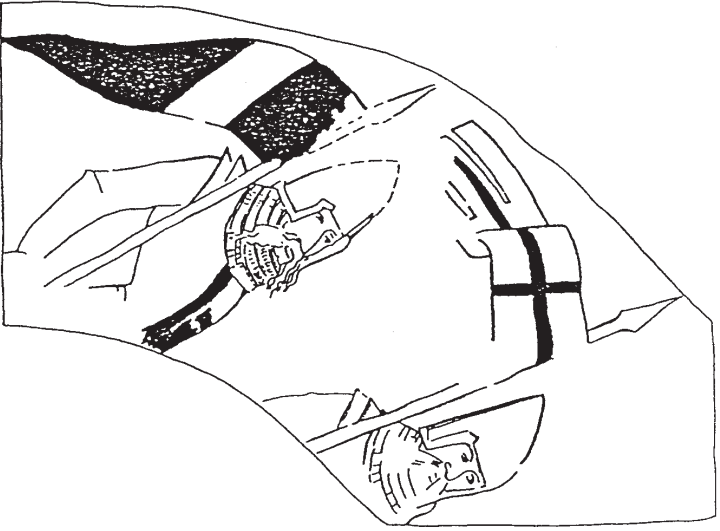


Fig. 47. Grand Marshall and Grand Commander wearing basnets with mail aventails. Fragment of the fresco of c. 1390 in the Lochstedt castle.

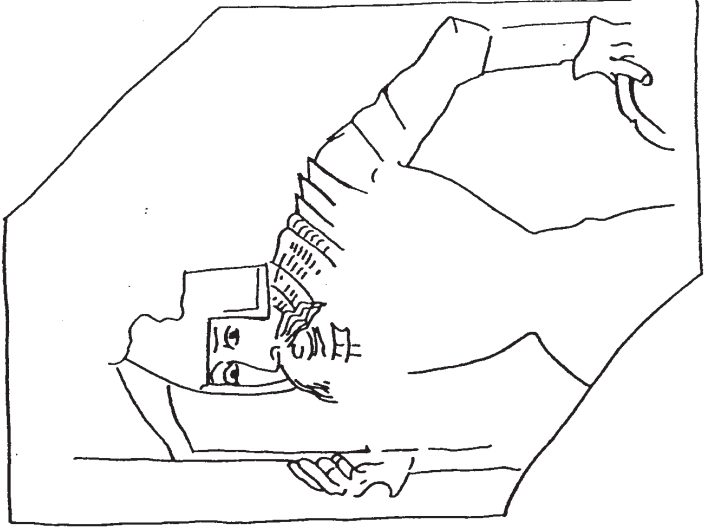


Fig. 48. Grand Master of the Wardrobe wearing basnet with mail aventail; a pauldron of lames (*armleder*) is visible. Fragment of the fresco of c. 1390 in Lochstedt castle.

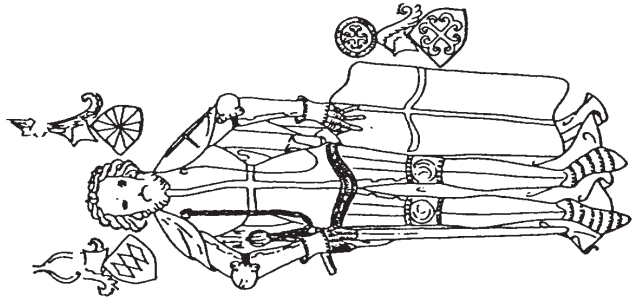


Fig. 49. Tombstone of Kunon von Liebenstein, d. 1391, showing full defensive armour (without helmet), breastplate (*brust, brustblech*), plate arm defences (*armwopen*), closed leg-harness, pavise. The sword and dagger are suspended in reverse order.

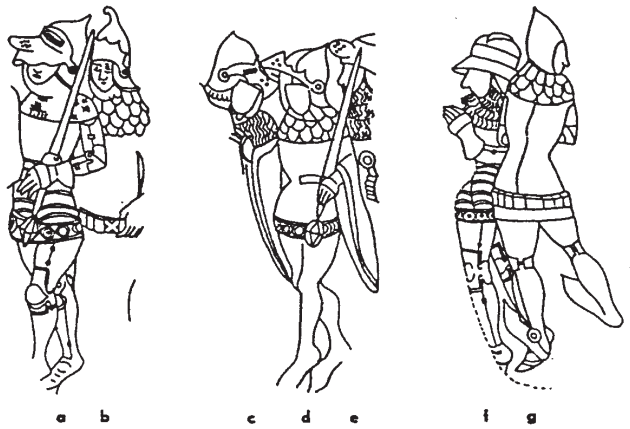
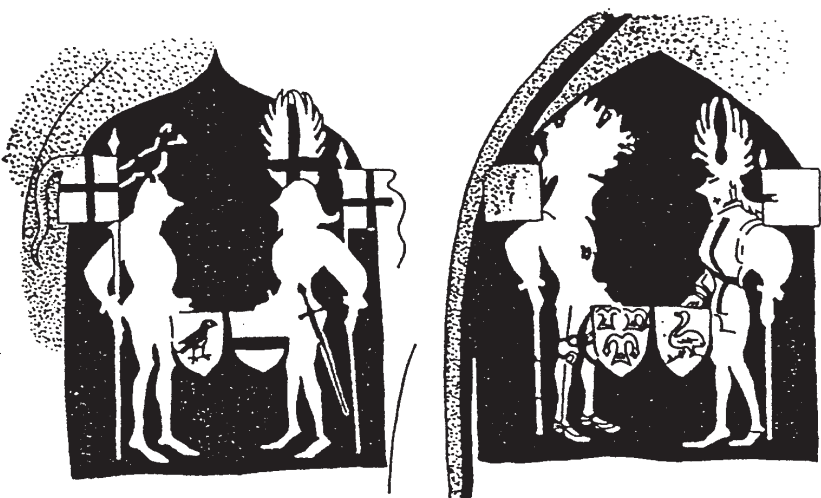


Fig. 53. Teutonic Knights, details of armour are very indistinct. Fresco of c. 1393 in the church at Juditten.

Fig. 54. Teutonic Knights, details of armour are very indistinct. Fresco of c. 1393 in the church at Juditten.

Fig. 55. Knights wearing various kinds of armour. scale collars (b, g, d), "pig-faced" basnets (a), and basnets with "Klappvisier" (d, e) are visible. Fragment of the painting on the altar, end of 14th-early 15th century, in All Saints' chapel in St Mary's Basilica in Gdańsk.

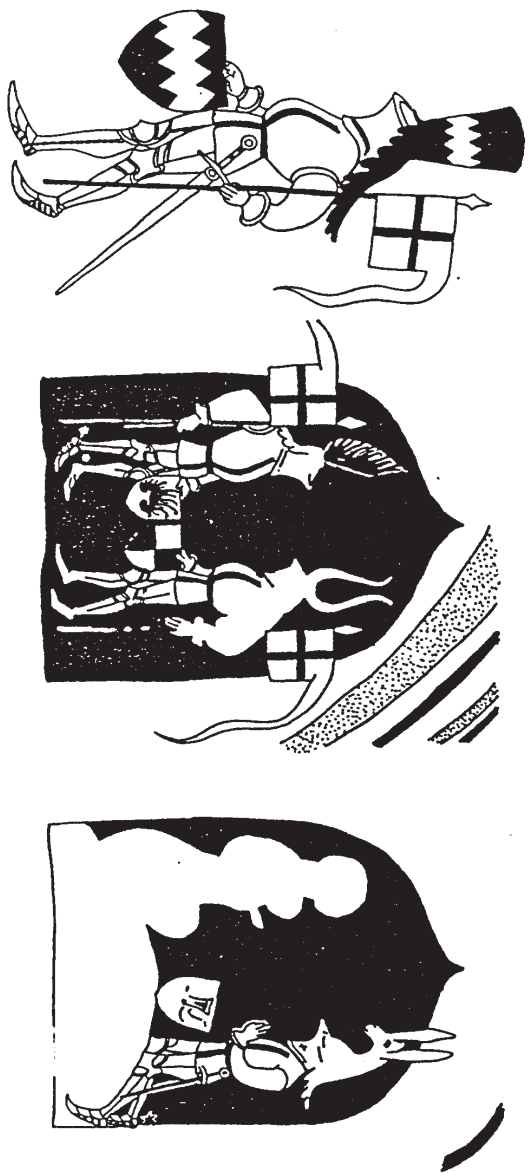


Fig. 50. Teutonic Knight wearing full armour, "frog-mouth" helmet, globose breastplate, closed leg-harness. Fresco of c. 1393 in the church at Juditten. Design deformed in 19th century.

Fig. 51. Teutonic Knight in full defensive armour. Closed leg harness (*beinwopen*) and spurs (*sporn*) are visible. Fresco of c. 1393 in the church at Juditten.

Fig. 52. Teutonic Knight, details of armour as in Fig. 51. Fresco of c. 1393 in the church at Juditten.

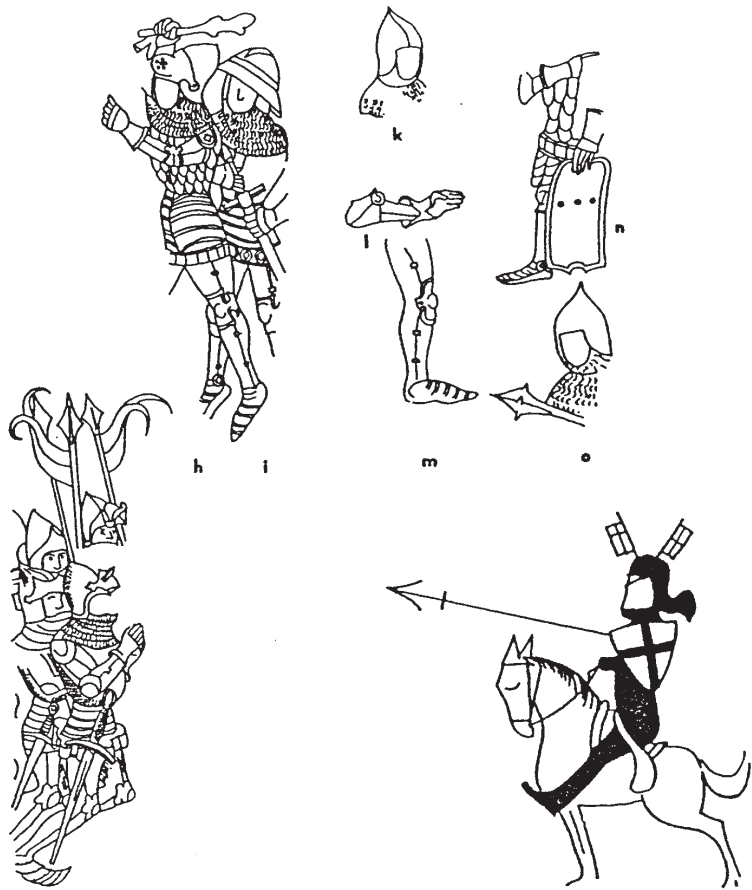


Fig. 56. Knights wearing various kinds of armour. The following details are discernible: “pig-faced” basnet (h), kettle-hat (f), basnet with a pointed skull — *slohnhube* (k. o), pavise (n), closed leg-harness (m), mace — *kolbe* (o). Fragment of the painting on the altar, end of 14th — early 15th century, in All Saints’ chapel in St Mary’s Basilica in Gdańsk.

Fig. 57. Knights wearing full defensive armour, basnets, collars (*collarium*) and hip-belts. Fragment of the painting on a reliquary, turn of 14th and 15th centuries, from Kwidzyń Cathedral.

Fig. 58. Teutonic Knight wearing great helm with the Order’s pennons. Reconstruction after the polychromy at Bunge on Gotland, early 15th century. Drawn by A. Klein.

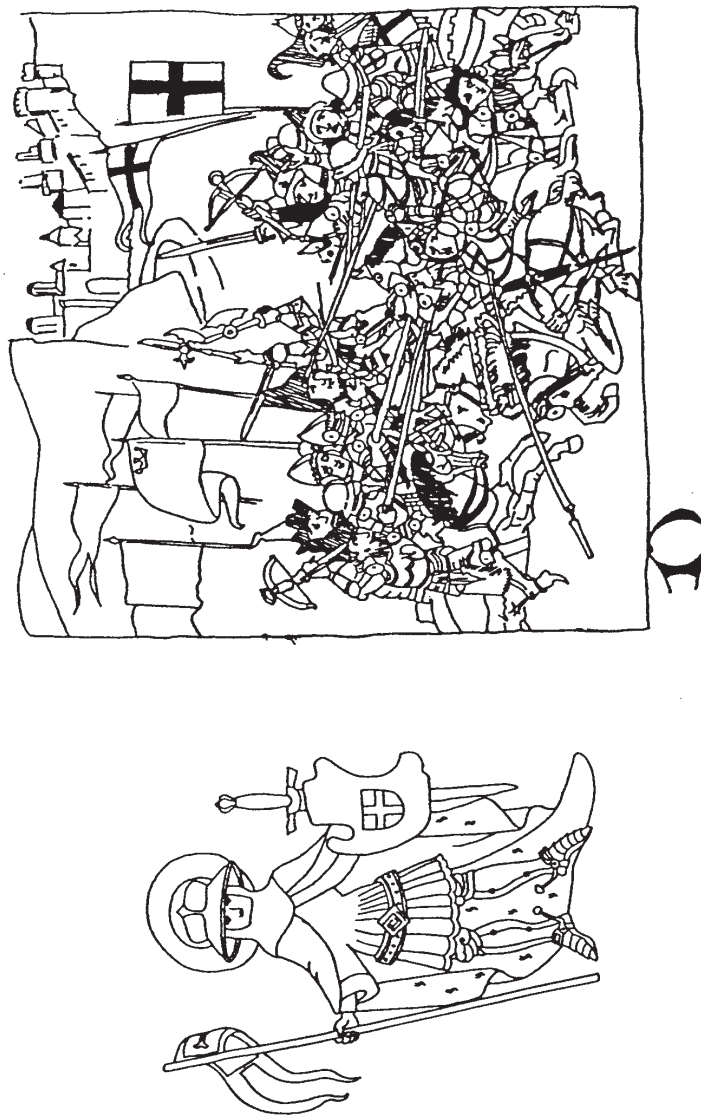


Fig. 59. Knight in kettle-hat, full plate armour with surcoat (*wopenrock*) and mantle worn over it, and with a lancer’s pavise. St Florian on the predella of the altar, first part of the 15th century, in St Mary’s Basilica in Gdańsk.

Fig. 60. The battle of Grunwald. Miniature from the *Ämtlicher Bernerchronik* (1471-1478) showing Teutonic Knights (on the right) wearing full plate armour, kettle-hats and sallets, with lances and shields. Some horses are covered with armour. Drawn by A. Klein.



Fig. 61. The battle of Grunwald. Miniature from the *Spiezer Berner-Chronik* of Diepold Schilling (1484-1485), showing Teutonic Knight (on the left) wearing full lancer's armour. Drawn by A. Klein.

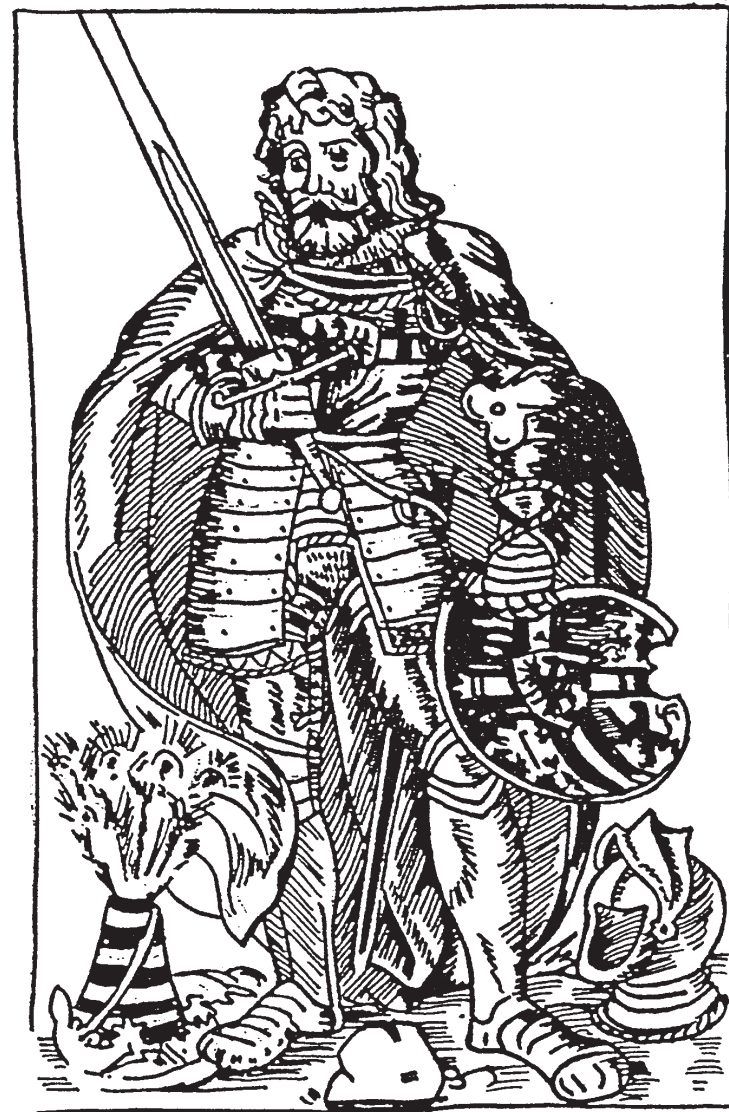


Fig. 62. Grand Master Friedrich of Saxony (1498-1510) after a lost portrait from Königsberg Cathedral. The Master wears ceremonial dress with his coatofarms on the breastplate (*trebs, glider*) and on the shield.

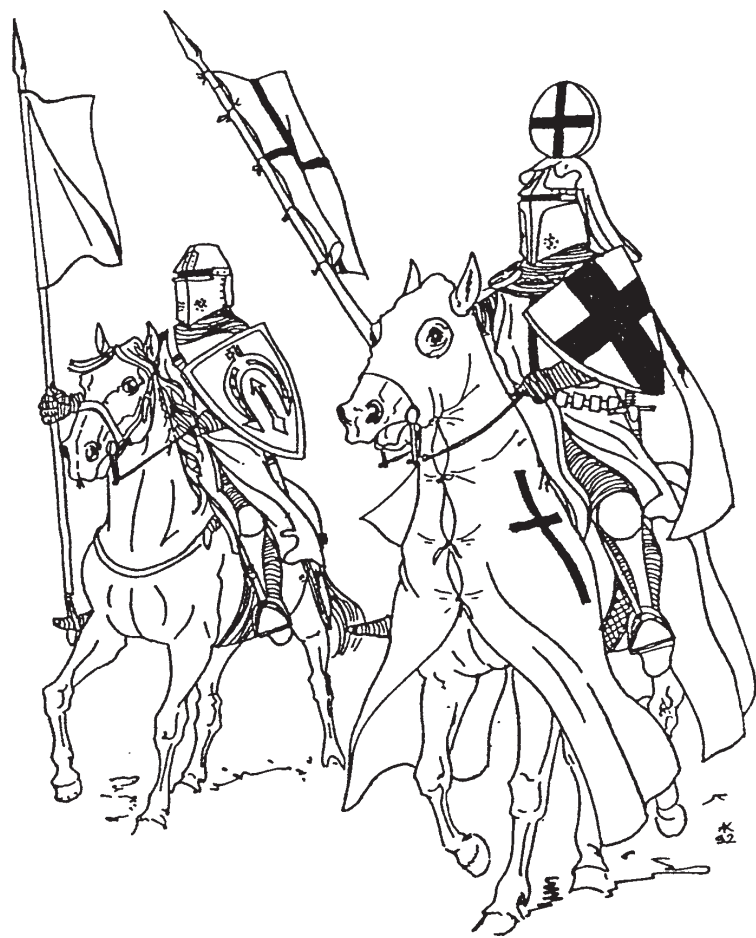


Fig. 63. Warriors from the end of 13th — early 14th century. A. Teutonic Knight wears great helm with the Order's crest, full mail armour, incomplete leg-harness. A lay knight is similarly armed, with family coat-of arms on the shield. Reconstructed by the author, drawn by A. Klein.

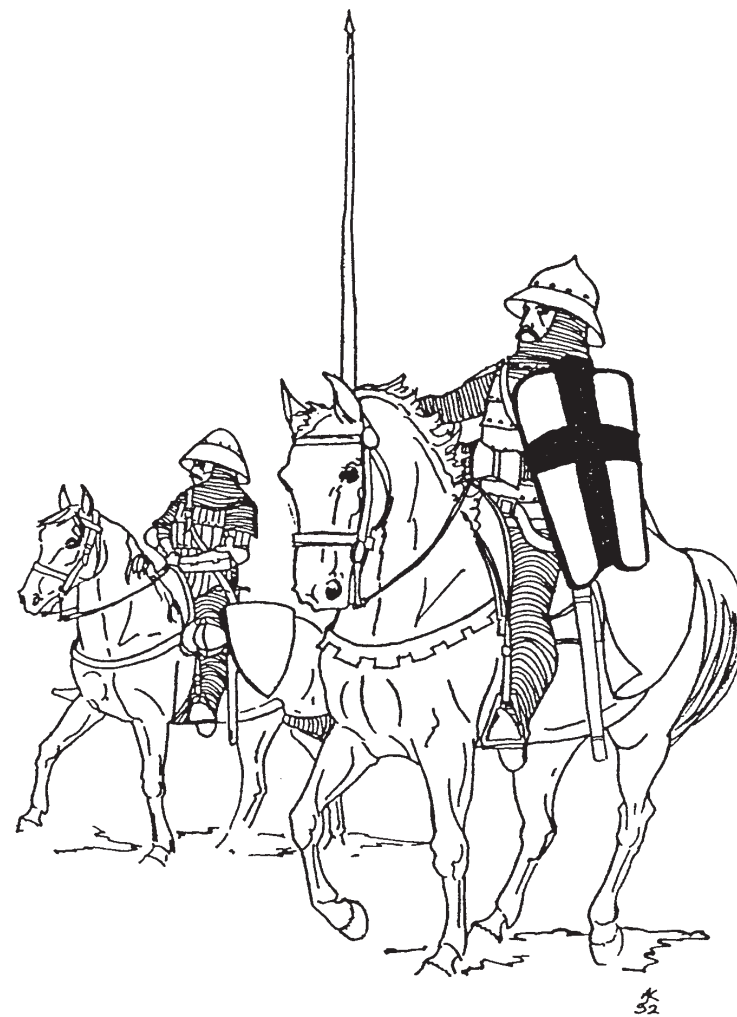


Fig. 64. Warriors of the second half of 14th — early 15th century. A Teutonic Knight in kettle-hat (*isenhut, ceplin*), coat of plates (*plate*), full mail armour (*pancer, lorica*), with small pavise (*prusche schild, scutum pruthenicum*). A lay knight in brigandine (*bronye, bronge*), full arm defences (*armwopen*) and poleyns (*knypokeln*). Reconstructed by the author, drawn by A. Klein.

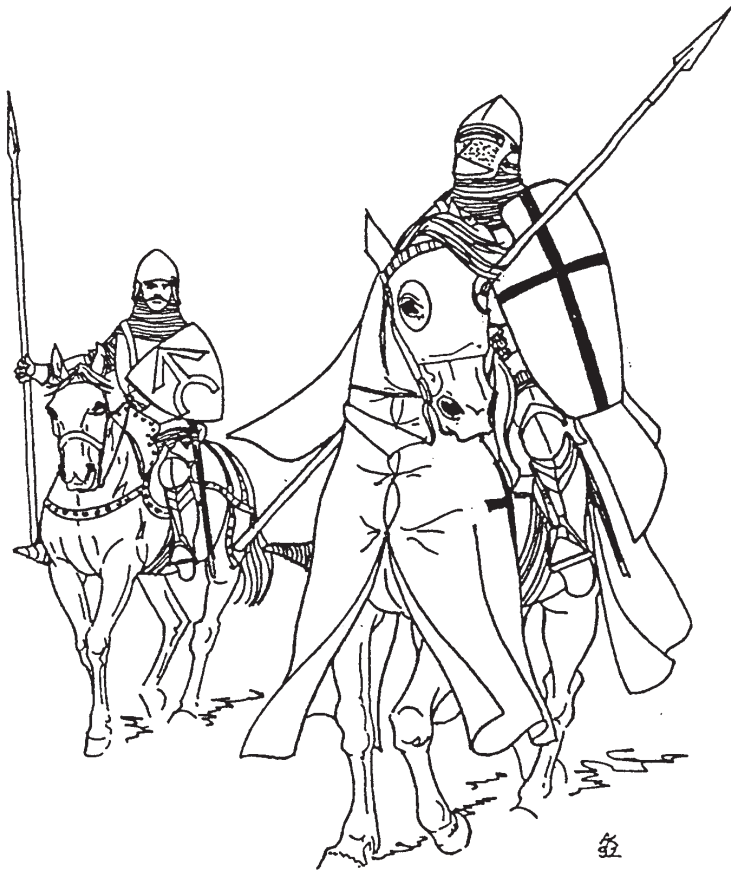


Fig. 65. Warriors from the time of the battle of Grunwald. A Teutonic Knight wears "pig-faced" basnet, full plate armour (*gancze harnasch*), with lancer's shield (*tarsche*). Horse covered with housing. A lay knight wearing basnet (*hube*), with triangular shield, sits in a high lancer's saddle (*strysetel*). Reconstructed by the author, drawn by A. Klein.

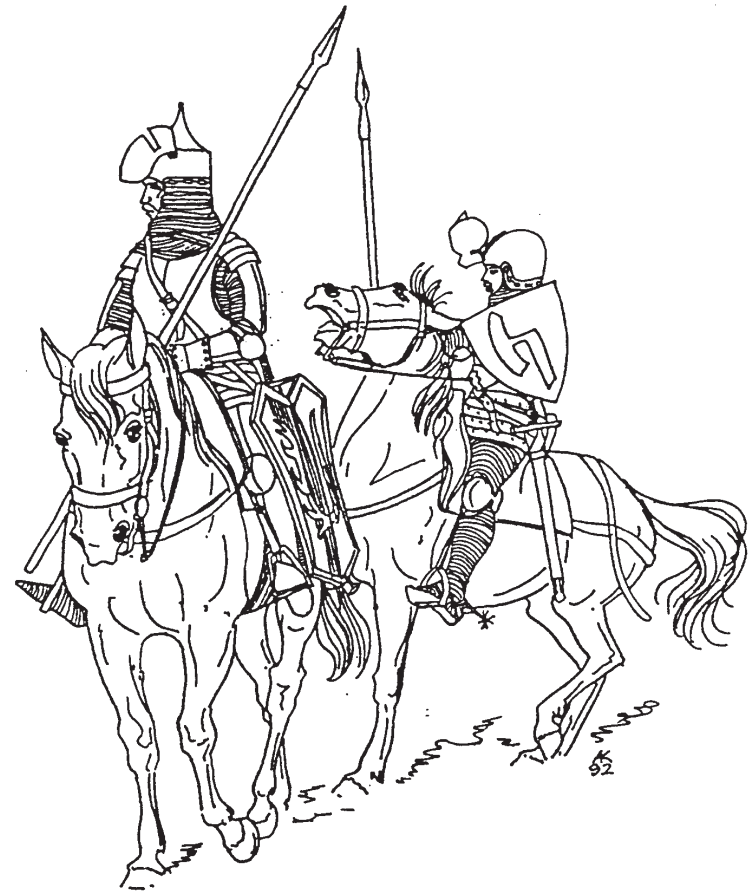


Fig. 66. Lay knights from the time of the battle of Grunwald. The knight in the foreground wears *pekilhube*, breastplate (*brust*) and closed leg harness. The knight in the background wears basnet with "Klappvisier", breastplate with skirt (*schurz*) and poleyns. Reconstructed by the author, drawn by A. Klein.



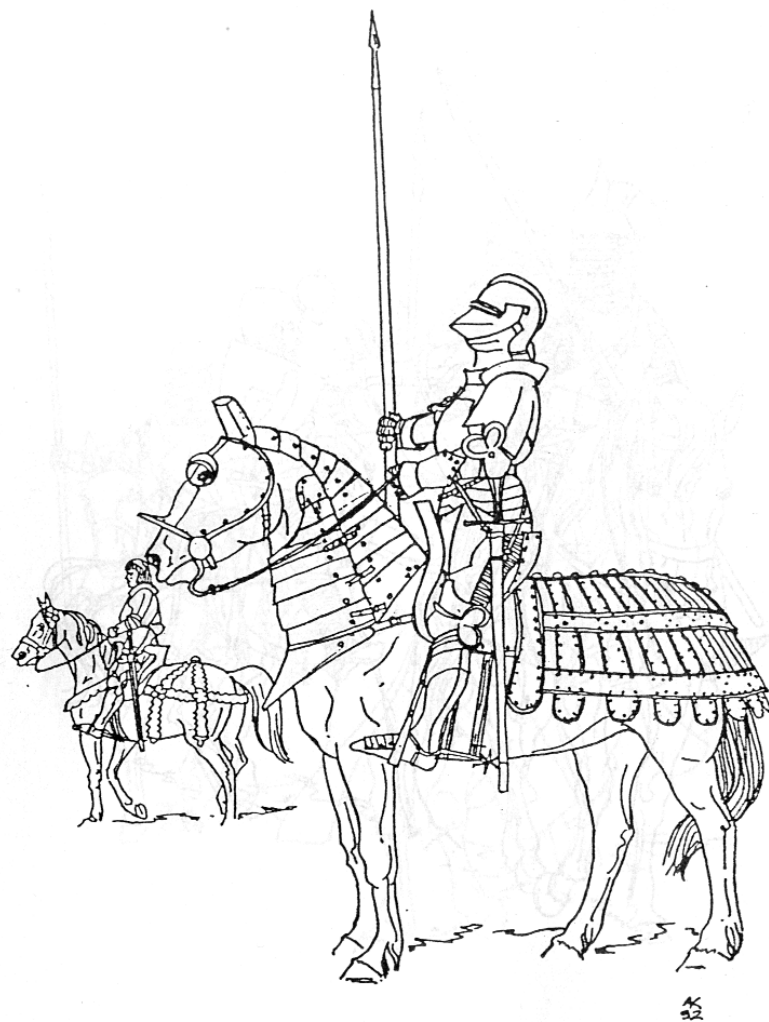


Fig. 67. Warriors from the first quarter of 16th century. Teutonic Knights clad in full lancer's armour (*arma integra*) and armet. Horse covered with armour (*rossgezug*). Squire in incomplete armour riding an unarmoured horse. Reconstructed by the author, drawn by A. Klein.

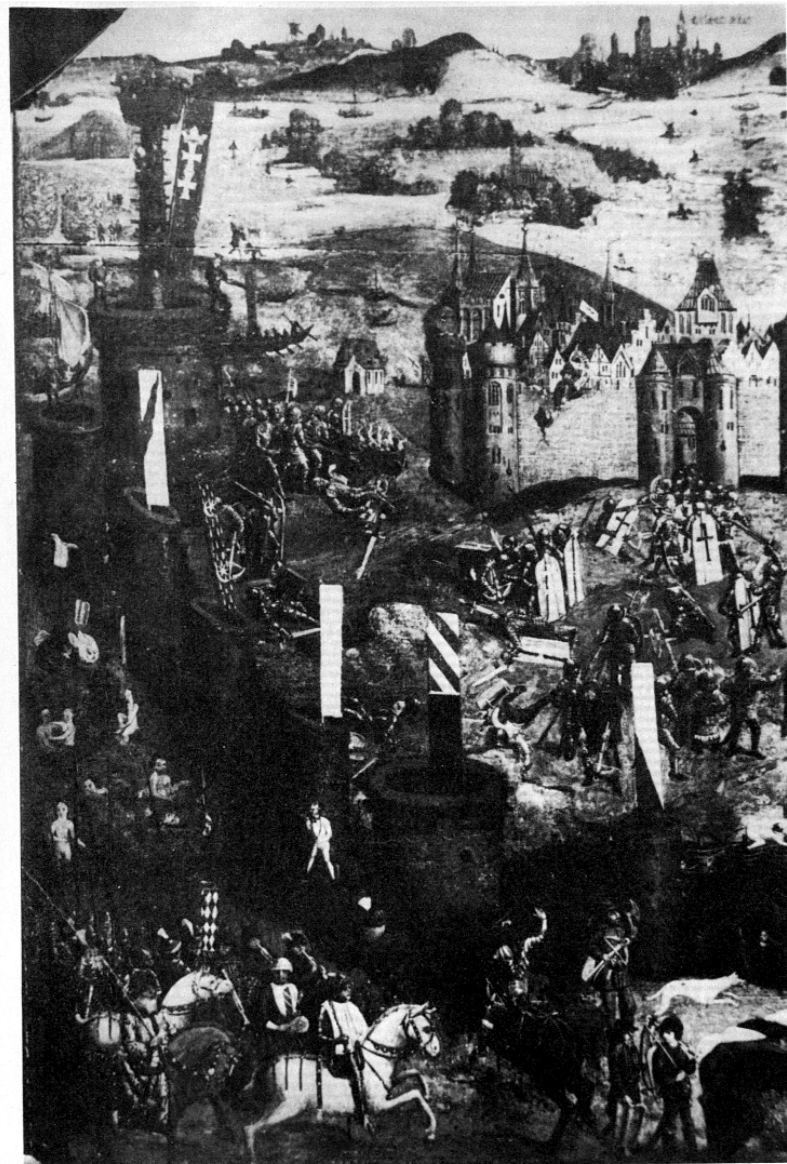


Fig. 68. Siege of the town of Marienburg by royal and Gdańsk troops in 1460, painted between 1481 and 1488. Once in Artus' Hall in Gdańsk, now lost. Photo K. Karpińska.