„Forms of War 1600-1815“ is the title of the Bavarian Army Museum's latest permanent exhibition, opened in 2019 and housed in the New Castle of Ingolstadt. With exhibits from the museum's own collection and some important loans, it illustrates the forms of warlike violence in the early modern period. Focal points are the fighting in the major battles on open fields, the siege and defence of fortresses, and the so-called “small war”, which placed a heavy burden on the countryside and the population in the vicinity of the major conflicts.

The book is an introduction to the subject and also provides some information about the redesign of the museum rooms. All the exhibited items are documented in text and pictures, most of them are published here for the first time.

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FORMS of WAR 1600-1815

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Tobias Schönauer and Daniel Hohrath

with a contribution by Marian Füssel

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Preface

The focus of this catalogue is on the violent warfare that marked the conflicts among the European powers in the 17th and 18th centuries. These wars had quite different causes and consequences. Between 1600 and 1815 there was a fundamental shift of emphasis in the power structures of Europe, even though it was often hardly noticeable to the contemporaries. In the beginning, the focus was mostly on individuals, families and certain corporates or orders; in the end, more and more states and – at least in the case of France – nations came to the fore. The transformation of Bavaria from duchy to constitutional kingdom is an exemple. What matters most in this context, however, is that the means of war remained essentially the same. While sometimes the conflicts may have been prepared long in advance and at times played out across large geographical areas, the actual armed clashes took place, as it were, face to face, and were subject to the many limitations of the pre-industrial world. This is what both the museum rooms and the catalogue want to convey.

The catalogue documents the museum section "Formen des Krieges" (Forms of War), which was opened in the New Castle of Ingolstadt on 3 June 2019. The book's concept is simple: It summarizes the objects and texts that can be seen and read in the exhibition in a compact form, and it offers photographic insights into the design of the rooms. The preceding detailed sketch of the historical context, for which I thank Prof. Dr. Marian Füssel, is based on the speech he gave at the opening of the exhibition rooms. The introduction to the exhibition written by the curators reflects the current state of discussion and work at our museum.

These exhibition rooms mark the beginning of the continuous renewal of the permanent exhibition of the Bavarian Army Museum, conceived as a "work in progress". It is not just a new presentation of what was on display in the old Army Museum in Munich until the Second World War, and later, since 1972, in the New Castle in Ingolstadt. Rather, the repositioning is connected with a new inspection and indexing of the objects in the collection. For this reason, the accompanying publication is very important. Many artefacts were already listed in the museum guides published before 1914, and some pieces were presented in even greater detail in the major exhibitions "Kurfürst Max Emanuel" (Elector Max Emanuel) in Schleissheim Palace in 1976 and "Wittelsbach und Bayern" (Wittelsbach and Bavaria) in the Munich Residenz and the State Museum of Ethnology in Munich in 1980. Yet many pieces are being published for the first time now. The museum thus continues to pursue the efforts that have shaped past exhibition projects and catalogues: To make the collection accessible to the scientific community as well as to the public. So this catalogue will be available free of charge on the Internet.

Many thanks to the curators Dr. Tobias Schönauer and Daniel Hohrath for the conception and realization of the exhibition rooms and the catalogue. They also provided all the texts accompanying the objects. The concept as a whole and in many details, was subject to some intensive discussions within the museum's college of scientists. Showing great energy and flexibility, Mr. Schönauer excelled in the organization of the exhibition and in the typesetting and editing of the catalogue. I

would like to thank all employees of the museum for their commitment and team spirit in the realization of the exhibition, in the provision of the objects and in all associated activities. For their permanent loans, some of which have been with us for many years, I would like to thank my colleagues in our partner museums of the Bavarian State as well as the Stadtmuseum Ingolstadt. I would also like to thank the Academic Advisory Council, chaired by Prof. Dr. Günther Kronenbitter, for their versatile, detailed and always constructive discussion of our plans. The design of the exhibition succeeds in presenting the objects in a pleasant and visitor-oriented manner, while at the same time highlighting the Gothic rooms in all their beauty. For this feat, I have to thank the Ausstellungsbüro Janet Görner.

Dr. Ansgar Reiß, Museum Director

Ingolstadt, in October 2019

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Marian Füssel

Theatre of War
Forms of Military Violence in Early Modern Europe

Describing war as theatre or ceremonial can easily arouse suspicion of ideological trivialisation; war, after all, is really about life and death, fear and suffering, annihilation and destruction. In the European societies of the 17th and 18th centuries, with their dynastic princely states, however, warfare as the 'supreme art' was seen as a mainstay of princely representation of power.[1] The boundaries between civilian and military ceremonial were rather fluid. In 1726, for example, the Electoral Saxon hunting and military writer Johann [Hans] Friedrich von Fleming stated in his handbook "Der Vollkommene Teutsche Soldat" (The complete German soldier):

"The ceremonial system has risen to its highest level in our times; war itself also displays a very large share of it. The military ceremonial is most clearly manifested in recruitment, musters, introducing the officers, flag presentations in garrisons, mounting guards, on the march, in the quarters, during compliments for rulers, commanding generals, foreign troops and the own officers during parades, posting of sentries, forming-up for battle, passages, capture, forming of cartels [i.e. international treaties], exchange and release of the prisoners, dispatching of buglers, drummers and hostages, declarations of war, attacks and storms, demand and capitulation and surrender of fortresses, as well as in military drill and numerous other activities."[2]

Fleming's list contains many practices that are still ritualised today, but he goes far beyond that and even regards the attack as being shaped by ceremonial. In the early modern period, theatrum belli (theatre of war) was the name initially given to the battleground, i.e. the actual geographical area of the war-related events.[3] And as such, the theatre of war became the namesake of countless map series. The communicative situation between audience and stage took on a further, much more real dimension in the field of military operations. Since the 16th century, the depiction of the actual engagements in the form of battles and sieges often followed a language of staging. The battlefield became a stage, soldiers turned to 'actors', defeats were sometimes glorified as tragedies. The fields of operations of the contemporary warfare may be roughly divided into battle, siege warfare and the so-called 'small war'.[4] In all of these there was a specific combination of violence and aesthetics to which the exhibits in the new permanent exhibition owe a great deal.

Siege Warfare

With regard to land warfare, researchers agree that the central war practice of the 18th century was in fact the siege. In the eyes of the contemporaries, battles should remain the exception rather than the rule. Sieges played a central role in warfare, even though some contemporary strate-

gists did not consider them to be of decisive importance. Frederick II of Prussia, for example, stated: "The art of the siege has become a craft like carpentry or watchmaking. Certain infallible rules have evolved, according to which everything always follows the same course. [...] All this is subject to accurate calculation, so that, even if one is absent, one can calculate quite exactly on which day, for example, the fortress will surrender."[5] But then again, Frederick was less successful in siege warfare than in his battles. It was the aforementioned, predictable ‚craftsmanship' of the siege that made it a central form of military operations in the 18th century. According to the prevailing military theory, coincidences were to be avoided as much as possible, which made the technically calculable siege fit perfectly into the prevalent mental framework. As early as 1677 Roger Boyle, first Earl of Orrery (1621-1679), stated that commanders made "war more like foxes, than like lyons; and you will have twenty sieges for one battell."[6]

But first let's have a look at the actual course of a siege, which in the 18th century mostly followed a very similar pattern, which is rightly associated with the name of the French marshal Sebastien le Prestre de Vauban (1633-1707).[7] In the last third of the 17th century, Vauban succeeded in developing a new, unexpectedly effective siege system, which covered both attack and defence. Under the reign of Louis XIV, France constructed a chain of fortifications comprising some 50 cities and towns from the English Channel to the Swiss border. In 1678, Vauban summed up his fundamental, strategic assessment of siege warfare as follows: "The fortification line blocks the enemy's access to our land and makes it easier for us to gain access to his."[8] The term fortification could either denote a fortress city or a fortified town here.

This concept was put into practice during the Nine Years' War, amongst others, from the French fortresses on the Upper Rhine. Not only did Vauban break new ground strategically, but also in the concrete siege technique, which will be briefly described below. A siege first of all required a considerable logistical effort. Ideally, the ratio of forces between the besieging and the besieged should be three to one, or even better five to one or ten to one; to attack a fortress held by 10,000 men, you had to raise at least 50,000 men yourself. One of the main problems in preparing for a successful and short siege, however, was the acquisition and transport of the siege artillery, since thousands of carts and horses were needed to move it. If a hostile army arrived in the proximity of a fortress, the garrison started its preparations for defence, which was tantamount to a kind of state of emergency. The vanguard of the attacker consisted of light troops, who were confronted by light troops from the fortress, thus leading to the first skirmishes. Once the enemy reached the city, they set up camp outside the range of the fortress guns and tried to encircle the city as completely as possible. To this end, so-called 'circumvallation lines' were set up, which could be supplemented by so-called 'contravallation lines' to the outside if a relief attack was expected. The besiegers now tried to find weak points in the fortifications and began to dig batteries and trenches, so-called 'saps' or 'approaches', to get as close as possible to the city walls. Vauban's innovation was to first have a long parallel dug at some 500-800 yards from the fortress, which served as a base of operations. From this parallel, the trenches were then laid out in a zig-zag pattern, as this made it harder to strafe them from the fortress.

This was followed by the digging of a second parallel and, in some cases, even a third. The fortress reacted to the start of the construction work with harassing fire. Only now did the real crunch time of the

siege begin. While the attackers tried to move their trenches under fire ever closer to the city walls, the defenders responded with sorties and constant shelling. The attackers, however, did not only fire at the fortifications, but sometimes also deliberately into the city itself, which could easily lead to massive firestorms. The siege artillery used for this was divided into three types of guns: cannons, mortars and howitzers. While the cannons fired iron cannonballs from long barrels, the extremely short-barrelled mortars launched their projectiles into the city in a high arc. As ammunition, they used stone balls or so-called 'bombs' – hollow iron balls filled with gunpowder.

As far as the bombardment was concerned, this gave rise to a problem comparable to the discussion about modern aerial bombing. Whereas the shelling of batteries and their military crews had an immediate military purpose, the bombardment was aimed directly at the civilian population in order to weaken their perseverance. The siege entered its last phase when the attacker reached the outer defensive ring, the so-called 'counterscarp'. From there, it was possible to undermine the city fortifications and heavy siege guns could be brought into position. The latter's fire and the explosions of the mines dug underneath walls and ramparts could finally open up a breach that made it possible to launch an assault.

Mining was used very successfully, for example, during the Turkish siege of Vienna in 1683. This led to the use of so-called 'counter-mines', which were deposited in long tunnels leading out from the city's fortifications, to be detonated in the case of an attack. If the besiegers succeeded in breaching the wall, all that remained was basically surrender. A lot of effort was put into negotiating it, and the timing of the surrender could be crucial in determining how the victors dealt with the city. The longer a siege lasted, the more the stress increased, not only for the besieged, but also for the besiegers, who had to dig trenches under constant fire.

The treatment of the civilian population also differed depending on the mode of surrender – after all, there was still the possibility of a coup de main whereby a city could be seized swiftly by military skill or treachery.[9] As late as the 18th century, ordered plundering and excesses still took place on the part of the besiegers. Generally, however, the capitulation agreements increasingly excluded plundering or merely used it as a threatening gesture to extort protection money; soldiers of a standing army were not supposed to plunder freely anymore. Besides the inhabitants of the city, it was above all the rural population of the surrounding area that suffered most from a siege. Among the destructive measures on the part of the defenders, such as flooding, it was mainly the plundering by the enemy forage parties and the compulsory entrenching work in the siege trenches that the rural population had to endure.

But what did a siege mean for the city concerned? Whenever war was approaching, the inhabitants of the city and the surrounding countryside were called upon to work on the fortifications, which in peacetime were less well maintained. Much more serious was the need to clear the field of fire of the fortress: A wide cordon of up to one kilometre around the city was emptied of all forms of settlement, from the vegetable patch to the inn, at the expense of its occupants; bridges were torn down for strategic reasons, and entire stocks of trees fell victim to the firewood supply. The besieged city itself could also literally be dismantled. In many of them the houses were unroofed and the road paving removed. This was to prevent fire blazes and ricochets from bombs and cannonballs. The complex urban community

was subjected to military logic, and being under siege changed the social figuration of a city. While rich citizens were able to escape from the city to safe areas, the poorer population of the surrounding countryside tried to find shelter within the walls. On the whole, a siege was a burden for the local civilians in every respect, since their defenders also usually drew on the resources of the city's inhabitants, which often amounted to a legally sanctioned looting. Some citizens, however, actually benefited from the siege, including craftsmen, who received repair orders, or merchants, who could command high prices in the face of limited resources. As a result, the urban communities, structured along the lines of orders, finally saw a divergence of social differences. Whereas the more affluent populace managed to avoid the most severe impositions by way of exceptions, the sub-bourgeois classes were particularly hard hit, especially when they lived in the suburbs beyond the walls.

An early modern battle, on the other hand, represented a state of emergency that was enormously condensed in terms of time.

Battle

To this day, battles have received greater attention in academic research than sieges.[10] Battles were much shorter – one day as opposed to weeks or even months a siege could last – and offered the individual many more opportunities to distinguish himself. The decisive character of battles, however, is a matter of dispute. While some describe an age of indecisiveness, others see the battle, by analogy with legal proceedings, as a tried and tested means of decision making that even averted atrocities from the civilian population.[11] But what exactly was a battle? In the early modern period, it constituted a demanding type of event. So as to bring some order to the diverse practices that make up a battle, a distinction was made between infantry, cavalry and artillery battles. The different confrontation scenarios of the three arms of the services, i.e. infantry vs. cavalry, cavalry vs. artillery etc., can be described in an even more complex way.[12] In the depictions of a battle, on the other hand, three narrative patterns can be distinguished: the commander's perspective, which recapitulates the piece like a game of chess on the basis of moves; the mole's perspective of the simple soldier, who perceives only a section of his combat area and is more concerned with sensual perception, violence and injury; and thirdly the anecdotal condensation of a battle into certain key scenes. Thus, every battle is present in the culture of remembrance at certain, usually decisive or critical moments.

The battle was a precisely choreographed but extremely contingent event with a high risk for both sides, who had to reach some level of agreement to fight it out; if this was not the case, it was often called an encounter instead, and winning or losing one were assigned a different significance. The fact, that a battle was mutually agreed upon, brings it close to a legal decision-making process or a duel for some contemporaries and present-day researchers alike.[13] It was often explicitly called a 'rencontre'. But in contrast to single combat or a duel, a battle could involve up to 120,000 men in a field of several square kilometres. This mass event was a huge challenge both logistically and epistemologically. To form up in the planned battle order as quickly as possible required a high degree of discipline and coordination; to maintain an overview and to know what was going on, was no less challenging. Thus, the course of some battles is still unclear to this day.

Battlefield formations changed from the 17th to the 18th century, which can be easily seen by comparing battle paintings

of the Thirty Years' War with those of the Seven Years' War. The lines became increasingly longer. The troops approached in columns, before regrouping into lines on the battlefield. One of the major challenges was the supply of men and horses and to position them correctly. The deployment to long lines – hence the term linear tactics – was carried out to a clearly defined 'ordre de bataille', structured according to the seniority in grade, since it was of varying prestige for officers or army chaplains [sic!] whether they were placed on the right or left, in front or behind, and there were repeated hierarchical disputes because of this. About 500 yards behind the first battle line a second one was placed and another 200 yards to the rear a third, as a reserve formation; the approach for the cavalry was similar. The firepower of the infantry lines formed up in platoons, i.e. groups the size of an eighth of a battalion, was considered to be pivotal, which is why the drill was focussed on this; it also motivated the quantitative growth of the armies considerably.[14] In the 18th century, the firepower of the Prussian army was particularly praised, but it has to be realistically assumed that the rate of fire was two rather than six shots per minute; the material quality of the muskets, flints and gunpowder played a major role in its effectiveness.[15] Battles became mass spectacles: About 50,000 men fought in the Battle of White Mountain in 1620, the first major battle of the Thirty Years' War, while some 500,000 men were involved in the Battle of Leipzig in 1813, during the Napoleonic Wars. In one of the biggest battles of that time on Bavarian soil, about 100,000 men faced each other near Höchstädt in 1704.

Ideally, the whole battle action still had to remain manageable and predictable; both were, however, hardly ever true. Battles were virtually ‚invisible' since nobody was able to oversee them completely, and the contingent outcome was the classic problem of all military theory. The military theorists of the 18th century therefore consistently advised, in the spirit of rationalism, that it was better to avoid battles altogether.[16] The concern of the strategists was that the battle could be determined by chance, but still be decisive, while the question of decision was not so easy to answer in practice. Some historians even call the period between the Thirty Years' War and the Battle of Waterloo an era of indecision.[17]

Since the Middle Ages, the ultimate criterion for the outcome of a battle in Europe had been the assertion of the physical battlefield.[18] The main goal of every commander was to drive the enemy troops from the battleground and hold it himself. In the age of linear tactics, this was coupled with bringing the enemy lines into disarray or even breaking them up. When the sources say that a formation fell into disarray, this was usually a sure sign of an imminent defeat. But it was not that simple. The exact location of the battlefield was open to dispute, since the issue of who had successfully held it was dependant on it.[19] Thus battles often took on a second reality as media events in which the assertions of validity collided anew.[20] Spatial, technical and cultural factors were the decisive factors for the intensity of violence on the battlefield. Ideally, the battle took place on an open plain that offered sufficient opportunities for manoeuvring. If the lines broke, this left enough room for an orderly retreat. Whenever the space was confined – be it by a mountain, a river or a marsh – it usually led to a massive escalation during the battle. Whenever the parties were also able to position their artillery particularly well, a further escalating moment of violence was added. It was not, however, about the complete physical destruction of the opponent. This would not have been in keeping with the code of conduct of the aristocratic officers' culture or the techni-

cal and logistical capabilities of that time. The pursuit of a fleeing enemy usually did not take place or inevitably ended with the onset of darkness. The most likely pursuers were mostly mounted units, whose main task was the 'small war'.

Small war

Due to the intensive discussion about the so-called 'new wars' in recent years, the topic of small wars and their actors has regained some topicality. While the former have been sociologically characterised by catchwords such as 'denationalisation', 'asymmetrisation' of the opponents and 'autonomisation' of para-statal agents of violence, historical parallels and lines of development have also been taken into account.[21] Modern historical research into the phenomenon of small wars has so far experienced two phases of increased popularity. Events in world politics at the end of the 1960s and 1970s led to an increased interest in the military history of guerrilla and partisan warfare ("guerrilla" in Spanish means nothing more than small war).[22] With the emergence of the so-called 'new asymmetric wars', there has been a renewed interest since the late 1990s in the history of the small war. The conflicts in the former Yugoslavia, the Gulf, Africa, Afghanistan or Syria have found a wide response in research, which has also helped to give new topicality to the question of their historical forerunners.

In addition to sieges and battles, the small war became increasingly important in the 18th century as a tactical form of operations.[23] Major battles were too costly and risky and, as mentioned before, were to be avoided as far as possible through skilful manoeuvring. Cutting the enemy off from his supply lines, for example, became an important objective in order to achieve success without significant enemy contact. This was particularly striking in the War of the Bavarian Succession (1778/79), the so-called 'Potato War', during which no major combat occurred at all.[24] The necessity of training for the small war grew in proportion to the extent to which the machine-like drill of the line troops made a flexible individual approach increasingly unlikely. The decisive blows, however, were still dealt out by the regular troops: "The task of the small troop detachments was therefore not to bring about battle decisions, but rather the tactical preparation, support and securing of operations on a large scale", Johannes Kunisch specifies.[25] In concrete terms, this meant taking over outpost and security duties, gathering information about the enemy through reconnaissance and patrols, or – conversely – using diversive manoeuvres to confuse the enemy or "masking" the actual troops. Another central task of the irregulars was to interrupt the enemy's lines of communication and supply. A noticeable step beyond such ancillary tasks was the so-called 'Detachementskrieg' (war of detachments), which denoted deliberate commando-style operations, sometimes combining regular and irregular forces. Time and again, these operations led to attacks on the civilian population, so that the actors of the small war in particular were held responsible for wartime atrocities.[26]

The deployment of light troops was characterised by a fundamental ambivalence of dependence and independence. In material terms, they were much more independent than the larger formations and rarely faced supply shortages, but in terms of concrete combat operations they remained dependent on the support of regular units. Due to their light armament, they were extremely flexible and capable of quick retreat, but just couldn't match the concentrated fire power of a regular unit deployed in line. Martin Rink summed up the advantages of light troops as follows: "personnel by being able to recruit

free troops who did not fight for a fixed pay, but against a share of the spoils; logistically due to their independence by 'feeding themselves on the country-side'; spatially by the greater mobility of light troops in the field; and organisationally, through the formation of 'Detachements' or 'parties' tailored to the mission."[27]

The practical requirements for officers and men of the light troops tended to be somewhat contradictory. While it was acknowledged that their effective tactical deployment required a certain degree of autonomy, these capabilities were nevertheless at odds with the concept of subordination fundamental to the absolutist armies. The prevailing rationalist zeitgeist of the century of enlightenment with its ideas of the 'mathematisation' of war was incapable of integrating into its frame of thought the necessary autonomy of the free troops, which could only be perceived as "chaotic".

Besides its tactical function, the small war also fulfilled important social functions. Just like the artillery, it allowed bourgeois soldiers serving in the free troops to rise to higher ranks and break through the otherwise quite impenetrable barriers to the officer corps. But it was precisely the autonomy of the light troops, necessary for such extraordinary merits, that made them suspect in the eyes of the hierarchy-conscious military; and for similar reasons, hussars became popular heroes or villains of contemporary literature and populated the theatre stages.[28] Only as a free corps officer, one could accomplish – for better or for worse – literarily useful heroic feats (called 'Husarenstücke' in German), which were denied to regular line soldiers.

But who exactly were these irregular troops? Some of them were specially recruited regiments in their own right, while others units were characterised by their common ethnicity. The Russian army, for example, had a high percentage of irregular formations recruited amongst Cossacks and Kalmyks, whilst the Austrians could field Croats and Pandurs.[29] The latter left their traces, particularly in Bavaria. The ethnic troops were made up mostly of border tribes, who possessed a lot of practical experience in all matters of small-scale warfare. Their activities, especially towards the civilian population, were often viewed on the basis of cultural prejudices, which postulated a fundamental uncivilised otherness of the peoples of the European periphery.

For the advocates of the light troops, on the other hand, it was precisely their 'exalted national pride' that contributed to making them a particularly reliable force – compared with the desertion-prone line troops –, motivated by a sense of ethnic solidarity.[30] Whenever Central European free troops committed assaults and other irregularities, this was attributed to their social recruitment background outside the established orders of society, which tended to attract 'criminal riff-raff'. In fact, the care taken in selecting the free forces was disproportionate to their importance and, above all, their operational freedom. As a result, deviants or deserters were recruited without distinction. Moreover, the uncontrollable practice of the free troops to self-supply time and again came at the expense of the civilian population. Apart from the paradoxical notions of their military qualities, the social status of the free troops was also highly contradictory. Although their practical-operational importance for the entire warfare was increasingly acknowledged, their social recognition was still blocked.

The small war cannot be reduced to a residual of older forms of battle and organisation (such as the classical mercenary armies) nor to a nascent nucleus of modernity, but is a specific response to the contradictions of absolutist warfare. In the wake of the revolutionary wars and especially with

the appearance of the Spanish guerrillas, the phenomenon of the small war was divided, according to Martin Rink, into two strands: "a military-tactical and a political-propagandist direction of development".[31] In other words, while classical irregulars continued to exist, these were now joined by partisans who were stylised as freedom fighters in public discourse.

Conclusion

The use of theatre metaphors integrated the war into the world of court aesthetics, suggesting a spatial overview and containment of the acts of war, which had a two-fold ideological effect. In the self-interpretation of the 18th century as an age of "tamed Bellona", war seemed to be confined to a limited battlefield. Its violence, however, was as little contained as the actual visibility of the individual operations was guaranteed.[32] The stage imagery thus nurtured in several respects a fiction of overview and control.

With the prospect of ‚staging' the war, far more came to light than just ‚pretty fiction'. Winning and losing were not only communicatively framed through symbolic acts, but also performatively created or affirmed. The European wars of the 17th and 18th centuries were thus strongly influenced by the logics of courtly society, not only politically but also aesthetically, socially and symbolically-performatively. Military and courtly-ceremonial claims to validity were closely linked by concepts of honour, fame and decorum belli.

In the century and a half between the end of the Thirty Years' War and the French Revolutionary Wars, hardly a year passed in Europe without armed conflict. Some six million soldiers were killed or wounded on the battlefields of Europe or died of diseases.[33] So it is difficult to speak of a taming of the war. The objects in museums today that still bear witness to the wars of the early modern era are mostly items that conform to the logic of contemporary aesthetics: a battle painting, a scale model of a fortress, a uniform, a sword. The weapons only give a hint of their cruel use, and much of what shaped the daily life of millions of people in wartime, such as illness, hunger or fear, largely defies representation or has left too little evidence to justify museumisation. Visitors to the permanent exhibition of the Bavarian Army Museum should therefore be aware of both the power of aestheticization and the infinite suffering that all forms of war have brought about in history. Therefore, I would like to conclude with the words of the sociologist Pierre Bourdieu on the meaning of historical knowledge, which constitute an important admonition of contemporary relevance, especially for military history: "If you have to know history, it is not so much to be nourished by it, but to free yourself from it, to avoid being obedient to it without knowing it, or repeating it without wanting to".[34]

1 The lecture was held on the occasion of the opening of the new permanent exhibition ‚Formen des Krieges 1600-1815' at the Bavarian Army Museum in Ingolstadt on 3 June 2019. The text of the original lecture was largely retained and supplemented where necessary. Preisendörfer, B. 2000: Exkurs über den Krieg. In id., Staatsbildung als Königskunst. Ästhetik und Herrschaft im preußischen Absolutismus. Berlin: De Gruyter, pp. 327-344 and pp. 422-428.

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Der Muske

Die Musketiere mit ihren schweren Musketen
Die Waffe gab diesen Einheiten ihren Namen. D
Musketier nahm bei steigender Distanz jedoch stark

Vor die 4 bis 7 kg wiegenden Luntenwaffen war eine Stütz
um sie sicher abfeuern zu können. Im Laufe des Krieges wu
immer kürzer. Im Nahkampf konnte der Kolben der Gewehre
kurze Stoßhiebe genutzt werden.
Musketiere waren normalerweise ungepanzert und somit im Nahka
eingeteilt und hatten die Pikeniere zurück, wo sie eingermaßen
Fiel es gegen sie meist hinter die Pikeniere zurück, wo sie eingermaßen
sprechlich nachladen konnten. Load- soh die Formation von Pikenieren und
Musketieren auf, konnte die Reiterei unter ihnen ein Blutbad anrichten.

The Musketeer

The musketeers had the firelocks with their heavy muskets. The accuracy of the
weapon, which gave these units their name, decreased with growing distance.

As these weapons weighed 10 to 15 lbs, a musket rest was necessary to fire them. To
the course of the war, however, they became increasingly lighter. For close combat
he couldn't shoot the short sword could be used.
As musketeers were normally unarmoured, they stood very little chance in close
combat, since they were usually positioned behind
the pikemen where they could reload their weapons relatively well protected.
If such folks as these formations of pikemen and musketeers dissolved, however,
the enemy cavalry could cause a bloodbath among them.


etier

Daniel Hohrath and Tobias Schönauer

An Exhibition Takes Shape
Refections on the New Permanent Exhibition

The exhibition "Forms of War 1600-1815" constitutes the first part of the new permanent exhibition of the Bavarian Army Museum in the New Castle of Ingolstadt. It makes up about half of the portrayal of the military history of the early modern period that is planned for the first floor. The focus here is on the three main manifestations of warfare of this era, i.e. the battle, siege warfare and the so-called "small war".

The southern half of the first floor will subsequently be devoted to other topics related to the history of military life in the early modern period.

The ground floor, currently housing the "Treasure chamber" and a brief overview of the history of the Army Museum, will be devoted to the period from the Middle Ages to around 1600. The second floor will be devoted to Bavaria's military history from 1815 to 1914.

Before we take a closer look at the "Forms of War in the Early Modern Period" and their depiction in the new exhibition, here are a few basic ideas concerning the concept and the requirements of the new permanent exhibition at the Bavarian Army Museum.

The Museum and its Collections

At this point, a brief look at the history of the museum and its collections might be useful, because the historical development of this institution, the change in its objectives and the historical condition of its collections set the framework for our work today.

The Bavarian Army Museum was founded in Munich in 1879 at the behest of leading circles of the Royal Bavarian Army, to which it was subordinated as a military agency until 1919. With the dissolution of the Bavarian army, the Army Museum became a civilian institution within the remit of the Ministry of Culture of the new Free State of Bavaria. In 1940, the museum was again transferred to the military side by placing it under the authority of the Chief of the Army Museums of the German Wehrmacht. Formally dissolved after the end of the war in 1945, the remains of the collections survived under the care of the Bavarian National Museum. The reopening as an independent state museum in Ingolstadt took place in 1972.

This eventful history demonstrates that concepts, objectives and modes of representation were and are subject to historical change. This observation applies not only to the exhibitions themselves, but also to the beginnings and further development of the collections. In a certain way, however, the historically evolved collection also provides a solid foundation. The permanent exhibition of a museum must and should be based on it and also reflect its history.

As long as the Army Museum was the "historical showcase" of the then Royal Bavarian Army, it represented its traditi-

on and continuity and thus served to no little part the military's self-reassurance. This was in keeping with its focus on presenting the glorious history of the Bavarian Army, its wartime feats and its units whose roots could be traced back to long before the establishment of the oldest regiments still in existence then.
With the end of the First World War, the Bavarian army as an institution disappeared, and the Army Museum was thus inevitably transformed into a place of remembrance, the preservation of material testimonies and the cultivation of the memory and traditions of the perished army. In the 1930s and after the takeover by the Wehrmacht, this was combined with the establishment of an identity for the German-Bavarian soldiery on the basis of the distinct ideological-propagandistic objectives of the National Socialist regime.
The re-establishment of the Army Museum at the new location in Ingolstadt as a state museum of the Free State of Bavaria, subject to the Ministry of Science and Art, was accompanied by a general renunciation of explicit historical statements for the sake of emphasizing the artistic and cultural-historical value of the collectibles, which accordingly were shown in sober display cases as handicraft artefacts. The only exception to this was the suspension of all the surviving regimental colours and standards of the Royal Bavarian Army in the banner hall, which was designed to create an overall emotional impression and simultaneously fulfilled the traditional function of a military memorial room.

Fresh Approaches

The new permanent exhibition, which is currently being realised step by step in the New Castle of Ingolstadt, faces fresh challenges in terms of conveying history and its creative presentation. If the mission of the museum is to be fulfilled, it is crucial to reflect the state of research in military history, which has developed in new directions in recent decades, but the levels of interest and previous knowledge of the museum visitors must also be taken into account. On the museum's homepage, it reads like this:

"The Bavarian Army Museum is one of the great museums of military history in Europe. The collections focus on Bavaria in its European context and cover the period from the late Middle Ages to the present day.
The Bavarian Army Museum seeks a critical and historically accurate reflection on military confrontation and the role of the army in history and their impact on people, society and government." (Ansgar Reiß)

The Bavarian Army Museum thus combines a perspective on regional history with a decidedly military historical question, which places the regional aspect in a broader comparative framework.
In fact, the very definition of the state's historical frame of reference is not as straightforward as it may appear at first glance: its spatial scope as a museum of a state can today only be the modern Free State of Bavaria, which of course is no longer identical with the kingdom in its final borders of 1816. The Palatinate in particular, at that time still belonging to Bavaria, although spatially separated from it, is now part of another German federal state. In this respect, too, the situation today differs from that of the "old" Army Museum of the 19th century.
Thus, there is a fundamental tension between the object of the historical analysis and its justification from its regional continuity. This is even more true in the early modern period: as a duchy and an electorate under the House of Wittelsbach, Bavaria comprised only slightly more than half of the territory that would later form

the kingdom and finally the Free State of Bavaria.

If, as is indispensable for a historical approach, history is not constructed as a linear development targeted at the present, but rather takes the perspectives, horizons and options for action of its contemporaries seriously, this has consequences for the presentation: after the crisis-ridden history of the Wittelsbach electorate in the 18th century, even around 1800 it was not foreseeable that the diversity of states and rulers in the south of the Holy Roman Empire would merge into a strong Kingdom of Bavaria. A present-day regional military history of the early modern period will also deal with the military histories of those clerical and secular principalities, and the free imperial cities too, which today are on Bavarian soil. At the same time, it will be placed in a more European context. This is due to the subject matter, as the military was and is an "international" affair. This is certainly true of the early modern period, in which wars were waged by a supra-regional mercenary system. This led to a constant exchange of personnel and know-how; fighting techniques, armament and equipment were similar throughout Europe, with partial exceptions of peripheral ethnically closed warrior cultures.

Until the 19th century this changed only gradually. The individual mobility of soldiers was already declining in the standing armies of the 18th century, as these often consisted largely of native men with long-term service contracts. For officers, too, multiple changes of employers became less frequent and finally ended with the national armies, restricted to citizens. This, however, had no impact on the exchange of knowledge. Wars led to contact and interaction with other cultures (albeit mostly unfriendly and involuntary), to mutual adjustment, and to a rapid acquisition and adaptation of superior weaponry and combat techniques. The military in general was more interested in precise knowledge of the conditions in other armies and states than almost any other group in society, even in peacetime. This is attested not least by the Bayerische Armeebibliothek (Bavarian Army Library) with its international collection of specialist literature and journals in several languages. All of this contributed to the fact that armies resembled each other much more – right down to their organisational structures – than other sectors of society.

For the realisation of the exhibition, this meant that it was important to show typical pieces representative of the warfare and fighting methods of the respective periods, especially in the area of the early modern period and in particular in the section "Forms of War", and to place them in the context of their practical use. Given the history of the collection, the majority of the weapons and equipment on display have a specifically "Bavarian" origin anyway.

Conceptual Considerations

Conceptually, one of the fundamental basic decisions concerns the new chronological arrangement of the exhibition sections: For a presentation of military history, it makes sense to question established period terms in political history – historical dates such as "1648", "1789" or "1806" do not represent watersheds when we look at the structures and the manner in which warlike violence took place and examine how this can be visualised with the help of museum objects.

So, we decided not to let the time frame "early modern times" end before the French Revolution or Napoleon, as is often the case: weaponry and ways of fighting, equipment and living conditions of the soldiers did not suddenly change as a result of the Peace of Westphalia, the

French Revolution or the rise of Bavaria to a kingdom. Rather, a slow evolutionary development can be observed in warfare, the sub-sections of which can be determined on the basis of some technical and organisational changes that were made over longer periods of time and cannot be pinpointed based on key dates.

Until the first third of the 19th century, the natural, social and economic conditions throughout all of Europe were characterised by a pre-industrial, agrarian and therefore economically unstable economy of scarcity, which shaped the limits and possibilities of society. In terms of technical history, it was an era of manual labour, the energetic basis of which – apart from the explosive substance black powder – was almost exclusively the physical strength of humans and animals.

Applied to warfare, this meant an inextricable framework of space and time: feeding an army competed directly with feeding the local population. At the same time, the regional population density and agricultural productivity were directly proportional. In other words, an army could only be fed where large numbers of people lived, and the landscape structures and transport routes were essential too. That is why Northern Italy and the Netherlands, but also certain fertile and densely populated regions of Germany such as the Danube valley, became Europe's most important "war theatres" time and again.

Travel on land was confined to two feet or four hooves. The marching and transport distances, the maximum speeds of troop movements and thus the operating radius of military units and entire armies depended on it. Although over the course of two centuries considerable organisational improvements in logistics and advances in territorial knowledge were achieved, there were still immovable frontiers that were only to be expanded in the wake of industrialisation in the 19th century.

Taking "1600" as a starting point of the section is not meant to set an exact date. At the turn of the 17th century, firearms, which had become increasingly important ever since the 15th and 16th centuries, had definitely established themselves as the dominant type of weapon, first in the form of the heavy cannons of siege artillery and soon also as small arms on the battlefield. Since about 1700 the entire infantry was armed exclusively with flintlock rifles, which were improved only in details until about 1830. So, the unity of a period can be postulated here as well: While weapons technology developed continuously over these two centuries, albeit in slow steps, in warfare it remained confined to smooth-bore muzzle-loaders charged with black powder. Effective firing ranges and the rates of fire were gradually increased, but remained within rather narrow limits. "Cold steel" retained its importance, as close combat only decreased in relative terms. Whether in armament, clothing or transportation: It was not until industrialisation in the second quarter of the 19th century that a decisive qualitative breakthrough was to take place.

The decision to use 1815 as the end point of the exhibition constitutes a pragmatic compromise: The Congress of Vienna brought about the end of a long period of war, and it seems reasonable to start the development of military affairs in the 19th century from here, although the fundamental changes did not take place until the following decades.

The Building and the Objects

These rather basic and theoretical considerations are now to be complemented by some more practical aspects of museum work: How can the military history of Bavaria be conveyed in a museum having a magnificent collection that has evolved over decades, but was established under

completely different conditions, and in a castle that was not designed as a modern museum?

A permanent exhibition differs from temporary, thematically oriented historical exhibitions – such as those organised by the Haus der Bayerischen Geschichte (the Augsburg-based House of Bavarian History) at changing locations or shown as special exhibitions in almost all museums –, in that it must be based almost entirely on the existing collections of the museum itself. Renouncing the short-term international loan system of the museums requires the courage to brave the "gaps": It is almost impossible to achieve a perfectly composed, comprehensively balanced presentation using just the physical objects that have come together in the eventful history of a collection.

Many of the objects that the curators would like to display are simply not available in a collection, while some others are in abundance. The often accidental preservation of "material relics of history" does not conform to our didactic desires. Thus, portraits of important protagonists, certain types of weapons or items of equipment may be present in other museums by chance, but not in our own collections.

A further problem, especially for an exhibition on the military history of the early modern period, is that it is much more important to show typical and everyday tools of war than unique objects of high artistic value, relics of famous personalities or testimonies of specific events. Therefore, a simple musket, as used by thousands of people, is more meaningful for depicting the reality of war than the chiselled epée carried by a general in a particular battle.

Such military "everyday objects" from the early modern period are often the true rarities: Not only in the collection of the Bavarian Army Museum, for example, weapons and equipment of officers are vastly over-represented; items of simple soldiers, by contrast, have survived in much smaller numbers. Contemporaries and also later collectors appreciated and preserved predominantly valuable, rare representative artefacts. The realities of war – fighting and surviving, as well as the everyday hardship and misery – are demonstrated most clearly by the fact that they have left no relics. Thus, the real, extremely rare treasures of the museum are often those unassuming ones, such as the simple original felt hat from the Thirty Years' War, the wooden beam of the "cheval de frise" or the leather pouch of a grenadier from the early 18th century. This rarity is, by the way, also the outstanding feature of the objects that are displayed in the tower room on the ground floor in a separate "treasure chamber".

Another precondition having a great influence on the design of the exhibition is the space available. For this purpose, modern museum buildings offer large, empty, windowless rooms that can be partitioned and subdivided as desired with exhibition architecture. In the particular case of the New Castle of Ingolstadt, however, the conditions are quite different. In view of the layout and the vastly different floor spaces of the rooms in the late medieval building, a complicated interplay between contextual planning and spatial conditions has to be ensured. An exhibition planning that is oriented towards the intended storytelling only will never find the space, the free wall or the passage where it would be desirable. The order and emphasis of the topics dealt with in the exhibition is also strongly influenced by the existing structural design of the building.

On the other hand, Ingolstadt's New Castle is itself an art monument that can and should be visited independently of its museum function. It was therefore an integral part of the exhibition planning by the architect Janet Görner that the historical spatial effect and the appearance of the

vaults, columns and window niches of the medieval building be preserved.
In some respects, however, the problems described should not be perceived as obstacles but as opportunities: An exhibition is not a book placed in space and illustrated with 3D objects. Nor can it claim any kind of encyclopaedic completeness. A well-thought-out sequence of objects and texts is important, but whether visitors will adhere to it is far from certain. A diverse museum audience cannot and should not be made to follow a fixed order and to absorb all the information offered. Occasionally, attempts are made to enforce this by means of gloomy exhibition labyrinths in which visitors cannot deviate from the guiding line. In the open halls of the New Castle, on the other hand, visitors should have the freedom to follow the conceived arrangement or find their own way.

Texts in the Exhibition

The exhibition relies on objects that convey immediate impressions and spark interest on the one hand, but on the other need to be explained. Artefacts from a past era hardly ever speak for themselves. Their function or, quite literally, their functioning, but also their practical and symbolic meaning have to be deciphered. This applies to arms and uniforms as well as to paintings and etchings. The former were not merely functional articles of daily use, but also expressions of cultural imprints; the latter were not merely depictions of reality, but representations of contemporary conceptual worlds and intentions. That is why explanations are necessary. It is true that the receptivity during a museum visit is not unlimited, but without texts the visitors would remain disoriented, their curiosity unsatisfied. While no one is forced to read, we invite them to do so. This is done by means of concise texts that are worded as comprehensibly as possible and are hierarchically graded in their own right. The textual concept of the exhibition proposes a staggered system of information. This was realised in close cooperation with graphic designer Luise Wagener. The texts have been written and designed to be accepted – hopefully gladly –, that is, in as few and simple words as possible, without oversimplifying them to the point that the statement is no longer true. Incidentally, this catalogue contains all the texts, so that they can be taken home conveniently.
Flat, backlit steles in front of the walls provide orientation by providing brief introductions to the thematic rooms and sections of the exhibition. The texts are structured into three parts (headline, a highlighted paragraph of about five lines and two to three additional paragraphs). Illuminated lecterns provide an overview of the themes of individual showcases or groups of exhibits. Those who are particularly interested can also obtain more detailed information by means of removable panels that highlight details of objects and pictures or explain how weapons or tactical formations work. All these texts are bilingual (German and English).
The principle of hierarchically structured, clear texts also applies to the descriptions of the individual exhibits. They are reproduced in full in the catalogue section of this book. The font size in the exhibition has been chosen so that texts can be deciphered even for older people with glasses. It is important that visitors can understand what each object is meant to represent within the exhibition, but special information on the specific historical artefact itself is also provided, with no exact text lengths specified. The aim is to provide every visitor – both those in a hurry and those with a special interest – with an individual offer that satisfies them and arouses their curiosity. For lack of space, only the headline and the highlighted paragraph of

the object signs have been translated into English, but this catalogue contains all the texts in English.
An exhibition first and foremost has to offer possibilities. Impressions and information can be perceived on an intellectual and on an emotional level. One principle in designing an exhibition is to relate the visitor's perspective to the perspective of the acting and suffering people of the past. This means that objects should, if possible, be shown within the room and in the showcase in just the way they were worn and used by those people.
Museum objects, including tools and weapons, are isolated from their functional context when presented in display cases in a neat and well-lit environment – this is quite inevitable. The brutal "reality" cannot and should not be reconstructed or simulated, not even by manipulative staging or the perfect use of virtual media. The encounter with things from the past requires – and at the same time encourages – a confrontation with history.

The Exhibition at a Glance

This brings us to the first part of the permanent exhibition "Forms of War in the Early Modern Period", which was conceived by Tobias Schönauer (for the period until the end of the Thirty Years' War) and Daniel Hohrath (for the period from 1650 to 1815). In altogether three rooms, we have opted to focus on what was ultimately the mission and purpose of the military: war in its main form, the direct exercise of violence. In these rooms, we present the development of the "art of warfare" – to use the historical term – and the military profession between 1600 and 1815. The widely varying size of the three rooms is due to the architecture of Ingolstadt's New Castle. They are dedicated to the topics "Battle", "Siege Warfare" and "Small War". At first glance, there is an apparent preponderance of "Battle", which is the topic of the large hall. If the rooms were to be sized strictly according to their historical significance, a completely different picture might emerge, since siege warfare, and even more so the commonplace "small war", not only required much more time within the war years, but were often of greater significance in more than one respect. Using the example of the battle, however, makes it easier to explain the typical armament and the evolving fighting methods of the armies in the 17th and 18th century in more general terms.

"A Staging Takes Shape"

Upon entering the hall from the staircase, the eye is immediately drawn to a scene of close combat from the Thirty Years' War: an armoured rider on horseback (a "Pappenheimer") fighting two foot soldiers.
Large-scale stagings are a design element of the new permanent exhibition. Each floor presents original objects from the collection in a special way. Down on the ground floor, this is a "thicket of pole arms"; in the section "Forms of War" the visitor encounters this "battle scene" from the Thirty Years' War. It aims to convey a – naturally only very vague – idea of what a battle during the early modern period meant for those involved: a vicious close-range encounter.
Of course, it is impossible to portray such a situation even remotely realistically in a museum setting; that was never the intention of this staging anyway. The aim here is rather to illustrate how the equipment was worn and used "on the person". Above all, however, the visitor should get a feeling for the physical violence that was exercised with these objects.
In many months of detail work, a group of three mannequins and a horse sculpture were created. The horse in particular was difficult to realise. First a horse breed

had to be found that corresponded to the animals used by the cavalry at the time of the Thirty Years' War. We opted for a Lusitano, because its rather small but powerful stature is very close to the breeds of that time.[1] The wood sculptor Wilhelm Knies from Schliersee was commissioned to create the sculpture, a task he accomplished brilliantly. After several detailed preliminary discussions in the museum and the measuring of a real horse on a stud in Bückeburg, the central element of the group was created. The mannequins depict three soldiers of this era: an armoured cuirassier on horseback, a pikeman and a musketeer. The hands and heads of the two foot soldiers were also created by Knies. To this end, the museum provided him with illustrations of faces based on Baroque paintings as well as facial reconstructions made with the help of bone finds from mass graves.[2] These details were important so that not only the horse but also the "people" could be recognized as contemporaries of the Thirty Years' War. The bodies of the mercenaries are life-size, wooden mannequins, which were reinforced by the museum's workshops and positioned as required.

Armament and equipment of the mannequins are a mixture of originals (especially weapons, helmets and armour) and replicas (especially the textiles and leather parts).[3] To reinforce the authentic impression, garments previously worn by a re-enactment group were used.[4] The saddle, whose reproduction took several months and presented the craftsmen with great challenges, is particularly noteworthy among the pieces of equipment. It was created with the support of Ulrike Brandstetter in the museum's own workshops.

The scene resembles a snapshot frozen in time. The pikeman is in a defensive posture, as shown in contemporary illustrations.[5] The charging horse shies back from the four-meters-long pike. The cuirassier swings his rapier for a deadly blow to the musketeer's head. The latter has dropped his gun in panic and trying to fend off the blow with his musket rest, is about to draw his side arm. The staging is surrounded by display cases in which the originals from the museum's collection are shown and explained in detail. In addition, the fighting techniques of cuirassiers, pikemen and musketeers are explained at lecterns, as is the reconstruction of the cavalry horse.

The arrangement of the mannequins is not coincidental, but rather based on reports we have about the Battle of Alerheim (3 August 1645). In addition to that, we included findings from a mass grave that was excavated on the battlefield in 2008, where some 85 soldiers who had died in an attack by the Bavarian cavalry under Jan van Werth had been buried.[6]

A window alcove next to the staging is dedicated to this very mass grave. Seven bone fragments from the remains of the fallen buried there provide information – based on anthropological research – on the age, pre-existing conditions, injuries and causes of death of the mercenaries who perished in the Battle of Alerheim. In this way, the deliberately spectacular staging corresponds with the sparse remains of the brutal reality. Other sources (etchings, ego-documents, paintings, topographical surveys, etc.) were also incorporated into the planning.

Together with the original objects that have been kept "above ground" in the collections of the Army Museum, this "scene from a battle" in the Thirty Years' War thus addresses equipment and armament of the mercenaries as well as their suffering and death in this formative period of Bavarian history.

From the Thirty Years' War to Napoleon

The large battle paintings from that period can be regarded as a representative conveyance of the events on the war theatre to a contemporary privileged upper class, and they often define the imagination of the realities of war to this day. Hence, they play an important role in the exhibition, not only in terms of their undeniable visual value. The famous oil painting of the Battle of White Mountain (1620) by Pieter Snayers, which hangs at the end of the section on the Thirty Years' War, demonstrates the wealth of interesting details and at the same time the need for a critical interpretation of such works of art. This room of the museum contains a short but impressive sequence of important battle paintings, from Huchtenburg's depiction of the Battle of Blenheim (1704) to Kobell's large canvas showing the Battle of Hanau (1813).

The next section illustrates the changes in warfare in the fifty years following the Thirty Years' War. The so-called Ottoman Wars are the main topic for the period up to about 1700, even if they were only one variant of the many wars in the peaceless Europe of that time. This is justified in our context, i.e. the issue of weaponry and the use of weapons, because the armament and fighting methods of the European armies did not differ from those in the Western theatres of war, except for a small number of adaptations to Ottoman tactics. Furthermore, the Ottoman Wars play an important role for the traditions of the Bavarian Army and the Bavarian Army Museum. In these Wars, Elector Maximilian II Emanuel distinguished himself as a general, and Bavarian troops and other southern German contingents played a special role in the conflicts in Hungary and the Balkans.

In the Ottomans, the soldiers of the now increasingly permanently formed standing armies met a differently organised opponent of equal strength. There was no technological superiority of the "West" yet to guarantee victory; this is rather a misplaced back projection from the colonial wars of the late 19th century. Two showcases present not only typical weapons of the European armies – our pieces are of course mostly German, often verified Bavarian specimens – but also characteristic Ottoman arms. The mutual influences and interactions are remarkable: The helmet shape of the Zischägge, as worn by the German heavy cavalry, has Ottoman models; the oriental mail shirt was manufactured in Venice.

Several muskets with different ignition mechanisms indicate the growing importance of infantry in Europe. The number of musketeers grew rapidly, but until about 1700, pikemen had to cover them with their pikes against the enemy's cavalry. Such protection was particularly necessary in the Ottoman Wars against the strong Turkish cavalry. To replace the pikes, plug bayonets were introduced, which were fitted into the gun's barrel and had to be removed for firing; another form of protection were the so-called "chevaux de frises", mobile barricades constructed of short pikes joined together. One of these is set up in the exhibition.

The large, well-known portrait of the Bavarian Elector Maximilian Emanuel – who commanded his troops in the Ottoman Wars as a prince and commander with great personal commitment – leads to a small gallery of portraits of military commanders: The era from 1650 to 1800 is considered the time of the "great commanders" and the public's attention was focused on their actions. Besides Maximilian Emanuel of Bavaria, there were some other princes who led their armies personally, such as Charles XII of Sweden or Frederick II ("Frederick the Great") of Prussia.

Many commanders were descended from the highest nobility, thus establishing their authority. Yet in wartimes, there were also soldiers, admittedly rarely, who came up from the ranks to the highest positions. It was not unusual for generals to be wounded or killed in action, which could influence the course of the entire war. The way they were depicted in paintings suggests absolute control over the course of events, but this usually had little to do with the reality on the battlefields. Nonetheless, the image of the commander as the decisive personality on the battlefield is indispensable in contemporary self-representation and historical memory for understanding the ceremonial "theatre of war" of the early modern period.[7]

Such depictions of military commanders span the entire period of the wars of the dynastic princely states, which can be dated from 1650 to 1792: The many medium-sized states – including the Electorate of Bavaria – competed for power and rank. To that end they joined the rival great powers in ever-changing alliances and provided them with troops to establish themselves as valuable allies.

In terms of military history, the period after 1700 is markedly different from the preceding half-century, so a separate section is dedicated to the 18th century. Now the battlefield was once and for all dominated by standing armies of long-serving soldiers, and the infantry finally became the most important arm of the service, thanks to two seemingly unspectacular innovations: The flintlock rifle and the socket bayonet, which turned the former into both a firearm and a thrust weapon. Well-trained, disciplined professional soldiers were able to perform the demanding linear tactics that brought much more firepower to the battlefield, since the soldiers, who were formed up in long lines three ranks deep, one behind the other, could now all fire up to three shots a minute simultaneously. A large display case shows the typical arms of the infantry and cavalry of the 18th century, while two gun models represent the increasing importance of field artillery.

The last section is devoted to the wars in the wake of the French Revolution, which became the catalyst for a new, 24-year period of war that was to change Europe's political order forever. It was thanks to this revolution that the young artillery officer Napoleon Bonaparte was able to ascend to the rank of general and "Emperor of the French". Whether and to what extent warfare was actually revolutionized during this period has been discussed time and again. Armies became bigger, and due to the social upheavals following the French Revolution, soldiers became more readily available and replaceable, because conscription made them "cheaper". The lack of drill was compensated for by national enthusiasm. The complicated linear tactics were no longer possible with all those young soldiers recruited en masse. Warfare became more mobile and aggressive, so that the smaller and cumbersome professional armies of old frequently proved to be inferior.

The display case with the weapons of the "Napoleonic period" shows at the same time that there were no fundamental technical innovations in terms of equipment and armament. The production of weapons, however, was rationalised in order to equip the ever larger armies. And above all, artillery was further expanded and made more mobile, so that it became the decisive arm of service in many battles. It is embodied by the full-sized Bavarian 6-pound field gun "Arco Carl" – its muzzle directed at the visitors symbolizes the deadly force of the cannon.

Being an ally of Napoleon, Bavaria was greatly expanded and became a kingdom in 1806. The fact that it was able to maintain its status after 1815 was not least due to the timely change of alliance in 1813,

embodied by the large painting of the Battle of Hanau at the end of the hall. The great sacrifices of human lives that were claimed in those wars, but especially in Napoleon's failed Russian campaign, are commemorated by some of the impressive watercolours by the Württemberg officer and eyewitness Christian Wilhelm von Faber du Faur; these constitute a real treasure of the graphic collection of the Bavarian Army Museum.

"The War for the Fortresses"

Let's come to the two smaller rooms: In the pentagonal tower, everything revolves around siege warfare. Fortified cities played a decisive role in almost all the European wars of the early modern period. In most wars of that time, sieges of fortresses not only took up much more time than the few major battles, but also their strategic importance was often much greater. Many campaigns centred around the possession of individual fortified cities.

Fortress models illustrate the technical race between attack and defence. In the middle of the room, the sensational planning model of Ingolstadt from around 1570 can be admired. It is one of the oldest models of an early bastionary city fortification. The wheelbarrow excavated in Ingolstadt in 1537 is less spectacular, but just as impressive as an object. It is a reminder of the enormous earth movements that were carried out in the shortest time and with the most primitive means possible during the construction or siege of a fortress: by soldiers, by the city's inhabitants and by the farmers of the area. But whilst the citizens dug trenches to protect their city (hence the moniker "Schanzer" – trench-diggers – for the Ingolstadters), the farmers had to toil for both sides: first for the defenders and then again, risking their lives, for the attackers.

Other display cases show some of the array of artillery and explosives, which were used during sieges. These range from mortars and heavy cannons to all kinds of incendiary and exploding munitions (rarely preserved today) and hand grenades that were thrown by grenadiers during an assault.

"The Everyday Life of War"

The smaller tower room on the other side shines a spotlight on the "small war", as the common acts of violence in the 18th century campaigns were called. Battles and sieges were merely isolated major events in the long period of time over which campaigns dragged on. Thus, the perhaps harmless sounding term "small war" ultimately covers the entire everyday life of wartime violence, the skirmishes and raids, the endless marches, the frantic search for provisions for the voracious armies, field camps and quartering, requisitions and plundering, and thus all that made war such a disaster for the population – and equally so for the common soldiers.

For an exhibition, the small war poses a problem, because apart from a few images that depict its events in a genre-like manner, either trivializing them or using all the trimmings of art to make them as gruesome as possible, there is hardly any surviving material evidence. Hunger, misery and cruelty can be described, but can hardly be shown by means of museum objects. Thus, the main protagonists in our case are exemplified by the light troops of the War of the Austrian Succession, namely the Pandurs of Colonel Trenck, who spread fear and terror in the Bavarian territories from 1742 to 1744.

Some of their original weapons were found in the collection of the Army Museum in addition to pictorial representations. Other than that, an open war chest (being a rather coveted booty) symbolises

the importance of money for warfare, and the scale model of a Danube raft hints at the problems of transporting troops and supplies at a time when there was a severe lack of adequate roads. A wall niche contains helmets with crude repairs from the time of the Thirty Years' War. They were found together with human remains – probably of marauding soldiers killed by farmers – in a field near Munich and throw something of a spotlight on the day-to-day violence and the fate of a myriad of nameless people who were either perpetrators or victims of those wars and all too often both at once.

1 Thanks to Christin Krischke (Bückeburg), Rebecca Güldenring (Bückeburg), Eberhard Senckenberg of the Lehr-, Versuchs- und Fachzentrum für Pferdehaltung (Schwaiganger Stud) and Dr. Marcus Junkelmann for their support.

2 Cf. e.g. Eickhoff, S. and Schopper, F. (2012): 1636 – ihre letzte Schlacht. Leben im Dreißigjährigen Krieg. Berlin, Theiss. pp. 160-163.

3 As a basis for the replicas cf. Wagner, E. (1980): Tracht, Wehr und Waffen im Dreißigjährigen Krieg. Hanau, Dausien Werner; Brnardic, V. (2009): Imperial Armies of the Thirty Years' War (1). Infantry and artillery. Oxford, Osprey Publishing; and idem. (2010): Imperial Armies of the Thirty Years' War (2). Cavalry. Oxford, Osprey Publishing.

4 Thanks to the "Kurbairische Dragonerregiment Johann Wolf e.V."

5 Cf. e.g. von Wallhausen, J.J. (1615): Kriegskunst zu Fuß (Vol. 2). Oppenheim.

6 Cf. Scheible, K. (2004): Die Schlacht von Alerheim – 3. August 1645. Ein Beitrag zur Geschichte des Dreißigjährigen Krieges. Alerheim, self-published; Lutz, A. (2010): Anthropologische Untersuchungen an Massengräbern aus dem Dreißigjährigen Krieg (unveröffentlichte Diplomarbeit), München; Kathrin Misterek, K: (2012): Ein Massengrab aus der Schlacht von Alerheim am 3. August 1645. In Bayerisches Landesamt für Denkmalpflege (ed.), Bericht der Bayerischen Bodendenkmalpflege (53), pp. 361-391.

7 Cf. Marian Füssel's contribution in this volume.


1792 – 1815
Revolution - Nation - Krieg

CATALOGUE

Battle in the Early Modern Period

Battles between entire armies were undoubtedly the dramatic highlights of war-related violence in the early modern period. The physical conditions of warfare remained comparatively unchanged during the long time span between the late 16th and early 19th centuries: all movements were carried out on foot or on horseback, and firearms worked with gunpowder. But while the size of the armies and the number of troops facing each other in battles steadily increased over the two centuries, the extent of the battlefields remained limited. A battle was fought over an area of several square miles and usually lasted only a couple of hours, during which the opposing armies met head-on.

There were many coincidences and influences that determined the outcome of a battle which therefore meant a high risk. For this reason, many commanders tried to avoid battles whenever possible.

Despite being conceived as "duels" between the opposing warring parties, battles were rarely decisive for the outcome of a war. Sometimes victor and vanquished could not even be clearly determined. Many thousands of soldiers were killed and wounded in these short but extremely violent clashes. The losses often amounted to up to a quarter of the troops deployed, which were lying on the field of battle in the aftermath.

On the battlefield, the opposing troops clashed in their pre-scheduled "battle orders". Usually these were wide plains on which the closed formations could move. Given that the distances at which the projectiles of small arms and even cannons could cause damage were very short, the armies could look each other in the eye in small and large scale battles alike. Close combat with cutting and thrusting weapons was common.

Over time, however, firearms became more and more important. Rifles and cannons increasingly dominated the battlefield. They became increasingly handy and easier to use, thus more numerous and eventually more effective. But it was only in the 18th century that the entire infantry was uniformly outfitted with flintlock rifles with bayonets. The tactical formations in which the soldiers had to fight were changing in line with the developments in firearms.

The bulk of the armies of the early modern period consisted of soldiers on foot, the infantry. The proportion of mounted troops, the cavalry, fluctuated over time, but they usually made up a smaller part of an army. Artillery, however, became more and more important and its guns became more mobile and effective. Whereas in the early 17th century only very few of the heavy cannons could be used on the battlefield, by the turn of the 19th century, ever stronger and more agile artillery was increasingly becoming the decisive arm of service.

1618-1648
30 Years of War

Around 1600, confessional differences and political rivalries intensified in the Holy Roman Empire. The Defenestration of Prague on 23 May 1618 triggered a regional conflict in Bohemia that grew into a European war. It was to last 30 years.

The war was waged on the Empire's territory, where Duke Maximilian of Bavaria was one of the most important actors. By 1600 the Duchy of Bavaria was the only bigger territorial state in southern Germany. With its largely contiguous territory, inhabited by about one million people, it was the most populous dominion within the Empire with its 17 million inhabitants.

Maximilian's focused fiscal policy enabled him to build up a powerful army. Many rulers had to outsource the recruitment of mercenaries to military entrepreneurs due to lack of funds; the House of Habsburg, for example, relied on the Bohemian nobleman Albrecht von Wallenstein from 1625 on. Maximilian, on the other hand, could afford – in both senses of the word – to take a different approach, as he had the financial means to pay for his army. He thus maintained complete control both over his army and his commander Johann Tserclaes, Count of Tilly (1559-1632), who entered Bavarian service in 1610.

When the Catholic League was founded in 1609, its members appointed Maximilian as their president (Bundesobrist), since the League's army of 25,000 men was lar-

Detail of: Duke Maximilian I of Bavaria (1573-1651), etching after 1621. Size of complete picture 23.7 cm (height) x 15.5 cm (width)
Bavarian Army Museum, inventory no. 0051-1968

gely financed by him. In the mid-1630s it consisted almost exclusively of Bavarian troops. Bavaria had thus attained a military importance during the Thirty Years' War that it would never again achieve, neither before nor afterwards. It was ultimately the army that enabled Maximilian to achieve and maintain many of his political goals.

Emperor Ferdinand II. (1578-1637) did not have the financial means to raise an army of his own when the Bohemian uprising broke out, which is why he asked the Duke of Bavaria for support. In return for his help, Maximilian received the Upper Palatinate in 1623 (permanently from 1628) and the electoral title of the Rhenish Palatinate (officially also in 1623). This decision was to have a considerable impact on the duration of the war, as the Protestant side was not willing to accept such a shift in the power structure of the Empire.

After the suppression of the Bohemian Revolt, other European powers such as Denmark (1623-1629), Sweden (from 1630) and France (from 1635) soon entered the war. The religious character of the conflict increasingly faded into the background. The changing coalitions were mainly determined by power-political interests. Hence Catholic France at times became allied with Protestant Sweden.

Of the 17 million people who had lived in the Reich before the war, only about 10 million were left in 1648. The war and its side effects, such as hunger and epidemics, meant that some parts of the empire had lost two thirds of their population when the war ended. The inability of the states to pay and provide for the soldiers they had recruited led to an intensification of warfare. The war was feeding off the country. Systematic devastation and the many campaigns resulted in refugee movements and spread epidemics. It would take more than half a century before these losses could be compensated to some extent through births and immigration.

It was not until the "Peace of Westphalia" of 1648 that an order was established which, although not a lasting peace, did establish a more stable system of power in Europe. Its principles remained part of the imperial constitution until the dissolution of the Holy Roman Empire in 1806. His militarily weak position at the end of the war notwithstanding, Maximilian succeeded in holding on to the Upper Palatinate; his lineage also retained the electoral dignity. Still, Bavaria paid a high price, as it lost about 35 percent of its population, mainly due to famine and epidemics.

1600-1650 With Pikes and Muskets

In the mercenary armies of the Thirty Years' War, the foot soldiers initially fought in large pike squares of up to 2,500 men. The pikemen with their long polearms were to provide a protective wall around the musketeers, who formed a line of riflemen around these so-called tercios, thus keeping the enemy at a distance. During the war, however, smaller and more manoeuvrable formations prevailed and the number of handguns was slowly increasing.

Even though infantrymen equipped with muskets soon made up half the force, the pikemen with their long pole weapons continued to dominate the visual appearance of the armies.

The cavalry often made up more than a third of the army. Armour still offered some protection against the lead bullets fired by weak handguns. But as they were expensive and restricted mobility, they fell increasingly out of use, and light cavalry became more and more important. It was also useful for controlling ever larger areas for the procurement of food.

Cannons played only a minor role on the battlefield. But this changed with the introduction of lighter guns, which made gun displacements during a fight easier. The course of the battles was mainly determined by the interplay between the foot soldiers and the cavalry.

Detail of: Johann Jacob von Wallhausen, Kriegskunst zu Fuß (vol. 2), Oppenheim 1615

Johann Tserclaes, Count of Tilly

Tilly, who came from Brabant, was the most famous commander of the Thirty Years' War, together with Wallenstein and Gustav Adolf of Sweden. He commanded the Bavarian army and, at times in personal union, the Imperial one as well.

Tilly's military career began around 1578 in Spanish service. He took part in numerous campaigns (including the Long Turkish War). In 1610 he entered Bavarian service as a lieutenant-general and held the supreme command at the Battle of White Mountain in 1620, where he achieved one of the most important and lasting victories of the Catholic side in the entire Thirty Years' War. In the following years Tilly consolidated Bavaria's powerful position through many military successes.

Following Wallenstein's dismissal, Tilly took over the dual command of the Imperial and League troops in November 1630. His name is closely associated with the almost complete destruction of Magdeburg in May 1631, where at least 20,000 people perished when the city was stormed. Tilly was deeply religious and always fought for the Catholic side. After being wounded at Rain am Lech, he was taken to Ingolstadt, where he died on 30 April 1632.

Johann Tserclaes, Count of Tilly, copperplate by Johann Alexander Böner after the painting by Anthonis van Dyck, 28.3 x 17.2 cm
Bavarian Army Museum, inventory no. N 5122

Maximilian I of Bavaria

Maximilian I (1573-1651) ruled Bavaria from 1597 on. He was one of the most eminent princes of his time and arguably the only one whose reign spanned the entire Thirty Years' War.
This painting shows him as a young man of about 25 years, wearing half-armour, helmet and sword.
During his reign, Maximilian succeeded to expand the national territory considerably and to become an elector. Bavaria evolved during this time into one of the best administered states in Europe.

Maximilian I of Bavaria was the Emperor's most important ally during the war. As "Bundesobrist" of the Catholic League (1609), a union of the Catholic estates of the Empire, Maximilian pursued an ambitious foreign policy and fielded a strong military force. Still, he could not prevent Bavaria from being severely devastated by repeated incursions by enemy troops.

Duke Maximilian I of Bavaria, Bavarian, pre-1600.
Oil on canvas, 139 x 101 cm
Bavarian Army Museum, inventory no. 0466-1966

Frederick V of the Palatinate

Frederick V, Elector Palatine of the Rhine (reigned 1610-1623), was also King of Bohemia from 1619 to 1620. This short reign earned him the nickname "Winter King".
Frederick belonged to the Palatinate line of the Wittelsbach dynasty, that had converted to the Calvinist faith. The Electoral Palatinate was composed of territories on the Rhine, the "Lower Palatinate", as well as the "Upper Palatinate" with the capital Amberg.
Since 1526 the Kingdom of Bohemia was ruled by the Habsburg Emperors in personal union. In 1618 the Protestant nobility of Bohemia opposed their claim to power, and on 23 May 1618 rebels toppled the Emperor's governors from a window of Prague Castle. This "Defenestration of Prague" marked the beginning of the Thirty Years' War.
In 1619 the Bohemian estates elected Frederick their king. As early as 1620, the Battle of the White Mountain put an end to his reign. Frederick had to flee and lost both his electoral dignity and the Palatinate hereditary lands. One lasting consequence of these events was the incorporation of the Upper Palatinate into Bavaria. Frederick spent the rest of his life in exile. In 1632 he died in Mainz probably from the plague.

Frederick V of the Palatinate, German, ca. 1620.
Oil on canvas, 208.5 x 117 cm
On loan from the Bavarian National Museum, inventory no. R 7331
Bavarian Army Museum, inventory no. L 6204

The Pikeman

The main task of the pikemen was to form a wall of long spears, which would provide protection against cavalry attacks. If necessary, the musketeers could also retreat behind this wall.
The enemy cavalry could not penetrate this forest of pikes and had to turn away, thereby becoming the target for the musketeers' gunfire.
Being up to 5 meters long, the pike was too unwieldy and bulky for individual combat, which is why pikemen were normally deployed in large closed formations. Around 1600 they accounted for about half of the foot troops; later their number dropped to about a third.
Pikemen were lightly armoured (half-armour and helmet). In the course of the war, however, they increasingly discarded this protection due to mobility and cost.

Mannequin of a Pikeman
Original items:
Bavarian Army Museum, inventory nos. A 953 (pike), N 1323 (pikemans pot), A 1084 (breastplate), A 1013 (sword), A 11729 (backplate)
Replicas:
Head (Wilhelm Knies), scabbard, gloves, textiles and shoes (Kurbairisches Dragonerregiment Johann Wolf e.V.)

Half-Armour for a Pikeman

Pikemen were only equipped with light armour. This comprised only a pikemans pot or spanish morion and a simple half-armour consisting of a gorget, a breastplate and a backplate and a pair of short tassets. The entire armour weighed about 7.5 kg. As the metal used for it was not very thick, it offered relatively little protection.

Pikeman's armour and spanish morion, German, c. 1600. Steel, brass, leather, armour with tassets (without helmet) height 63 cm, width 62 cm
Bavarian Army Museum, inventory nos. A 1086 (breastplate with tassets and backplate), A 4375 (gorget), A 4520 (helmet)

Spike

A pike is nothing more than a 4 to 5 meter long wooden shaft tipped with an iron spearhead or spike. To fasten the latter to the shaft, long iron bands were forged onto the sides of the spike. These were to prevent an opponent from chopping the spike from the shaft with a sword strike. Here both bands have broken off, the remaining bits were soldered on.

Spike, German, 16th/17th century. Iron, wood, length 33.3 cm
Bavarian Army Museum, inventory no. N 5286

Infantryman's Sword

Pikemen carried a sword called "tuck" for self-defence in a melee.
The quality of these edged weapons was very mixed. As a rule, officers carried rapiers whose blades were better crafted. Nevertheless, even simple soldiers could capture higher-quality edged weapons.
This infantryman's sword is relatively plain and light (820 g). The hand is only protected by a knuckle-bow and a short crossguard.

Infantryman's sword, German, late 16th century.
Steel, wood, total length 104 cm
Bavarian Army Museum, inventory no. A 1021

Skirmish in the Thirty Years' War

Battles and skirmishes were a popular motive among 17th century painters. This fictional scene was painted during the Thirty Years' War.

The depicted scene shows the attack of cavalry on pikemen. A cuirassier is just about to strike with his sword. A small number of the foot soldiers are equipped with helmets and armour. Some have already fallen under the hooves of the charging horses, others turn to flee. The ensign on the left carries a banner with a floral design. The similarity of this scene with the staging in the centre of the room is purely coincidental – the painting was not acquired in the art trade until after the completion of the group of mannequins.

Skirmish in the Thirty Years' War, painting by Jan Martszen de Jonge, pre-1647. Oil on wood, 56.5 x 72.5 cm
Bavarian Army Museum, inventory no. 0195-2018

The Cuirassier

Mounted troops made up between a quarter and one half of the field armies. Because of their greater mobility, they were responsible for the decisive movements.
At the outbreak of the war, cuirassiers were still equipped with a three-quarters armour, covering the body down to the knees. During the war, however, this armour was gradually reduced, as it was expensive, difficult to replace and uncomfortable with a weight of 25-30 kg. But it still offered some protection against firearms. The breast and backplate were usually "bulletproof", i.e. at 25 m they could not be penetrated by a bullet from a pistol. The cuirassier's armament consisted of a heavy long sword and two wheel-lock pistols.

Mannequin of a cuirassier
Original items:
Bavarian Army Museum, inventory nos. A 11631 (helmet), A 11768, A 791, A 11737, A 11696, N 5011, N 5012, N 5013 (armour), A 11709 (gauntlets), A 5415 (sword)
Replicas:
Gloves (leather), boots (replica made in 1886), textiles

Wheel-Lock Pistols

Cuirassiers were armed with a sword and a pair of wheel-lock pistols.
Since it was difficult to handle a burning slow-match on horseback, the wheel-lock technology lent itself to cavalry firearms. They were, however, expensive and very prone to failure.
The pyrite used to generate the ignition sparks wore away quickly, which meant that an ignition could not always be guaranteed. Therefore, the soldiers always carried two pistols into battle. Wheel-lock pistols were normally only used for shots from less than 20 m distance.

A special spanner was required to cock the "dog" holding the pyrite. For the time-consuming loading process, the horsemen had to withdraw out of the range of the opponent every time.

Two wheel-lock pistols, German, first half of the 17th century.
Pear wood, iron, steel, length 64 cm each
Bavarian Army Museum, inventory nos. A 852 (top) and A 853

Holster for Wheel-Lock Pistols

Wheel-lock pistols were carried in holsters which were fixed on each side of the saddle pommel.
These leather holsters enabled the rider to draw the gun with ease and speed. Sometimes the holsters were also fitted with flaps made of fabric or leather to protect the pistols from moisture.

Holster for wheel-lock pistols, German (?), 17th century. Cowhide, length 42 cm each
Bavarian Army Museum, inventory nos. A 831 and A 832

"Pappenheim Plate Armour"

The collection of three-quarters suits of armour from the early period of the Thirty Years' War is unique in the German-speaking world.
Unlike the ornate suits of armour of the 15th and 16th century, such "munition armour" only represents a crudely worked mass product.
They were blackened with linseed oil to provide better protection against rust. The closed burgonet and the black colour gave them a menacing appearance. The total weight of such an armour amounts to about 21 kg. This type of armour was also called "Pappenheimer" – named after the cavalry general Gottfried Heinrich zu Pappenheim (1594-1632).

Nine "three-quarters" suits of armour, German, c. 1620. Steel, iron, leather, height including helmet 137 cm (varies according to the composition of the armours)
Bavarian Army Museum, various inventory nos.

Sash

One of the ways to tell the enemy parties apart was to use coloured sashes as a distinguishing mark.
It was not until after the Thirty Years' War that a standardised uniform was developed in the armies of early modern period.
Imperial troops almost always wore red sashes. This was less uniform among the other warring parties. Bavarian troops used white-blue sashes several times, the Swedish units mainly used blue ones.

This sash made of woollen material was draped from one shoulder or worn around the waist. Originally it was probably green-blue.

Sash, German (?), 17th century. Woollen material, length 251 cm, width 32 cm
Bavarian Army Museum, inventory no. N 5109

Thrusting Sword

Together with the pair of pistols, this kind of cavalry sword, called a "Rapier" in German, was the main weapon of the cuirassier.
With a weight of about 1.5 kg, these weapons could reach considerable kinetic energy.
The mark on the blade can be attributed to the bladesmith Wolfgang Stantler. Spanning several generations, the Stantlers were specialised craftsmen in Munich.
In addition to Stantler's mark, the blade was marked with the letters "HZ" for Hauptzeughaus (main arsenal) at some later date. Thus, this edged weapon can be positively identified as an old Bavarian armoury stock. Dozens of such arms, which were mass-produced, have been preserved in the Army Museum's depot.

Thrusting sword, Southern German (Munich), 1600-1620. Steel, iron, overall length 101.3 cm
Bavarian Army Museum, inventory no. A 11848

The Horse

Around 1600, horses were somewhat smaller than today, but very strong. In addition to the horseman, they also had to carry his heavy equipment (saddle, harness, weapons) weighing over 100 kg.
The animal shown here was modelled on a "Lusitano", a breed corresponding to the horses used by the heavy cavalry of that time. The longer the Thirty Years' War lasted, however, the more difficult it became to find or requisition sufficient numbers of suitable animals. Therefore, not only thoroughbred horses were used, but one fell back on all available breeds.
This was another reason why the riders were wearing increasingly less armour, as untrained or weaker animals were not enduring enough to carry the load.

Sculpture of a Horse
Original parts:
Bavarian Army Museum, inventory nos. A 7614 (snaffle bit), A 1183 (stirrups), A 1177 and A 1199 (leather holster for pistols)
Replicas:
Horse sculpture (Wilhelm Knies), bridle, stirrup leather, saddle and girth (workshops of the Bavarian Army Museum, Kornelia Koch, and Leder Art & Design Ulrike Brandstetter), pistols (Armin König)

Bridle

The bridle decorated with non-ferrous metal originates from the collection of the Munich history painter Frank Kirchbach. The corresponding snaffle bit can be seen on the horse sculpture.

Bridle, German, c. 1700 (partly complemented).
Leather, non-ferrous metal, length c. 80 cm, width c. 40 cm
Bavarian Army Museum, inventory no. A 7614

Dragoon's Saddle

The saddles of the 17th century had a high pommel (front) and cantle (rear). These provided a good support for the horseman when leaning out for strikes with the sword.
The seat of this sample is not long enough for an armoured horseman – it is rather a saddle for dragoons who did not wear armour. It is made of cattlehide reinforced with tanned pigskin. The lower parts are padded with horsehair, the pommel and cantle are lined with reed stalks and cotton. No traces of a girth or stirrups are visible on this specimen; maybe these were placed over the saddle.

Saddle for dragoons, German, 17th century. Leather, horse hair, reed, cotton, metal, length 64 cm, width 80 cm, height 40 cm
Bavarian Army Museum, inventory no. A 505

Picket

The troops' baggage also included pickets onto which the horses could easily be pegged anywhere.
Horses were an extremely important resource in the armies of old. As riding, draught and pack animals they were employed in many different ways.
Allegedly, this picket was found near Ingolstadt, which could indicate its use during the Swedish bombardment of the city in April/May 1632. The metal eyelet and base indicate that this piece was in use over a longer period of time. Otherwise the valuable metal would not have been "wasted" for such a purpose.

Picket, Southern German (?), 17th century. Wood, iron, length 136 cm
Bavarian Army Museum, inventory no. N 5105

The Musketeer

The musketeers led the firefight with their heavy muskets. The accuracy of the firearm, which gave these units their name, decreased with growing distance.
As these weapons weighed 4.4 to 7 kg, a musket rest was necessary to fire them. In the course of the war, however, they became increasingly lighter. For close combat the musket butt or the sword could be used.
As musketeers were normally unarmoured, they stood very little chance against cavalry in close combat after firing their muskets. Therefore, they then usually retreated behind the pikemen where they could reload their weapons relatively well protected. If such "pike & shot" formations of pikemen and musketeers dissolved, however, the enemy cavalry could cause a bloodbath among them.

Mannequin of a musketeer
Original items:
Bavarian Army Museum, inventory nos. A 936 (bandolier), A 8207 (musket rest), A 1099 (musket), A 1019 (sword)
Replicas:
Head and hands (Wilhelm Knies), scabbard and textiles (Kurbairisches Dragonerregiment Johann Wolf e.V.), felt hat with feather, shoes

Felt Hat and Skullcap

At the outbreak of the war, foot soldiers were sometimes still equipped with a helmet. The musketeers soon discarded this protection and started wearing felt hats instead.
Textile objects from this period are very rare. Most of them were either worn out or did not survive due to pest infestation.
A hat offered no protection against cuts with edged weapons or against bullets, but some shelter from the rain and sun. Thus, practical considerations prevailed, even though feathers were often used as a fashion accessory. Occasionally so-called "secrets" were worn beneath the hat, such as skullcaps to protect the head from sword blows.

Broad-brim hat, German (?), early 17th century.
Felt, diameter 42.5 cm
Bavarian Army Museum, inventory no. A 1161

Skull cap, German, 16th century. Steel,
height 11 cm, width 21 cm, depth 23 cm
Bavarian Army Museum, inventory no. A 11598

Sword

In order to be able to defend themselves in close combat, the musketeers carried a light sword as a side arm.
After firing their muskets, the musketeers were vulnerable. Until they had reloaded, they could only defend themselves with the butt of their gun or with the short sword. This example weighing just 755 g is very light.

Sword, German, 17th century. Steel, wood, leather, total length 94.5 cm
Bavarian Army Museum, inventory no. A 1012

Musket with Musket Rest

Like all other military firearms of the early modern period, matchlock muskets were muzzle-loaders.
Black powder was poured down the barrel, followed by a lead ball and some paper or cloth wadding. In order to ignite the main charge in the barrel, a small amount of priming powder next to the touch hole had to be detonated with the smouldering match, held in a curved lever, that was pressed into the primer when the trigger was pulled.
Though the matchlock was not very prone to failure, it could be unreliable and sometimes dangerous. Flying sparks from the smouldering match could ignite the powder prematurely, and in rain the match could go out.
The weight of a musket at the beginning of the war was over 7 kg. Therefore, a musket rest was absolutely essential for firing the gun, as it could not be held steady enough without support. Later the muskets became lighter.

Matchlock musket, German, c. 1600-1650. Iron, beech wood, length 140.5 cm
Bavarian Army Museum, inventory no. A 1100

Musket rest, German, c. 1600. Iron, wood, length 145.5 cm
Bavarian Army Museum, inventory no. A 414

Powder Flask

Every shooter carried a powder flask with some extra black powder.
Black powder should be composed of about 100 parts saltpetre, 15 parts charcoal and 12 to 15 parts sulphur. The quantity, the mixing ratio and the grain size all had an effect on the shooting result. About half the weight of the projectile was needed for one shot.
Today it is difficult to assess how effective the firearms of that time were, as the quality of the black powder was crucial for this. Since gunpowder is a natural product, each consignment was of different quality. Thus, the quality of each keg was tested in the field to assess how much powder had to be used for a shot.

Powder flask, German, first half of the 17th century. Wood, iron, velvet, height 26.5 cm, width 21 cm
Bavarian Army Museum, inventory no. A 6250

Bandolier

Everything the musketeer needed for loading his musket was carried slung over one shoulder in a bandolier: prepared powder charges, a bullet pouch and the powder flask.
In bad weather, the shooters had to shield these containers from moisture under their clothing. The small wooden boxes each contained a precisely measured powder charge for one shot. The bullet pouch contained the lead bullets, which were cast by the shooters themselves. In addition, they carried a small flask containing fine black powder called priming powder or primer. This "meal powder" was more reactive than normal black powder and therefore better suited for priming.

Bandolier with bullet pouch, Southern German, first half of the 17th century. Leather, wood, length c. 85 cm
Bavarian Army Museum, inventory no. A 938

Buff Coat

Sturdy buff coats made of thick leather provided some protection against blows and cuts.
This buff coat made of leather with short sewn-on skirts dates from the early days of the Thirty Years' War. The original lacing is no longer extant, but was only a decorative feature anyway: this garment was closed with hooks and eyelets.

Buff coat, German (?), c. 1620. Leather, metal, height c. 56.5 cm, width c. 57 cm
Bavarian Army Museum, inventory no. A 946

Officer in Buff Coat

This portrait was painted in 1634, when the sitter was 37 years of age. The red sash worn over the yellowish leather jerkin could indicate that he was a member of the Imperial forces.
The helmet and baton on the table mark him as an officer. The elaborately worked shirt and the lace ruffles are testimony to his wealth and status.
The coat of arms could not be identified so far. According to the museum's records, the portrayed person is Colonel Sebastian von Bauer. However, this has not yet been confirmed.
In the 19th century the painting formed part of a private collection in Bamberg. In 1923 it found its way into the Army Museum via the Bavarian National Museum.

Colonel Sebastian von Bauer (?), 1634. Oil on canvas, 60.5 x 45 cm
Bavarian Army Museum, inventory no. A 6290

Battle of Nördlingen 1634

On the 5th and 6th of September 1634 a battle took place near Nördlingen in which the Swedish forces were defeated. While this had far-reaching consequences, it did not lead to a lasting peace.

After the death of the Swedish king Gustavus Adolphus in the battle of Lützen in 1632, his army was increasingly weakened. The Swedes were defeated near Nördlingen by the united armies of Emperor Ferdinand II, the Spanish King Philip IV and the Bavarian Elector Maximilian I.

This resulted in the Peace of Prague of 1635, which gave hope for a lasting settlement of the hostilities. But then France, fearing that the Emperor's position in the Empire would be too strong, entered the war on the side of Sweden. Thus, it took another 13 years before a lasting peace was concluded.

The painting shows a hilly landscape with the combatants meeting in widely scattered groups. The inevitable commander's hill can be seen in the foreground, from which a group of officers is watching the battle. Their red sashes could indicate imperial commanders.

Battle of Nördlingen, Bavarian (?), after 1634.
Oil on canvas, 102 x 168 cm
Bavarian Army Museum, inventory no. A 6280

Battle of White Mountain

It is presumed that Pieter Snayers (1597-1667) created this painting of the Battle of White Mountain near Prague (8 November 1620). The scene shows a hilly landscape with the clashing enemies. The battle between the Catholic armies and the rebellious Bohemians was one of the most important encounters of the war.

A four-horse carriage can be seen in the middle ground. It is preceded by Duke Maximilian of Bavaria, dressed in black armour and with a red crest, on horseback; he is accompanied by guardsmen on foot.

Other than in Snayers large-format depiction, this painting does not show different moments of the battle. Rather, the artist depicts the turning point of the battle when the troops of the "Winter King" Frederick of the Palatinate flee in the direction of Prague.

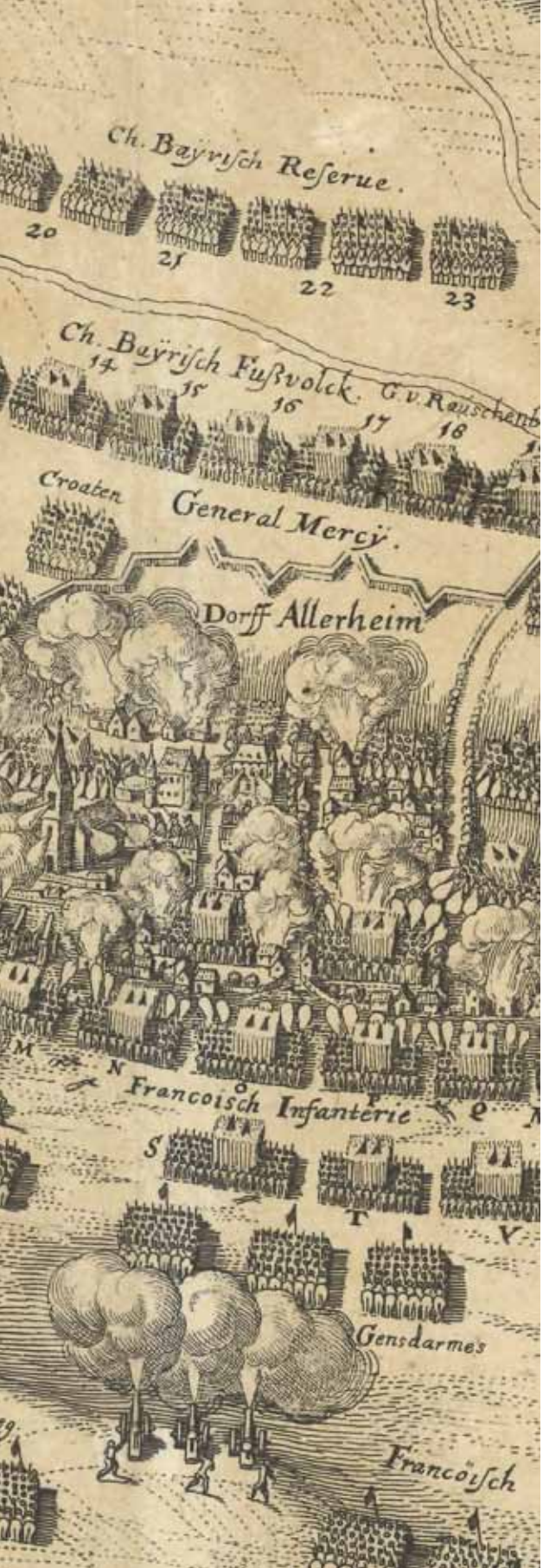
Battle of White Mountain, painting by Pieter Snayers (?), about 1620/1630. Oil on canvas, 40.7 x 67.5 cm
Bavarian Army Museum, inventory no. A 10756

Falconet

Light cannons such as this falconet were increasingly used from about 1630 onwards, making the artillery more mobile. Displacing heavy guns during a battle was almost impossible. The light guns, on the other hand, were able to keep up with the infantry.

The barrel shown here fired iron balls with a diameter of about 3.3 cm. The weight of the 18.42 kg barrel was engraved during the production: 33 pound, 12 lot. This translates into a pound weight of 551.8 grams, which is quite close to the historical Bavarian and Austrian pound: 560 grams; this suggests that the barrel was manufactured in Bavaria or Austria. It is mounted on a carriage that was intended for use in fortresses.

Falconet, German, 1613. Steel, iron, wood, barrel length 195 cm
Bavarian Army Museum, inventory nos. D 199 (barrel) and D 40 (reconstructed carriage)



3 August 1645 The Battle of Alerheim

On 3 August 1645 one of the bloodiest battles of the Thirty Years' War took place near the small village of Alerheim, close to Nördlingen. On that day, between 5,000 and 10,000 soldiers died there.

The Imperial-Bavarian army had assembled under their Commander-in-Chief Franz von Mercy, the opposing French troops were commanded by the Duke of Enghien, the "Great Condé". The French attacked despite the good positions of the Bavarians and suffered heavy losses. Nevertheless, they managed to win the battle, with the death of Mercy probably bringing about the decisive turn.

The heavy losses of the French and their allies (Weimar and Hesse) meant that they were unable to invade Bavaria. Thus, the battle at Alerheim did not have the desired success for the French.

Detail of: "Abbildung des Haupt Treffens zwischen den Chur Bayrischen, vnd Französischen Armeen, bey Allerheim geschehen", Copperplate from 1645. Size of complete picture: 28 x 36.6 cm
Bavarian Army Museum, inventory no. A 1290

2008
The Mass Grave of Alerheim

In 2008, a mass grave with hundreds of human bones was found during excavations near Alerheim. They are the dead of the battle of 3 August 1645.
The grave is situated in an area where the Bavarian cavalry, commanded by Jan van Werth, attacked and overran the French infantry. At first, the dead of the battle were not buried, but left lying in the hot August heat in the open air for more than six weeks. In the end, when they were buried by four volunteers, they were thrown into several mass graves spread across the battlefield because of the condition of the already heavily decomposed corpses.
Today, thanks to scientific investigations of the bones, statements can be made about age at death, health issues and injuries of the dead.

Detail of the mass grave during the excavation (photo: ADV excavation company)

Pre-Existing Conditions

This shin fragment (tibia) shows extensive inflammatory deposits caused by an inflammation of the periosteum (periostitis). It has already turned into a massive bone infection (osteomyelitis).
Inflammations of this kind are extremely painful and presumably often led to a severe disruption of the patient's ability to move. Inflammations of the periosteum can, for example, be caused by overstrain or a bacterial infection. Such diseases may have been caused by long marches. It is also conceivable, however, that an injury or a wound had led to ulceration. In any case, the evidence shows that the soldiers dragged themselves into battle despite the pain.

Thigh bone fragment with inflammations (top) and healthy reference bone (bottom), 29 x 5 cm and 38 x 6 cm
On loan from the Bavarian State Collection for Anthropology and Palaeoanatomy, Munich
Bavarian Army Museum, inventory nos. L 7086 and L 7085 (reference bone)

Age Determination

From this fragment of the right thighbone it can be seen that the femoral head (epiphysis) has not yet fused together. As this fusion is not completed until the age of 16 to 19, it means that this individual was younger than this at the time of his death. Of the 61 skeletal parts examined from the mass grave of Alerheim, over 50 were found to be from young men under the age of 25, and 17 of these even came from persons between 13 and 20 years of age. Thus, the average age of the dead in this grave was 21 to 25 years. This supports the knowledge from written sources that the combatants became younger and younger in the course of the war. In the final phase of the war, it was not possible to do without turning even teenagers into soldiers.

Thigh bone fragment of an adult (top) and an adolescent (bottom), 5.5 x 5 cm and 9 x 5.5 cm
On loan from the Bavarian State Collection for Anthropology and Palaeoanatomy, Munich
Bavarian Army Museum, inventory no. L 7083

Non-Fatal Slash Wound

Some soldiers show injuries that must have occurred much earlier and were survived. This skull fragment shows traces of a healed slash wound. The area around this point shows bone growth attributable to a healing process. This is evidence for a non-fatal injury that was survived.
Healed wounds like this were found on a number of skeleton parts.

Fragment of a skull bone with non-fatal slash wound, width 17.5 cm, height 7 cm
On loan from the Bavarian State Collection for Anthropology and Palaeoanatomy, Munich
Bavarian Army Museum, inventory no. L 7087

Fatal Slash Wound

In very few cases it is possible to deduce a cause of death from injuries to a bone. Blood loss or injury to vital organs often led to death. This skull has sustained a massive slash injury. This caused part of the skull to flake off, resulting in a brain injury that was certainly fatal.

Many of the corpses from the Alerheim mass grave show slashes to the head, which were sometimes fatal. The nature and position of the slashes supports the thesis that the dead fell victim to a cavalry attack.

Fragment of a skull bone with fatal slash wound, width 15 cm, height 14 cm
On loan from the Bavarian State Collection for Anthropology and Palaeoanatomy, Munich
Bavarian Army Museum, inventory no. L 7084

Lethal Gunshot Wound

With the muzzle-loaders of the Thirty Years' War aimed shots were virtually impossible. Nevertheless, this fragment of the left skull side clearly shows a fatal gunshot wound with a circular entry hole If the shot had been fired by enemy musketeers or cavalry, the foot-soldier must have turned sideways in the melee, which is certainly conceivable. Then again, this could also have been a friendly-fire incident.

Fragment of a skull bone with bullet hole, width 17.5 cm, height 16 cm
On loan from the Bavarian State Collection for Anthropology and Palaeoanatomy, Munich
Bavarian Army Museum, inventory no. L 7088

Johann von Werth

Johann Werth was born in 1591 as the son of a farmer in the Lower Rhine area. In the course of the war he succeeded to become one of the most famous cavalry generals of his time.

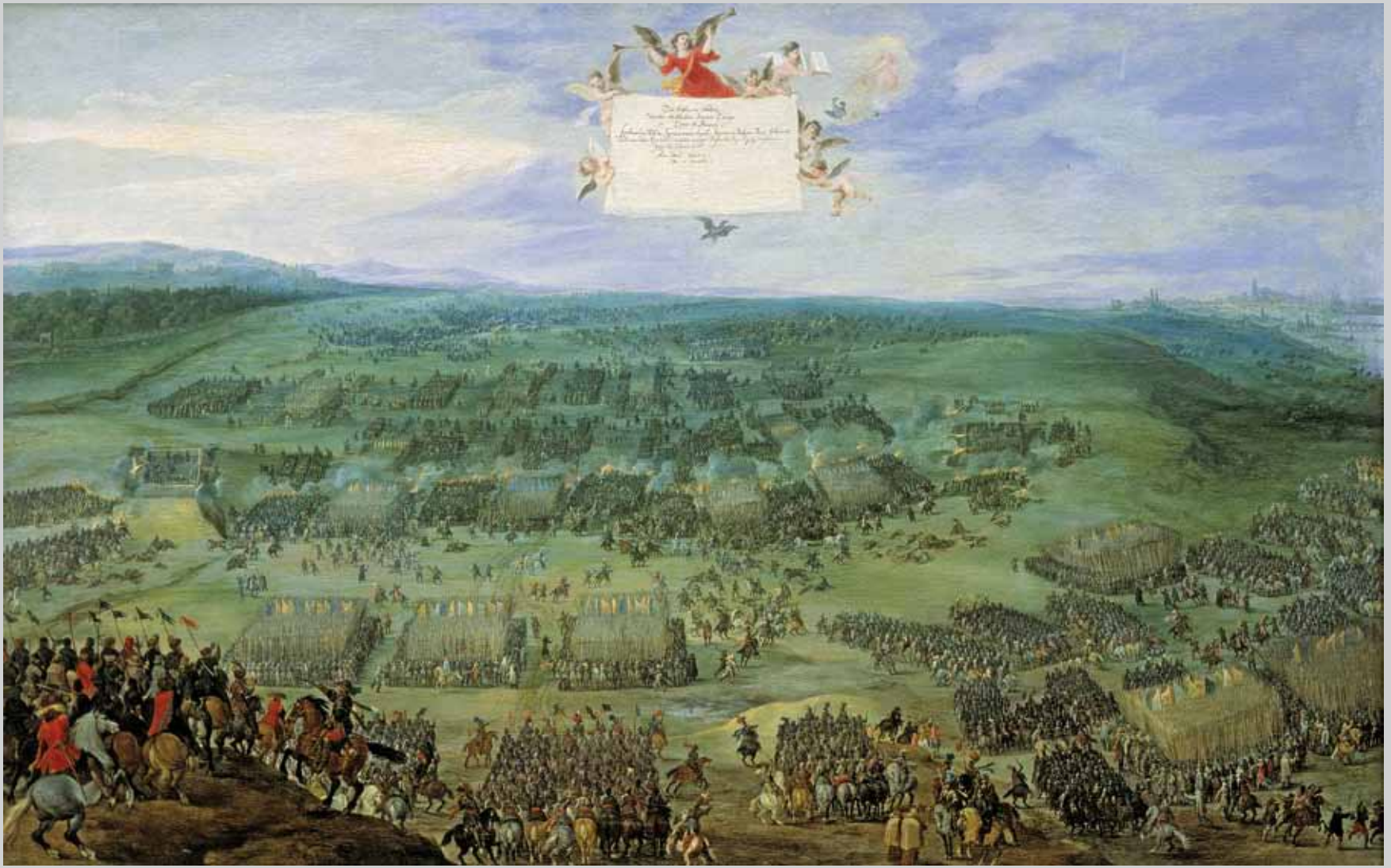
Around 1610, Werth had joined the Spanish army under General Ambrosio Spinola as a mercenary. He worked his way up through the ranks to become an officer in the cavalry – an exceptional career for that time.

He took part in many battles of the war, including those at White Mountain in 1620, near Nördlingen in 1634, Jankau in 1645 and Alerheim in 1645. He spent the years 1638 to 1642 in French captivity before he was exchanged for the Swedish general Gustav Graf Horn. The Emperor ennobled him to a Freiherr in 1634, and in 1644 he was promoted to general.

Werth survived the end of the war by three years only and died in January 1652 in Benatek, Bohemia.

The 1635 painting shows him with a buff coat and a red sash. The silver trimmings on his sleeves and the white lace collar are an indication of his already high position as a baron and field marshal lieutenant.

Johann von Werth, Bavarian (?), 1635.
Oil on canvas, 67.5 x 55 cm
Bavarian Army Museum, inventory no. A 6848



Battle of White Mountain

On 8 November 1620 one of the most consequential battles of the Thirty Years' War took place at the White Mountain near Prague. Here the Catholic armies met the rebellious Bohemians.
In the foreground, you can see the deploying Catholic armies, in the middle ground the opposing fronts collide, while in the background the Bohemian soldiers flee to Prague in disarray.
Pieter Snayers' (1592-1667) painting shows several moments of the battle simultaneously. According to an inventory of paintings from 1770, Snayers only painted the figures, while the landscape is by Jan Brueghel.
The details of this painting are interesting. Like in a hidden picture the viewer always discovers new figures, scenes or objects, e.g. several monks on the Catholic side or dead horses and soldiers who have been overrun by the battle.

As in many Baroque battle canvases, the events are depicted as if they were observed from a steep hill in the foreground. This elevation of the terrain is called "Feldherrnhügel" in German. In many cases, however, this commander's hill did not exist at all. On the real battlefield outside Prague this was actually the lowest point of the terrain. The horseman with an outstretched arm and a blue sash clearly visible in the left foreground might represent Duke Maximilian of Bavaria.
Fama, the Roman goddess of fame, hovers above the battle scene. She holds a scroll with a Latin inscription which can be summarised as follows: On 8 November 1620, Emperor Ferdinand II defeated Elector Palatine Frederick, who had invaded Bohemia, on the battlefields outside Prague. This was accomplished thanks to the leadership of Duke Maximilian of Bavaria and Count Bucquoy.

Battle of White Mountain, painting by Pieter Snayers, c. 1620/1630. Oil on canvas, 149 x 226 cm
On loan from the Bavarian State Painting Collections
Bavarian Army Museum, inventory no. L 6219

1663 – 1792 “Ottoman Wars”

Since the Middle Ages, the Ottoman Empire had been developing into an ever-growing military superpower. With the conquest of Constantinople in 1453 at the latest, it had become a competitor of the European states in the Mediterranean and in the Southeast and the East as well, which led to a long series of wars.

From the 16th century onwards, its expansion spilled over into the Kingdom of Hungary and the lands of the Habsburg dynasty in the southeast of the Holy Roman Empire. As a result, the Empire and the other German states were also drawn into the wars against the Ottomans. Troops from the Electorate of Bavaria fought in that theatre of war as well. In several campaigns, Elector Maximilian Emanuel proved to be a talented and successful commander, which earned him the sobriquet “the Blue King“ among his Ottoman opponents.

The advances of Ottoman armies became a serious threat to the Emperor and the Empire on several occasions. Often the defensive wars against the “Turks“ had to be fought simultaneously with other conflicts in the West, as King Louis XIV of France tried to exploit the Emperor‘s predicament to his own advantage.

With the unsuccessful siege of Vienna in 1683, the Ottoman expansion into the West reached its high point, but there were still conflicts with changing successes and setbacks for both sides until far into the 18th century. It was not until after 1768 that the

Detail of: Maximilian Emanuel as Vanquisher of the Turks, copperplate after 1683
Bavarian Army Museum, inventory no. 0024-2017

Ottomans were permanently pushed out by Austria and their other great adversary, Russia.

Until then the Ottomans remained an even match for the "western" armies. Numerically, their armies were usually superior to the European troops and the army logistics, i.e. supply and replenishment, were far better organized in the Ottoman Empire than in the European states of the early modern era.

The strength of the European troops lay in their tactical unity in the open, pitched battle. In the further course of the war, however, these advantages were often lost when their armies had to retreat, weakened by hunger and disease. Nor can it be said that the Ottomans were in a decisive technical disadvantage in terms of armament. As far as the production of artillery pieces and small arms was concerned, they did not lose ground to the European states until the 18th century. It also became apparent that traditional weapons such as bows and arrows, that were still in use by the Turks to some extent, were very effective in the hands of trained soldiers. Ultimately, it was primarily political and structural internal problems that caused the Ottoman Empire to slowly lose military strength from the late 17th century on. The conflicts were proclaimed by both sides to be a war of religion between Islam and Christianity, but this was more propaganda than reality. The Ottoman armies were composed, to a large extent, of Christian Orthodox inhabitants of the European territories under their control. In some regions, notably in Hungary, the rather lax Ottoman rule did not seem any more oppressive than a Habsburg rulership. In between the wars not only trade relations were flourishing, but diplomatic contacts as well; treaties and even alliances were concluded.

1650-1700 Professional Soldiers

From 1650 onwards, troops were increasingly no longer raised for individual campaigns but on a permanent basis (standing armies). They could now be trained longer and were armed uniformly.

In Europe, the importance of the infantry grew. Battalions consisting of several hundred soldiers formed the basic battle unit. The number of musketeers grew considerably, but until about 1700 pikemen had to cover them with their pikes against the cavalry of the enemy. This protection was especially necessary in the "Ottoman Wars" against the strong Turkish cavalry.

A large part of the armies was made up of cavalry and mounted infantry (dragoons). Their mobility was also important for the supply of the troops. The artillery was still very unwieldy, so that only fairly light guns could be taken along to support the infantry.

While the European armies were very similar, in the Ottomans they met an opponent with a different organisation but of equal strength.

Detail of: Alain Manesson Mallet, Les Travaux de Mars, troisième et derniere partie, Paris 1672, copperplate. 14.5 x 9.5 cm
(Daniel Hohrath Collection)

An Opponent of Equal Strength

At first glance, the armament and tactics of the Ottoman armies seemed backward. This impression, however, is misleading: they were equal to their European opponents in most respects.
Since there was always a lively cultural exchange beyond the wars, the firearms of the Ottomans were technically up to date. Some things, such as the curved sabre and the lightweight cavalry helmet, were also adopted by European soldiers.
In the hands of experienced mounted warriors, lances, bows and arrows were still very effective weapons. The agile Ottoman cavalry was particularly feared. The infantry did not fight in tightly closed formations, but was usually superior in numbers and very good in hand-to-hand combat.

War Hammer

In addition to sabres, the Ottoman cavalry also used war hammers of different forms in close combat. Even helmets and armour could be penetrated with these weapons.
Besides their martial role in battle, these impact weapons also served as badges of rank for leaders and high-ranking individuals. They were often particularly preciously decorated and manufactured of high-grade materials. This war hammer, whose damascened spike resembles a raven's beak, shows clear signs of use.

War hammer/horseman's pick, Ottoman, 17th century. Iron, silver, leather, wood, length 70.6 cm
Bavarian Army Museum, inventory no. 0071-1976

Ottoman Mail Shirt

The Ottomans didn't wear heavy body armour such as the European suit of armour and cuirass. Mail shirts of interlinked small iron rings, which had already been widespread in the Middle Ages, remained in use until modern times.
While the chain mail did not protect against projectiles, it did protect well against cuts. In return its wearer could remain very agile. Ottoman horsemen were equipped with many different weapons. Thus, they could fight with sabres, lances, throwing spears or as mounted archers.

This long mail shirt for a horseman was most likely imported from Venice. It bears witness to the close trade relations in the Mediterranean, which were largely uninterrupted by wars. The item came into the holdings of the Army Museum in 1904 from the Bavarian Military Academy.

Mail shirt, Ottoman/Venetian, 17th century.
Iron, silver, length 110 cm
Bavarian Army Museum, inventory no. A 1538

Yatagan

The Yatagan was a widespread weapon of the Ottoman infantry. In European sources, it is sometimes referred to as a "head cutter".
The characteristic shape of the blade shows a concave curve towards the hilt and a convex one in the front. This facilitated the "drawing cut" with this dreaded weapon.

Yatagan with scabbard, Caucasian/Turkish, late 17th century. Iron, silver damascening, ebony, brass, leather, length 81.7 cm
Bavarian Army Museum, inventory no. E 7216

Recurve Bow

Up until 1700, bow and arrow were still among the most effective weapons of the Ottoman armies.
With the string inserted, the reflex bow could be tensioned so much, that it was bent against its natural curvature. With these bows, practical ranges of more than 800 m could be achieved.
A skilled archer could shoot 20 arrows a minute, even from horseback. In this respect, this traditional weapon was clearly superior to the firearms of the time. Its handling, though, required considerable strength and many years of practice.
The bow, preserved in its original form, is shown in its relaxed position with the string removed.

Recurve bow (unstrung), Ottoman, 17th century.
Wood, horn, animal sinew, birch bark,
length 82 cm
Bavarian Army Museum, inventory no. A 1569

Bowcase

In addition to a quiver for the arrows, a special bowcase for carrying the recurve bow was an essential.
The bowcase is shaped in such a way that a strung recurve bow could be inserted safely and removed quickly. This case, made of different pieces of leather sewn together and decorated with flower panicles, tulips and grapes, is probably of Tatar origin.

Bowcase, Ottoman/Tatar, 17th century.
Leather, height c. 55 cm, width ca. 30 cm
Bavarian Army Museum, inventory no. A 8487

Turkish Kilij Sabre

The curved Turkish sabre (kilij) was the characteristic edged weapon of the Ottoman armies. Swords with this blade form, called scimitars in English, also became popular with their opponents.
Many Turkish sabres came to Europe as a result of the campaigns against the Ottomans, either as trade goods or as booty. This particular weapon was clearly produced in the Ottoman cultural area.
Its new owner had the blade decorated with detailed engravings to commemorate events in 1683: They depict the conquest of the Castle of Gran (and the siege of Vienna on the reverse).

Sabre, Ottoman, 17th century, German rework after 1683. Iron, steel, wood, length 87 cm
Bavarian Army Museum, inventory no. A 11867

Ottoman Šišana Rifle

Other than in Europe, bows and arrows continued to be used in the Ottoman armies, although the majority of their troops were also equipped with firearms.
The quality of Ottoman handguns was quite high, as their barrels were often forged from Damascus steel, which was uncommon in European military firearms. This steel was at once very hard and elastic; in addition, it had a very decorative pattern.

The most common firing mechanism in the Ottoman world was the Miquelet lock, a Spanish variant of the flintlock.
The shape of the butt and the small-scale decorations are typical for these rifles.

Flintlock rifle (šišana), Ottoman, c. 1700. Damascus steel, iron, brass, wood, bone, length 120 cm
Bavarian Army Museum, inventory no. A 1534

Capture of Belgrade Fortress

On 6 September 1688, troops under the command of Maximilian Emanuel stormed the city and fortress of Belgrade. This marked the end of the "Great Turkish War" (1683-1688).
Maximilian Emanuel had taken part in the whole Turkish War in person. In 1688 he had been given the overall command for the first time. During the assault on the Danube fortress, the elector of Bavaria demonstrated – as so often before – great personal bravery. Belgrade was the last major Ottoman fortress in the Hungarian-Serbian region. Capturing it was the main objective of the 1688 campaign, and Belgrade was to change hands several times in the coming years.

The painting is a typical baroque battle scene without any documentary claim. Apart from the depiction of Belgrade in the background, only a frenzied, unspecific equestrian fight is shown. Both the Ottomans with their turbans and the European (Bavarian?) soldiers are only "typecast". The clothing of the soldiers in the foreground shows that the painting was only created in the early 18th century.

Capture of Belgrade Fortress, German, c. 1710.
Oil on canvas, 56 x 80 cm
Bavarian Army Museum, inventory no. A 8101

European Military 1650-1700

In the permanently formed standing armies, equipment and armament became increasingly standardised. It was an experimental stage in which the firearms of the infantry became ever more effective.
The muskets of the infantrymen became lighter, so that supportive rests for them were no longer needed. Various firing mechanisms were tested to make the weapons easier to use and more robust. At the end of the 17th century, bayonets were inserted into the barrel so that the musketeers could defend themselves in close combat; firing the rifles, however, was then no longer possible.
Helmets and body armour gradually disappeared, though they were still useful in the fights against the Ottoman horsemen and archers.

Cavalry Epée

These epées for the cavalry were most suitable for stabbing, but could also be used for strikes.
Such epées with their fairly narrow blades were the typical cavalry weapon until well into the second half of the 17th century.
The double-edged blade of this sword bears the inscription "SOLI DEO GLORIA ANNO 1666" (Glory to the only God in the year 1666).

Cavalry epée, German, blade dated to 1666, shell missing. Steel, iron, wood, length 104.5 cm
Bavarian Army Museum, inventory no. A 10960

Cuirass and Zischägge

In the second half of the 17th century, the heavy cavalry wore only bullet-proof breast and back plates.
For helmets the zischägge – called lobster-tail helmet in English – prevailed: it was modelled on the çisak helmet common in Asia and also used by the Ottomans.
A heavy, knee-length buff coat made of very strong leather and with wide skirts was usually worn under the cuirass, with a thickness of approx. 5 mm.
The zischägge was relatively light (c. 2 kg) and allowed a clear view despite the peak, cheek-pieces, nasal bar and neck-guard.
With these, the European cavalrymen, fighting in close formation with back-swords or using their firearms, were protected and yet quite mobile.

Breast and back plate for cuirassiers, German, c. 1680. Steel, metal, leather, weight 14 kg, height 41 cm
Bavarian Army Museum, inventory no. A 11777

Zischägge, German, c. 1680. Iron, steel
Bavarian Army Museum, inventory no. N 5288

Backsword

Since the late 17th century, the main weapon of the cavalry was a heavy sword, Pallasch in German, with a straight blade suitable for cutting and thrusting.
The heavy cavalry sword required great strength and skill, but then it was a very effective weapon.
The double-edged blade features an engraving with the popular motto "OMNIA CUM DEO" (Everything with God). Above this stands a Bavarian lion with sword. The scabbard is made of wood, covered with leather and fitted with brass plates.

Backsword (Pallasch) with scabbard, Bavarian, c. 1690. Steel, brass, leather, wood, length 10,.5 cm
Bavarian Army Museum, inventory no. H 17349

Sabre of the Horse Grenadiers

With the Ottoman Wars, the "oriental" form of the sabre spread into the European armies as well.
The curved sabre with its blade sharpened on one side was a very effective cutting weapon. The curvature of the edge facilitated a "pulling cut" which caused particularly deep flesh wounds.
This sabre was used by the troopers of an Bavarian elite unit, the "Grenadiers à Cheval" (Horse Grenadiers). The year of manufacture 1687 and the Passau wolf are etched on the blade.

Sabre of the Bavarian Grenadiers à Cheval, Passau, 1687. Steel, brass, length 95 cm
Bavarian Army Museum, inventory no. A 11366

Cavalryman's Pistol

Each trooper was equipped with two pistols. In the 17th century they were still an important weapon.
It had long been standard practice for cavalrymen to advance slowly against the enemy, fire their pistols at close range and retreat again. Not until the enemy was weakened did they attack with the sword.
Around 1670 the old wheel-lock pistols were replaced by weapons featuring the new flintlock system, which were more reliable and cheaper.

Cavalry flintlock pistol, German, c. 1700. Iron, steel, walnut wood, length 25 cm
Bavarian Army Museum, inventory no. 0886-1986

Matchlock Musket

The simple matchlock musket remained the standard weapon of the infantry until the late 17th century.
Its "soldierproof" mechanics were cheap and sturdy; the system's disadvantage was that you always had to have a burning slow-match ready. Even though the muskets became lighter and handier, loading took quite a long time. A fire-rate of more than one shot per minute was almost impossible to accomplish.

Matchlock musket, German, Suhl, c. 1680. Iron, European beech wood (stock), walnut wood (ramrod), length 158.5 cm
Bavarian Army Museum, inventory no. A 9477

Musket with Combination Lock

This infantry musket combines a wheel-lock with a matchlock, which makes it easier to use.
Thanks to the wheel-lock, the musket was ready to fire in an instant. If the mechanism of the wheel-lock malfunctioned, the soldier could still ignite the charge with the slow-match.

Infantry musket with wheel-lock and matchlock, German, Suhl, c. 1670. Iron, beech wood, length 151.5 cm
Bavarian Army Museum, inventory no. A 1102

Musket with Combination Lock

Next to the snap-lock, this weapon was fitted with an additional serpentine.
The snap-lock was a precursor of the flintlock. It had a simpler design than the wheel-lock, but was still quite prone to malfunction. This is why this musket was fitted with an additional serpentine for a slow-match.

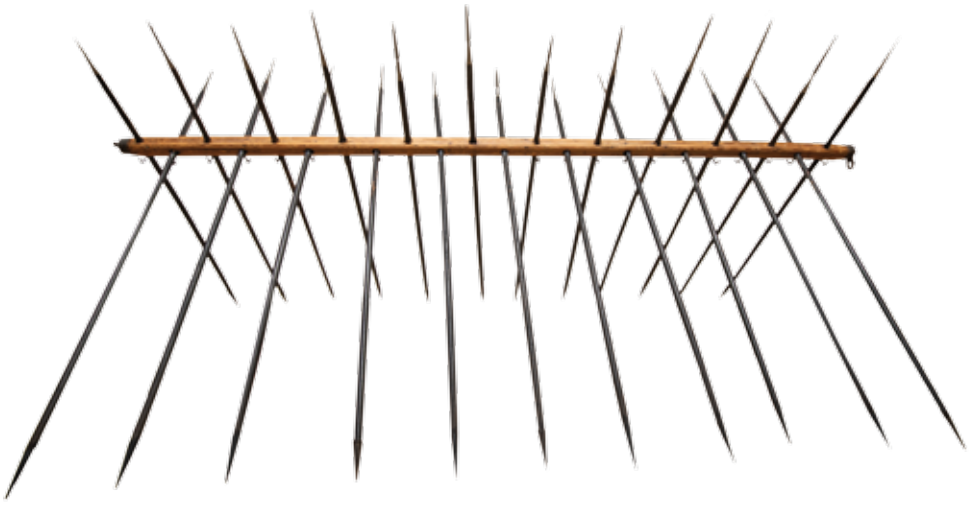
Musket with snap-lock and additional serpentine, German, c. 1650. Iron, steel, beech wood, length 177.5 cm
Bavarian Army Museum, inventory no. A 1103

Plug Bayonets

With a bayonet, the rifle of the musketeers was turned into a long thrust weapon. This allowed them to defend themselves in close combat, so that they were no longer dependent on the protection of the pikemen.

Bayonets first appeared in France around the middle of the 17th century. Until around 1700 these were mostly long daggers with wooden handles, which were inserted as plug bayonets into the barrel of the musket. This had the disadvantage that the soldier could no longer load and fire his weapon when the bayonet was "fixed".

Plug bayonets, German, c. 1700. Steel, wood, lengths 65.5 cm, 64.5 cm, 58.5 cm
Bavarian Army Museum, inventory nos. A 1743, A 1758, A 11327



Cheval de Frise

Even after the introduction of the bayonet, infantry units were still vulnerable, if they could not maintain their fixed formations of densely packed soldiers.
This was particularly true in the face of attackers who charged quickly and were ready for close combat. Against these, the foot soldiers were trained to construct barriers out of short pikes.
With these so-called "chevaux de frise" it was possible to quickly erect an effective barricade out in the open, behind which the infantrymen would find cover and could lead the firefight. Carrying the pikes and the necessary wooden body proved to be quite annoying, however. Therefore, the "Frisian horses" fell increasingly out of use.
This "Spanische-Reiter-Balken" (lit. cheval de frise beam) was donated to the Army Museum in 1904 by the director of the Kunsthistorisches Museum Graz. So, it may have been used in the fights against the Ottomans at the end of the 17th century.

Cheval de frise, consisting of a beam and 23 pikes.
Iron, wood, length of the beam 377 cm,
pikes c. 220 cm
Bavarian Army Museum, inventory no. A 1853

A Special Gun

Light cannons of this size could be taken along into battle by the infantry and increased the firepower of the units.
Normally these cannons had cast bronze barrels with a smooth bore. This one is a custom-built gun: The barrel is forged from iron and "rifled", for which helical grooves were cut into the gun barrel, so as to give a spin to the projectile. This stabilizes the trajectory and increases the accuracy of fire.
The practical value, however, was probably low, as rifled barrels were complex and time-consuming to load and required special projectiles.
The inscription on the barrel describes the manufacturing process:

"ALSO HAT MICH GESCHMIDT ABGEDRET VND GEZOGEN GEORG MEMMERSDORFER HAMMERMEISTER IN NURNBERG 1694"
("THVS I WAS FORGED TVRNED AND RIFLED BY GEORG MEMMERSDORFER MASTER HAMMER FORGER IN NVREMBERG 1694".)
The gun was probably a showpiece, demonstrating the capabilities of the manufacturer. It originates from the armoury of Rosenberg Fortress in Kronach.

Field gun on wheeled gun carriage, Nuremberg, 1694. Iron, wood, total length 236 cm, height 105 cm, width 137 cm
Bavarian Army Museum, inventory no. D 261

Maximilian Emanuel as Vanquisher of the Turks

This copperplate etching glorifies Maximilian Emanuel as a victorious general in the Turkish War.

In the pose of a Roman general, Maximilian Emanuel rides his enemies down, while the goddess of victory holds a laurel wreath over his head. In the foreground one can see emblematic equipment of the vanquished: turban, scimitar and shield with Turkish crescent.

The text leaves no doubt as to the existential quality of the confrontation: "The Turkish Hell Hound trembles before Him still".

Maximilian Emanuel as Vanquisher of the Turks, copperplate by Johann Haffner, 1683-1690; 43.5 x 34 cm
Bavarian Army Museum, inventory no. 0024-2017

Great Generals

The period from 1650 to 1800 is regarded as the time of the "great generals". Their actions were in the spotlight of public attention.
Some princes led their armies in person, amongst them Maximilian II Emanuel of Bavaria, Charles XII of Sweden and Frederick II of Prussia. Many generals were descendants of the highest nobility, which secured their authority. In very rare cases, however, a simple soldier would rise from the ranks to become a commander – but only in times of war.
It was not uncommon for military leaders to be wounded or killed in action, which could have an impact on the whole course of the war. The way generals were depicted in paintings suggested an absolute control over the events - even though this had little to do with reality on the battlefields.

Maximilian II Emanuel (1662-1726)

This representative painting depicts Maximilian Emanuel, Elector of Bavaria, in a classic general's pose, wearing his armour, with helmet and ceremonial baton.
In 1710, when the portrait was painted, Maximilian Emanuel was in French exile and no longer played an active military role in the ongoing War of the Spanish Succession (1701-1714). The painting commemorates his golden days as a princely commander: He is depicted against the backdrop of the citadel of Namur, which he helped to reconquer in 1695. He was, after all, the only one of the Wittelsbach dukes, electors and kings with a distinguished career as a military commander.
This painting found its way into the Bavarian Army Museum as early as 1886. Because the army he raised in 1682 was never completely disbanded until its demise in 1919, Maximilian Emanuel was considered the founder of the modern Bavarian army. He therefore played an important role in the preservation of its traditions.

Maximilian II Emanuel, painting by Franz Joseph Winter, 1710. Oil on canvas, 264 x 180 cm
Bavarian Army Museum, inventory no. A 1679

Prince Eugene of Savoy

Eugene of Savoy (1663-1736) was considered the most eminent European general of his day.

As was customary for younger sons of European aristocratic families, Eugene was earmarked for a clerical career in the church. Yet he decided early on to pursue a military career and entered into the service of Emperor Leopold I because he was not promoted by Louis XIV.

From 1683 on, Eugene fought as an officer in all the Emperor's wars, both against the Ottomans and against France. In 1697 he was given the supreme command in the "Great Turkish War" and from then on became the most important imperial commander. Furthermore, he also gained great political influence.

Prince Eugene of Savoy-Carignan, copperplate by Georg Paul Busch, Berlin, c. 1730; 36 x 19.5 cm
Bavarian Army Museum, inventory no. 0161-1968

Charles XII of Sweden

Charles XII (1682-1718), known as the "Warrior King", became a legend: Most of his reign he waged war far away from Sweden and was killed in a siege.
During the Great Northern War (1700-1721) Charles tried to defend Sweden's position as a great power in vain. He led his troops personally and regularly placed himself in the highest danger. Both his bravery and his modest appearance wearing the plain uniform of his soldiers became a model to be admired. Yet his lack of consideration towards himself and others and the absence of political and strategic planning also served as a warning.

Charles XII, King of Sweden, copperplate by Christian Fritzsch, 1743; 36.1 x 22.8 cm
Bavarian Army Museum, inventory no. 0536-2018

Frederick the Great

During his time, Frederick II, King of Prussia (1712-1786), was probably the most successful ruler and commander rolled into one.

Immediately after taking over the throne in 1740, Frederick occupied Silesia, which until then had belonged to Austria and went on to defend this conquest in three wars. Prussia thus became one of Europe's great powers.

In war, the king always led his army personally as "Roi Connétable" (king and commander). During the Seven Years' War (1756-1763), his reputation as a brilliant strategist and battle commander contributed to his success, although he also made serious mistakes on several occasions.

Frederick II, King of Prussia 1763, copperplate by George Bretzing after the painting by Johann Christoph Frisch, Berlin, 1812; 51.5 x 37 cm
Bavarian Army Museum, inventory no. 0094-2019

Gideon Ernst von Laudon

The career of Laudon (1717-1790) was one of the rather rare examples that even in the 18th century a simple officer could move up the military ladder as a result of his outstanding achievements.

Gideon Ernst von Loudon was born into a noble family from Livonia. At the age of 15 he joined the Russian army, and in 1742 he entered Austrian service as a captain in Trenck's Pandurs.

During the Seven Years' War (1756-1763) he led a series of successful small war operations and rose fast into the high ranks. As early as 1759 he independently commanded a larger corps and became one of the most important and popular Austrian military commanders. In 1778 he was promoted to field-marshal. In the year 1789 he led the reconquest of Belgrade as commander-in-chief against the Ottomans.

Gideon Ernst von Laudon, mezzotint by J. B. Pichler after a painting by Paul Haubenstricker, c. 1780; 39 x 28 cm
Bavarian Army Museum, inventory no. 0218-2019

1650-1792 Rivalry between the Crowns

The relations between the states after the Peace of Westphalia were anything but peaceful, but of the many conflicts none got out of control as much as the Thirty Years' War. Even so, wars were a "normal" means of politics. In almost all territories, the princes strove to consolidate their power internally and to expand their dominions. If it would benefit the rise of the ruling dynasty, territories could be ceded or exchanged. Often the casus belli were disputes between related dynasties, when rulers died without direct descendants. In "wars of succession", entire alliance systems competed for the distribution of territories and the European balance that was endangered as a result.

After the Thirty Years' War the rulers tried to reorganize the military system. "Standing armies" should already be maintained in peacetimes, so that they could be deployed at any time at the will of the potentates. Securing their funding proved to be a long and chequered process.

In the Electorate of Bavaria, the year 1682 is considered the birthday of the standing Bavarian army. Bavaria was the only state in southern Germany that could play a greater military role. The much smaller secular and ecclesiastical states and imperial cities, especially in Franconia and Swabia, which now belong to modern Bavaria, were in no position to do so.

Detail of: Alain Manesson Mallet, Les Travaux de Mars, troisième et derniere partie, Paris 1672, copperplate, 14.5 x 9.5 cm
(Daniel Hohrath Collection)

European politics were increasingly determined by the rivalry of great powers: The main players around 1680 were the Holy Roman Empire under the Habsburg Emperor, the kingdoms of France, Spain, Sweden and England, and the republic of the United Netherlands. For a long time, it was the antagonism between the French House of Bourbon and the Austrian Habsburg dynasty that was at the centre of most conflicts.

Some conflicts, such as the War of the Spanish Succession (1701-1714), the War of the Austrian Succession (1740-1748) and the Seven Years' War (1756-1763), reached far beyond Europe, with France and Great Britain becoming the main opponents. The many small and medium-sized German princely states joined the great powers in changing alliances; by placing troops at their disposal they took part in their wars. The prerequisite for participating in this "game of thrones" was the maintenance of standing armies.

Its exposed position between the Austrian territories and the French dominion presented both opportunities and threats for Bavaria. The Wittelsbachs formed several alliances with the Bourbons. Elector Maximilian II Emanuel's great ambitions came to a catastrophic end in the War of Spanish Succession as early as 1704, and in the War of the Austrian Succession, too, the rise of his successor to Holy Roman Emperor as Charles VII was only short-lived. When he died in 1745, his country was occupied by Austrian troops. Although Electoral Bavaria was restored to its previous borders in the peace negotiations, it no longer played an independent role in European politics. In the War of Bavarian Succession 1778-1779 between Prussia and Austria, Electoral Bavaria was nothing more than an object, Bavarian troops were not involved. While the succession of the Wittelsbach's Palatine branch was confirmed in 1779 and a significantly larger state was created by unifying the territories of Electoral Bavaria with the Electoral Palatinate, Bavaria's power-political clout hardly increased.

After phases of extremely intense warfare (1667-1715 and 1740-1763), Europe came to a relative calm for about three decades. Around the year 1780, the balance of power had shifted considerably. Now there were five major powers: France, Austria and Great Britain, as well as the "social climbers" Russia and Prussia. Many of the smaller competitors, including the Electorates of Bavaria and of Saxony and other medium-sized princely states, were "out of the game" now.

1700 – 1792
"The 'Art of War"

The disciplined soldiers of the standing armies had to fight in complex formations. They were supposed to execute their movements with machine-like precision, blindly follow orders and remain steadfast even in the face of death. The so-called "art of war" called for ever more detailed planning. The outcome of a battle, however, remained uncertain - only the high losses on both sides were a certainty. Avoiding battle was considered the ultimate art of the general.

Since about 1700 every soldier of the infantry carried a musket with bayonet, thus making pikemen for their protection obsolete. To increase the rate of fire, strict drill was needed. In the "linear tactics", the infantrymen stood only three to four men deep in thin but long lines.

The heavy cavalry was supposed to break through the enemy lines in battle at a gallop and with a bladed weapon in their hands. A more mobile, light cavalry was also employed. Artillery gained more importance, the number of guns on the battlefield continued to increase.

Musketeer loading his rifle, detail from the "Neujahrsblatt der Militärischen Gesellschaft der Pförtner" Zürich, 1753
(Daniel Hohrath Collection)

Musketeers, Fusiliers, Grenadiers

Infantry made up the vast majority of the armies. From about 1700 all foot soldiers were armed with a flintlock musket with bayonet. This remained the standard weapon of the infantry until around 1830.
The socket bayonet was a long pointed dagger, that could be attached to the side of the musket's muzzle, thus overcoming the problem of the vulnerability of the riflemen. Now the infantry could fend off attacks of the cavalry, without having to remove the bayonet for firing, and even strike out with it in close combat.
The main focus was on the synchronous volley fire of entire platoons. Though smooth-bore muskets were ill-suited for aimed shots, infantrymen were able to fire up to three live rounds per minute through constant training.

Flintlock Musket c. 1720

From 1690 onwards, the flintlock became the predominant ignition mechanism throughout Europe. For the next 150 years, the flintlock musket remained the standard weapon of the infantry.
The flintlock system was much more reliable than the matchlock and more robust and cheaper than the wheel-lock. A burning slow-match was no longer needed, the spark to ignite the powder was created by the flint clamped between the jaws of the hammer. One weak point, though, was the wooden ramrod, which was prone to snapping.

Flintlock musket with socket bayonet, Suhl, c. 1720. Iron, wood, length with bayonet 189 cm
Bavarian Army Museum, inventory nos. A 1952 and N 2088

Flintlock Musket c. 1770

In the 18th century, the muskets of the infantry were fitted with socket bayonets, newly invented shortly before 1700.
The bayonet was attached to the muzzle of the musket's barrel by means of a round spout. This way it could remain fixed for loading and firing.
This musket also features an iron ramrod, which was unbreakable and therefore allowed for faster reloading. This innovation was first introduced in Prussia in 1718.

Flintlock musket with socket bayonet, Bavarian, Fortschau, c. 1770. Walnut wood, iron, steel, length with bayonet 184 cm
Bavarian Army Museum, inventory nos. A 2551.a-b

Flintlock Musket c. 1790

The muskets of the infantry were mainly optimized to speed up the loading process. No importance was attached to aimed shots.
The cylindrical ramrod made the rifle somewhat heavier due to its large lower end, but it did not have to be reversed during reloading.
The flash pan of this musket is fitted with a flash guard to protect a neighbouring soldier from injuries caused by the lateral shower of sparks, generated when firing the rifle.

Flintlock musket with bayonet, German, c. 1780.
Iron, steel, brass, wood, length with bayonet 190.5 cm
Bavarian Army Museum, inventory no. H 9243

Grenadier Sabre

The sabres for grenadiers were slightly longer and heavier than those of ordinary infantrymen.
Grenadiers were frequently used as assault troops and could thus become involved in close combat. Therefore, sabres were still quite useful for them. Their main function, however, was symbolic: Since the grenadiers were hand-picked elite troops, their side arms also set them apart from ordinary infantrymen.

This weapon, elaborately decorated with the Electoral Bavarian coat of arms, was probably carried by an officer.

Grenadier sabre for a subaltern, Bavarian c. 1760.
Steel, brass, wood, length 85.5 cm
Bavarian Army Museum, inventory no. A 11354

Infantry Sabre Sword

The short sabre sword of the infantryman had no longer any value as a weapon.
The infantry was drilled to manoeuvre and conduct the firefight in fixed formations. The bayonet on the rifle was deemed sufficient for the occasional close combat. The increasingly lighter and shorter sabres were not really suitable as weapons.
Attempts to abolish the sabre frequently failed due to the opposition of the soldiers who vehemently stood up for this symbol of their honour.

Infantry sabre sword, German, c. 1750. Steel, brass, length 60 cm
Bavarian Army Museum, inventory no. A 1935

Electoral Bavarian Grenadier Drum

The drums used by the Grenadier companies were often especially large.
The grenadier drummers were entitled to play distinctive grenadier marches.
The drum shell is painted with white flame tongues on a light blue background, interspersed with hand grenades with burning fuses as a symbol of the grenadiers. The coat of arms of the Electorate of Bavaria is depicted in the centre. This grenadier drum originates from the historical collection of the Bavarian Infanterie-Leib-Regiment and was given to the Army Museum in 1904.

Grenadier drum, Bavarian, c. 1720. Wood, calfskin, leather, cord, height 63 cm, diameter 55 cm
Bavarian Army Museum, inventory no. A 2033

Electoral Bavarian Infantry Drum

The dull, loud sound of the big drums provided the beat for the movements of the troops.
Every infantry unit featured several drummers (German: Tambours). In the battle formation, they were placed to the right and the left behind the infantry line.
Drum signals could be used to transmit commands in the noise of the battle. The beat of the drum made it easier to march in step, but it was also used to encourage the men.

The drum shell is made of brass sheet and embellished with the silver-plated coat of arms of the Electorate of Bavaria.

Infantry drum, Bavarian, c. 1770. Wood, copper, leather, silver plate, cord, height 43.5 cm, diametre 44.5 cm
Bavarian Army Museum, inventory no. A 2094

Fife with Case

With their "Fifes and Drums", the bandsmen set the marching rhythm and also served to communicate orders. The high-pitched notes of the fifes could even be heard above the noise of battle.
This type of fife is called a transverse flute or traverso and is a direct predecessor of today's concert flutes. The range of this woodwind instrument is three octaves.
To protect them from dirt and moisture, such fifes were carried in a special metal case. This specimen is painted with white-blue lozenges and the Electoral Bavarian coat of arms. It could hold three fifes.
This fife came from the Royal Bavarian 3. Infanterie-Regiment into the collection of the Bavarian Army Museum. The case is said to have come from the collection of the Princes of Thurn und Taxis.

Traverso, Bavarian (?), second half of the 18th century. Boxwood, brass, cork, length 51 cm
Bavarian Army Museum, inventory no. E 4162

Case for grenadier fifes, 1729-1777. Sheet metal, oil colours, length 54.5 cm
Bavarian Army Museum, inventory no. A 11578

Battle of Blenheim

On 13 August 1704, a French-Bavarian army was defeated at Blenheim by the allied Imperial, Dutch and English troops commanded by Prince Eugene of Savoy and the Duke of Marlborough.
It was this battle that decided the fate of Electoral Bavaria for ten years, which fell under a harsh Austrian occupation. Not until 1715 was Maximilian Emanuel able to return to his exhausted homeland. The painting shows the successful battle from an English point of view: Marlborough, on a rearing horse in the foreground, is handing over the victory despatch. The carriage of the captured French Marshal Tallard is visible on the left. In the foreground two monks are crouching, probably as a symbol of the triumph of the Protestant English and Dutch over the Catholic French and Bavarians.
For this scene, the painter has invented a hill that does not exist there. From this tribune there is an overview of the battlefield in the Danube plain with the embattled village of Blindheim, for which the battle – "Schlacht von Höchstädt" in German – is named "Blenheim" in English.
The topographical representation of the plain is quite reliable, whereas the depiction of the tactical formations probably originates from much older sources, as in 1704 the infantry already fought in long lines of musketeers, only four men deep. Pike squares no longer existed.

Battle of Blenheim, painting by Jan van Huchtenburgh, shortly after 1704. Oil on canvas,
112 x 160 cm
Bavarian Army Museum, inventory no. 0496-1971

Cuirassiers, Dragoons, Hussars

In the 18th century, the cavalry fell into several branches. These were distinguished by the size of their horses, their armament and their tasks in battle.
The heavy cavalry (cuirassiers or reiters) wore solid breast plates, remnants of the former plate armour. It was supposed to ride down the enemy in tight formation. Its main weapon was a heavy, straight-bladed sword (called Pallasch in German).
Dragoons initially were mounted infantry, fighting on foot; but they were usually employed like cuirassiers. Hussars were mounted on small, fast and wiry horses: like the Hungarian originals they were equipped with a curved sabre.
All mounted soldiers also had a pair of pistols and a shortened musket (carbine) for self-defence.

Cavalry Backsword

The backsword, called "Pallasch" in German, a straight cavalry sword with a strong wide blade, was the main weapon of cavalry in the 18th century.
The heavy blade permitted powerful cuts, but it was also suitable for stabbing.
The engraving on the blade of this weapon allows an exact attribution and dating: the backsword was used by the Bavarian "Grenadiers à Cheval-Regiment der Kaiserin", which existed from 1742 to 1753.
The inscriptions "Carolus VII, Römischer Kaiser" (reverse) and "VIVAT Seckendorff" show that they were applied before 1745, i.e. while the Bavarian Elector Charles Albert headed the Empire as Emperor Charles VII and field-marshal Seckendorff was the commander of the army.

Pallasch of the Bavarian Grenadiers à Cheval regiment, 1742-45. Steel, brass, wood, leather, length 103.5 cm
Bavarian Army Museum, inventory no. A 2016

Carbine

Carbines were muskets with shortened barrels. They were particularly well suited for cavalry troopers as they could also be used from horseback.
Unfortunately, they had only a short range and lacked accuracy. In a fight on horseback, this firearm was only a stopgap measure; you had to stop to be able to fire it, which took the momentum out of an attack.

The carbine was fitted with a "slide bar" with a ring, which was attached to the rider's bandolier with a snap hook so that it would not get lost.

Cavalry carbine with flintlock, German, c. 1780.
Iron, steel, brass, walnut wood, length 95.5 cm
Bavarian Army Museum, inventory no. N 2104

Cavalry Pistol

Even in the 18th century a pair of long-barrelled pistols continued to be part of every cavalryman's equipment.
Pistols played only a minor role in the fight on horseback. They were only useful for close-range shots before swords were drawn for the actual hand-to-hand combat. Like all military muzzle-loaders, they were single-shot, and reloading was hardly an option in combat.

Flintlock pistol M 1733, French, Saint-Étienne, c. 1750. Iron, brass, walnut wood, length 49 cm
Bavarian Army Museum, inventory no. 0439-1985

Pistol Holsters with Housings

Holster housings (in German "Schabrunken") covered the holsters for the pistols on the saddle pommel. These were mainly decorative elements.
Together with the shabraque (decorative saddle cloth), the holster housing represented the horse's "uniform". This pair from an unknown regiment dates from the second half of the 18th century. The combination of red with a white border was quite common.

Pistol holsters with housings, German (?),
1750-1780. Leather, woollen material,
length 38 cm (holster)
Bavarian Army Museum, inventory no. N 1840

Cavalry Boots

Troopers of the heavy cavalry wore boots made of extremely thick and hard leather with large "bucket tops".
The heavy cavalry rode in close formation during an attack, densely packed. Such boots were supposed to protect the troopers' legs from sabre wounds, breaks and bruises.
In the 18th century, boots gradually became lighter again to increase the mobility of the cavalrymen.

Like all military clothing, shoes and boots are extremely rare. This pair arrived at the Army Museum from the private collection of the painter Angelo Jank (1868-1940). It weighs 6.6 kg.

Cavalry boots with strap-on spurs, German, c. 1700-1740. Leather, iron, height 58 cm
Bavarian Army Museum, inventory no. H 17373

Dragoon Musket

The firearm of the dragoons was a cross between the infantryman's long musket and the short carbine used by cuirassiers and hussars.
Since dragoons were also trained for the fire-fight on foot, they were provided with slightly longer muskets with a greater range.

This weapon dates back to the first third of the 18th century. It still comes with a wooden ramrod.

Flintlock dragoon musket, made in Suhl, c. 1720.
Iron, steel, walnut wood, length 145 cm
Bavarian Army Museum, inventory no. A 1842

Hussar Sabre

Especially with the hussars, who were outfitted according to the Hungarian model, the light scimitar was part of the "look".
This type of sabre, common from the Orient to Eastern Europe, was also used in all European armies.
The inscription "FRINGIA" (Land of the Franks) on this weapon indicates that it was made in Germany for export to the Balkans or Hungary.

Hussar sabre with leather scabbard, German, 18th century. Steel, brass, leather, wood, length 103.5 cm
Bavarian Army Museum, inventory no. A 11369

Cavalry Trumpet

Bugle calls were not only used to convey orders in battle, but the trumpets also served as musical instruments for ceremonial occasions.

The use of trumpets was initially restricted to cavalry regiments. The cuirassiers were the most distinguished arm of the service within the armies. As late as the 18th century, the trumpeters themselves still enjoyed a special status in the army. Being musicians, they were organised in guilds – in parts of Germany, at least – and could be used as parliamentaries, among other things.

Cavalry trumpet by Philipp Schöller, Munich, c. 1750. Brass, cord and tassels wool with silver wire, length 73.5 cm
Bavarian Army Museum, inventory no. A 1990

Scale Model of a 10-Pound Howitzer

Howitzers were high-angle guns. They fired hollowed shells filled with gunpowder, which were detonated by a time fuse. For howitzers, the reference for calibre specification was a stone ball. This scale-model of a 10-pounder is based on an original gun with a bore of about 17 cm.
The accuracy of high-angle guns was poor. They were effective against area targets such as large troop deployments or settlements on the battlefield, which would often catch fire after shelling.

Model cannon, German, c. 1800 (1/4 scale).
Bronze, wood, iron, length 78 cm, width 54 cm, height 38 cm
Bavarian Army Museum, inventory no. D 1151

Scale Model of a 3-Pound Cannon

The "3-pounder" was the lightest gun of the field artillery. These guns mainly fired massive iron balls.
It was common practice to indicate the calibre of cannons in terms of the weight of an iron ball whose diameter corresponded to that of the barrel. With the 3-pounder, that would have been about 75 mm.
The main gun of the field artillery was the 6-pounder, the heaviest in field use was a 12-pounder; they only differed in size, not in their construction.
In most cases, determining the scale of a model is only possible with some known, slightly fluctuating variables such as the wheel diameter or the wheel base.
The gun is very similar to the Prussian 3-pounder of the year 1717, but bears no markings.

Model cannon, German, first half of the 18th century (1/3 scale). Brass, wood, iron, length 100 cm, width 58 cm, height 45.5 cm
Bavarian Army Museum, inventory no. D 287

Regiment Drawn Up in Line

There was little difference between battle and parade formations in the 18th century. The battalions of the infantry were arranged in long lines, which were only three men deep.

The painting depicts a field parade of the French infantry regiment "d'Alsace" in 1768, with three battalions lined up side by side. The grenadier sappers, musicians and drummers have fallen in on the left.

The régiment d'Alsace was a German unit in the service of the King of France.

Since 1667 it was commanded by princes from the House of Wittelsbach. For the princes of smaller principalities, military careers in the armies of the great powers were not unusual, as they offered a lifestyle appropriate to their status and political connections.

Since 1752 Charles August, Prince of Zweibrücken was colonel-in-chief. In 1770 his younger brother Max Joseph replaced him. That he would go from being a French officer to Elector of Bavaria and the Palatinate and later the first King of Bavaria was not yet foreseeable in 1768.

Parade of the Régiment d'Alsace, painting by Richard Schauwenbourg, 1768. Tempera on paper, 48.5 x 182.5 cm
Bavarian Army Museum, inventory no. A 2296

Looting the Dead

The bodies of fallen soldiers were completely plundered on the battlefields of early modern times. In a society of lack everything was useable.
Only a few hours after a battle, valuables, weapons and equipment, as well as all clothing had disappeared. Finds from mass graves confirm this still today.
In the picture soldiers (here light troops in Hungarian costume) are searching a dead or seriously wounded enemy officer. Whether the approaching horsemen want to prevent this or are out for loot themselves is not recognizable.
The painting was apparently created around 1750 after a print entitled "Wahlstatt" (battlefield), made some 40 years earlier. It does not indicate a specific event. The white-blue flag in the background may suggest a Bavarian connection, but it is impossible to pinpoint this. This painting is one of the typical depictions of martial genre scenes, which were popular in the Baroque period.

Looting the dead after the battle, painting, German, c. 1750, after a template by Georg Philipp Rugendas (1666-1742). Oil on canvas, 52 x 67.5 cm
Bavarian Army Museum, inventory no. N 2125

1792 – 1815 Revolution – Nation – War

The French Revolution became the catalyst for a new, 24-year period of war, which was to change Europe's political order and the face of war forever.

Revolutionary France proved itself capable of mobilising people and material on a whole new scale. By abolishing traditional class privileges, all of her inhabitants became citizens of the French "nation" with equal rights and obligations. In addition, there was a bureaucratic centralisation by which the new state had access to the entire population. France thus developed a military potential whose magnitude was previously completely unknown.

While the "old" European powers expected the revolutionary events to weaken the great power France, the new French leadership felt threatened. France started a war that was to sweep across Europe. Her successful defence turned into an unstoppable expansion.

Thanks to the revolution, a young, talented and ambitious artillery officer could quickly rise to become a general, a statesman and finally the "Emperor of the French": Napoleon Bonaparte. A brilliant commander, he ruthlessly used the means of his time and within a few years he defeated the much more cumbersome and

Detail of: Buonaparte, etching by Ph. A. Hennequin, 1797/98, after a painting by Andrea Appiani, print, 1797/1798. Size of complete image: height 57 cm, width 39 cm
Bavarian Army Museum, inventory no. 0436-2010

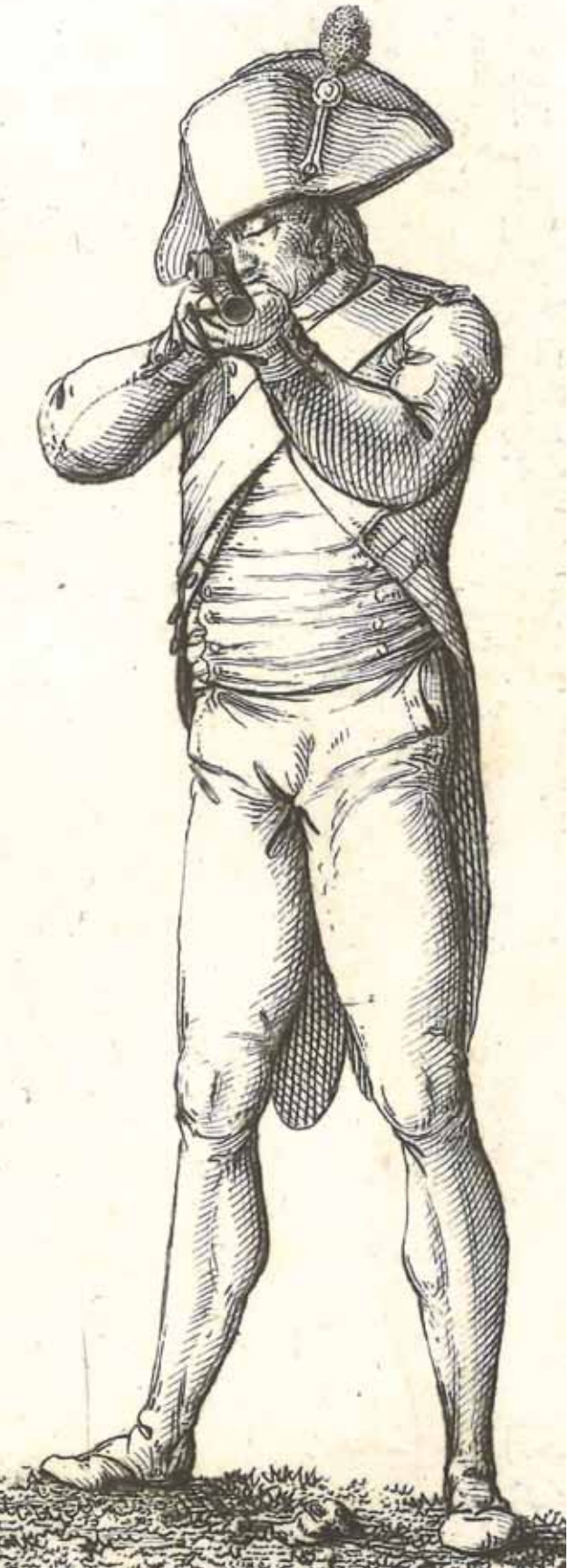
cautious armies of the European powers in rapid campaigns and bloody battles. France's reach of power quickly extended from northern Italy through the western side of the River Rhine to Holland

The complex state of the Holy Roman Empire collapsed in this crisis: From 1803 to 1806, it literally disintegrated. Most the smaller and smallest states disappeared, the smaller territories, imperial cities and ecclesiastical dominions were mediatized or secularized and handed over to larger states. New states were created by the grace of Napoleon. A few of the old princely states remained, grew dramatically and became sovereign as kingdoms and grand duchies. In return they became vassals of France, and had to reinforce Napoleon's "Grande Armée" with their troops.

With luck and skill Bavaria became one of the big winners of these developments. Although the Electorate of Palatinate-Bavaria, which had been united since 1777, was initially weakened by the loss of its territories on the western side of the Rhine, it was now able to expand considerably through Swabian and Franconian lands and form a cohesive territory. In 1806 it was made into a kingdom. The price of the new crown was a military build-up and participation in Napoleon's wars against Austria, Russia and Prussia.

After Napoleon's Russian campaign - in which some 30,000 Bavarian soldiers were also killed - had failed in 1812, the states of Europe once again joined forces against France. King Maximilian Joseph successfully changed sides at the decisive moment. The Kingdom of Bavaria became the strongest middle power in the German Confederation.

The French victories had forced foes and friends to undertake far-reaching state and military reforms. The Congress of Vienna in 1815 created a relatively stable order that averted major wars in Europe for some fifty years.



1792 – 1815 Revolution in Warfare?

The social upheavals brought about by the French Revolution made soldiers both more readily available and replaceable. The compulsory military service for all citizens made soldiers "cheaper", thus armies grew in size, and high losses could be compensated.

National passion had to compensate for the missing drill. With the young soldiers recruited en masse from among the entire population, the complicated linear tactics could no longer be practiced. Instead, the infantry was trained to attack in deep columns with the bayonet. Generals such as Napoleon sought to force a quick decision in battle. Warfare became both faster-paced and more aggressive, so that the smaller and cumbersome professional armies fighting in "the old way" often proved inferior.

There were hardly any fundamental technical changes with regard to equipment and armament, but the arms production was organised more efficiently. Artillery in particular was increased in size and mobility, so that now large calibre guns could be used effectively on the battlefield as well. In many battles, it became the decisive and "deadliest" arm of service.

Detail from: Christian von Mechel's Soldaten- und Plotons-Schule für die Infanterie aus dem französischen Reglement vom 1. August 1791 übersetzt, Basel 1799, plate IV, figure 7. copperplate, overall dimensions: 20 x 33.5 cm, image height 11 cm
Bavarian Army Library, inventory no. FDv 48

Old Weapons – New Tactics

During the Napoleonic Wars, the armament of the soldiers remained almost the same as before. Innovations were limited to smaller technical improvements.
The late 18th century saw the introduction of a so-called "light infantry" which did not fight in the rigid formations of the traditional line infantry but in an open order and highly mobile. In some armies, light infantrymen – going by various names like rifles, chasseurs or Jäger – were armed with rifled guns, which allowed for precision shooting.
The cavalry too saw new branches introduced, e.g. light dragoons, chevau-légers and mounted chasseurs, as well as lancers or uhlans. For the heavy cavalry, helmets, breast and back plates were re-introduced.

Fusilier Short Sword

Though the short sword was irrelevant as a weapon, this "side arm" formed part of every soldier's equipment.
This type of fusilier sabre was introduced for the Bavarian infantry in 1794 and remained in use until 1838. From 1806 on the blade was engraved with the crowned inscription "MJK" (for Maximilian Joseph King).

These sabres were popular with the soldiers, even though the army command would have gladly dispensed with them.

Fusilier short sword M 1794, Bavarian, after 1806.
Iron, brass, tombac, length 73 cm
Bavarian Army Museum, inventory no. E 1581

Model 1801 Musket

The flintlock musket was the standard weapon of the infantry until 1830. Even though some details had been improved since around 1700, in principle the weapon remained unchanged.
However, there were innovations in the manufacturing process: the individual components were manufactured according to more precise standards, so that damaged parts were easier to replace. Another new feature was the more stable shape of the hammer with a heart-shaped cutout, which had first been introduced in France in 1777.
Since 1801, this rifle based on the French model was uniformly produced for the Bavarian army in the newly founded state rifle factory in Amberg.

Infantry flintlock musket with bayonet, M 1801, Bavarian, Amberg, 1801-1804. Iron, steel, brass, walnut wood, length with bayonet 193.5 cm
Bavarian Army Museum, inventory no. H 6977.1-2

Cartridge Pouch

The most important piece of equipment was the cartridge pouch, carried by every infantryman on a wide bandolier over his left shoulder.
A cartridge pouch usually held about 60 cartridges. With these, a soldier could sustain even a longer firefight. Additional cartridges for the troops were transported into battle on carts. These numbers demonstrate the importance that small arms had gained since about 1700.
The pre-fabricated cartridges for the flintlock musket consisted of a paper cylinder holding the appropriate quantity of black powder and a bullet wrapped in the front end.
Cartridge pouches like this one were used in Prussia from 1809 on. The oval-shaped brass plate is stamped with the Prussian eagle.

Cartridge pouch, Prussian, after 1809. Cowhide, brass, c. 23 x 14 cm
Bavarian Army Museum, inventory no. 0589-2018

Rumford Sabre

Long, heavy sabres were increasingly becoming the standard weapon of the cavalry. They were easy to handle and caused serious injuries to the opponent.
From 1788 on the entire Bavarian cavalry was issued with this sabre. The characteristic feature of this edged weapon, which was named "Rumford Säbel" after the Bavarian military reformer, was the angular hilt made up of iron bars to protect the hand.

The blade is engraved with the motto: "Für Den Vater Des Vaterlandes" (For the Father of the Fatherland" under the electoral hat and the initials "CT" (Carl Theodor).

Cavalry sabre M 1788, Old Bavarian, before 1799.
Steel, wood, leather, length 97.5 cm
Bavarian Army Museum, inventory no. A 2393

Bavarian Model 1804 Pistol

The pistols of the cavalry became handier around 1800. This reflected their function as weapons for emergency use.
Due to their poor accuracy and short range, cavalry pistols were only effective at short distances. They were used mainly for self-defence, before the hand-to-hand fighting with sabre or sword ensued.
This specimen is a sealed sample serving as a model for serial production.

Flintlock pistol M 1804, Bavarian, Amberg. Iron, steel, brass, walnut wood, length 38.5 cm
Bavarian Army Museum, inventory no. B 300

Model 1804 Cavalry Carbine

The shortened musket of the cavalry had a much longer range when compared to the pistol.
Carbines were not so relevant for use in a battle, but for the everyday service of the troopers. During their reconnaissance rides, patrols and raids they often got into firefights.
This carbine, used by the Bavarian cavalry since 1804, had the same calibre as the infantry musket, but its range and accuracy were reduced due to the shortened barrel. The left side of the stock is fitted with a so-called slide bar onto which the snap hook sitting on the horseman's bandolier was hooked. That way the carbine would not be lost when the rider reached for his sabre.

Bavarian cavalry carbine M 1804, Suhl, c. 1810.
Iron, steel, brass, walnut wood, length 95 cm
Bavarian Army Museum, inventory no. B 531

Infantry Drum

The drums of the infantry became smaller and lighter around 1800. They remained indispensable, however.
The beat of the drums set the marching pace. On the noisy battlefield, the drums were meant to transmit commands through certain signals and to encourage the soldiers with their loud sound.

This Bavarian infantry drum bears the embossed name of King Maximilian I Joseph "MJK" under the royal crown.

Infantry drum, Bavarian, after 1806. Brass, wood, calfskin, cord, leather, animal strings,
height 39 cm, diameter 40 cm
Bavarian Army Museum, inventory no. B 382

Bugle

In the light infantry, bugles were used to give signals.
With their variable and highly audible sound, bugles could transmit many different commands. This was particularly important for the light infantry, which fought in a loose formation. For them, drums were not really useful.
For the Bavarian rifle companies, 16 different signals were laid down. This type of light infantry bugle was used from 1804 to 1856.

Light infantry bugle, Bavarian, Munich, after 1804. Manufactured by G. Ottensteiner, brass, wool; height 28, width 37.5 cm
Bavarian Army Museum, inventory no. N 1416

6-Pound Field Gun "Arco Carl"

Cannons of this calibre were the most important guns of the field artillery from about 1750 to 1860. Drawn by six horses, they were pretty mobile on the battlefield and very effective.
The calibre was specified in the weight of an iron ball, the diameter of which corresponded to that of the barrel bore.
The gun carriage is not contemporary. Its construction, however, differs little from the pattern of the Napoleonic period. This gun carriage was made in 1866 and corresponds to a model from 1836.
Like all Bavarian bronze barrels this one bears an individual name: "ARCO CARL". An engraving on the cascabel (=Bodenstück mit Stoß) / breech base (=Stoßboden) shows the initials of the technical directors of the Gieß- und Bohrhaus Augsburg (Foundry and Drilling House): "IR" for Ignaz Reißer and "CN" for Caspar Nietzl. Reißer was the cannon founder. Between 1801 and 1830, he cast 295 barrels, which included 128 six-pounders. Nietzl as a bore driller was responsible for the mechanical processing of the cast barrels.

6-pound field gun, Bavarian, Gieß- und Bohrhaus Augsburg, 1814. Bronze, iron, elmwod, wheel diameter 143 cm, barrel length 175 cm, overall length c. 320 cm
Bavarian Army Museum, inventory no. 0378-1988

Napoleon Bonaparte

With the campaign in northern Italy Napoleon Bonaparte (1769-1817) demonstrated his ability to redefine the conditions in Europe with military force.
His successful campaign in northern Italy against the Austrian troops established his reputation as the most important general of the young French Republic.
Napoleon staged himself in a new way with reports and images. Here he is seen galloping down from the Alps into the plains of Italy. The leopard skin used as a saddlecloth and the Gorgon head on his horse's chest underline the revolution's aggressive energy. Meanwhile the horseman turns his gaze back in perfect tranquillity.
The painting signals there is no stopping the dawn of a new era. It is one of the earliest portraits of the future Emperor of the French.

Buonaparte, etching by Ph. A. Hennequin, 1797/98, after a painting by Andrea Appiani (1754-1817), 55.5 x 37.5 cm
Bavarian Army Museum, inventory no. 0436-2010

Archduke Charles of Austria

Archduke Charles (1771-1847), a brother of Emperor Francis II, was the first general to be militarily successful against Napoleon. Archduke Charles was Austria's most important military leader, winning numerous victories against the French armies after 1796. He last beat Napoleon's army at the Battle of Aspern in 1809. Although he himself was defeated a short time later at Wagram and had to step down as commander-in-chief, Archduke Carl was celebrated and revered as the "Saviour of Germania" ever since.
Wearing a general's uniform, he leans against a gun, holding the commander's telescope in his right hand. A small battle scene in the background hints at his military achievements.
In this portrait, he comes across as a counter-figure to Napoleon, not as a representative of the "old" powers. The casual-aggressive pose is as novel as the emphasis on the artillery.

Archduke Charles of Austria, painting by Moritz Kellerhoven, 1795/1800. Oil on canvas,
218 x 149.5 cm; On loan from the Bavarian State Painting Collections
Bavarian Army Museum, inventory no. L 7090

Images of Suffering and Horror

The artillery officer Christian Wilhelm von Faber du Faur (1780-1857) belonged to the Württemberg contingent, taking part in Napoleon's Russian Campaign in 1812. He sketched what he saw there almost daily.
Faber du Faur was one of the few to survive. To this day, he is considered a unique chronicler of that military disaster of hitherto unknown proportions, which has left a deep impression on the European imagination. After the war, he turned his studies into drawings and watercolours. These originals were purchased for the Bavarian Army Museum in the 1920s and today represent a unique treasure of its graphic collection. They are the direct templates for the 100 lithographs published between 1831 and 1846.

Battle of Krasnoi

The retreat of Napoleon's beaten "Grande Armée" became more and more of a disaster with every day.
The early onset of winter caught the weakened troops unprepared. They had difficulties in holding their own against the attacks of the Russian army. This large paper sheet combines several motifs that were later used on the artwork for the lithography series.

"Zwischen Smolensk und Krasnoj am 15. November 1812", tempera painting by C.W. von Faber du Faur, 1814. Watercolours on paper, 52.2 x 88.3 cm
Bavarian Army Museum, inventory no. 0492-1997.c

Dead French Soldiers

On 17 September 1812, the bridge over the Kalatsha River near Borodino was the scene of a bloody fight.
When the French attempted to cross the bridge to advance against the heights of Gorki, they were met with deadly fire by superior Russian forces and had to retreat. Only the carcasses of horses visible from afar and the partially stripped corpses bore witness to the bloody battle. The army had left them like garbage on its way.

"Die Brücke über die Kolotscha bei Borodino, den 17. September 1812", watercolour by C.W. von Faber du Faur, 1827/30. Watercolours on paper, 28 x 35.8 cm
Bavarian Army Museum, inventory no. 0064-1967.57

Abandoned Wounded

Napoleon's "Grande Armée" had already suffered heavy losses during its advance. After the bloody battle at Borodino on 7 September 1812, it had to leave numerous wounded behind as it marched on towards Moscow. These wounded and the sick were left behind in various settlements along the road.

Many of those makeshift hospitals, however, burned down due to a careless handling of fire, with the mostly bedridden patients falling victim to the flames. The few survivors, often severely injured themselves by the fire, were left to their fate.

"An der großen Straße von Moshaisk nach Krymskoje, den 18. September 1812", watercolour by C.W. von Faber du Faur, 1827/30.
Watercolours on paper, 20 x 27.2 cm
Bavarian Army Museum, inventory no. 0064-1967.59

The Last Ones

The remnants of the "Grande Armée" tried to leave Russia as quickly as possible and to reach East Prussia via the border river Memel.
Of more than 600,000 soldiers, less than 10 percent returned. In the Bavarian army, less than 3,000 of 30,000 men survived. Most of the soldiers had not been killed in combat, but had died of disease, hunger, exhaustion or frostbite. Supplies had broken down that summer already.

The picture shows Württemberg officers dragging themselves through the snow. Any military order had long since ceased to exist.

"Bei Eve, den 11. Dezember 1812", watercolour by C.W. von Faber du Faur, 1827/30.
Watercolours on paper, 19 x 29.9 cm
Bavarian Army Museum, inventory no. 0064-1967.97

Success Despite Defeat: Hanau 1813

In the Battle of Hanau (29 - 31 October 1813), the Bavarian general Prince von Wrede commanded an Austro-Bavarian army. Facing these troops was Napoleon's main army.

The French force was clearly superior to the Coalition troops and finally prevailed, but both sides suffered heavy losses. More than 10,000 soldiers were left on the battlefield dead or wounded.

Despite their victory, the French army was very weakened and continued on their retreat to France. For the Bavarians, the battle was a political success: King Maximilian I Joseph of Bavaria had renounced Napoleon only three weeks before, and with this military engagement, the Bavarian army had proved itself a valuable member of the anti-French coalition.

Battle of Hanau, painting by Wilhelm von Kobell, 1814. Oil on canvas, 206 x 323 cm; On loan from the Bavarian State Painting Collections
Bavarian Army Museum, inventory no. L 7075


Manier
von
Speckel
20 Ruthen

Siege Warfare

Fortresses played a decisive role in almost all European wars of the early modern period. Many campaigns revolved around the possession of specific fortress cities. There were considerably more sieges than major battles.

Fortified places were the most fiercely contested objects. If they were located on the periphery of a dominion, their strategic role would be to make it more difficult for enemy armies to penetrate and at the same time serve as a base for attacks from one' s own forces. As "keys to the land", they closed off thoroughfares and dominated much of the surrounding area. Larger cities in the interior of the country could also play an important role as fortresses. The large and prosperous cities in particular, being economic and trading centres situated along important roads and rivers, played a decisive role in the warfare of the early modern period. For it was here that the resources were available and the provisions stored, which were indispensable as the basis for the armies' supplies.

After the implementation of heavy firearms had rendered high walls inadequate for protection, a new kind of fortification had evolved from the 16th century onwards, which required much more space and much more money than the city walls of the Middle Ages. Hardly anyone else but the princely potentates of large dominions were able to finance this, so that only selected towns were expanded into ever stronger fortresses. Ingolstadt, the main fortress of the Electorate of Bavaria, is a perfect example of this. The technical race between attack and defence required constant expansion and modernisation. Against the increasingly complex fortifications with their bastions, ramparts and trenches, a systematic technique of assault was developed beginning around 1670, making use of approach trenches and gun batteries.

The time until a fortress had to surrender seemed predictable. Nevertheless, sieges frequently dragged on for a long time. The attackers needed provisions for many weeks, heavy guns and ammunition, all of which had to be transported over long distances. It was not unusual for sieges to be lifted because this supply failed or because a field army drove the besiegers off.

By then, however, the city was all too often already in ruins. For the inhabitants of a city, the protection offered by the fortifications against passing and plundering troops in daily life in wartime was reversed: now the city itself was at the centre of the war events. The shelling brought fire, destruction and death, while a prolonged siege could also lead to the collapse of the food supply, especially since the military garrison was often far more numerous than the population. If a fortress was not handed over timely by its garrison, which happened relatively rarely, the population was left at the mercy of the marauding and murdering victors.

Walls, Trenches and Bastions

After about 1550 a new approach to the construction of fortifications prevailed in Europe. The high stone walls of castles and city defences gave way to lower but massive earth walls.
The heavy cannons of the artillery were able to breach vertical walls with ease, whereas sloping ramparts were not so easy to collapse.
Increasingly deeply staggered fortification structures extended far into the foreland.
Complicated, geometrically calculated systems of ramparts, ditches and bastions were constructed to hamper the approach of a besieger. Blind spots, where an attacker could find cover from the fire from the defenders, were to be avoided. This made the construction and maintenance of fortifications more and more expensive.

Planning Model for the Transformation of Ingolstadt into a Fortress 1566

Ingolstadt's transformation into a fortress city was begun in 1537. The fortifications had hardly been completed in 1565, when further plans for the expansion of the fortress were made: Ingolstadt was to get higher and more modern walls.
The model shows how massive the new fortifications were planned in comparison to the medieval town. The course of the old city wall can still be discerned by a (only partially preserved) narrow ledge. The main rampart in front of it was to be reinforced at the corners by large, pentagonal bastions, which had to cover each other. A wide moat and another lower rampart were planned in front of it.
In the end, this design, which was very modern for its time, was not executed in this way. However, the model proves just how much importance was placed on the fortification of Ingolstadt.
The spruce used for it was felled in 1566 or a little later. This makes it one of the oldest models of this kind in Europe.

Planning model of Fortress Ingolstadt, Bavarian, ca. 1570 (c. 1/640 scale). Spruce, 194 x 202 cm
Bavarian Army Museum, inventory no. N 5104

Design and Construction of Fortresses

The contour models presented here are three-dimensional additions to a manual on the art of fortification, which the Prussian officer Alexander von Zastrow (1801-1875) published in several editions between 1828 and 1854. They always show one segment from which the technical principles can be discerned. Nine of the altogether 16 models of the series are shown here.

Fortification According to Albrecht Dürer

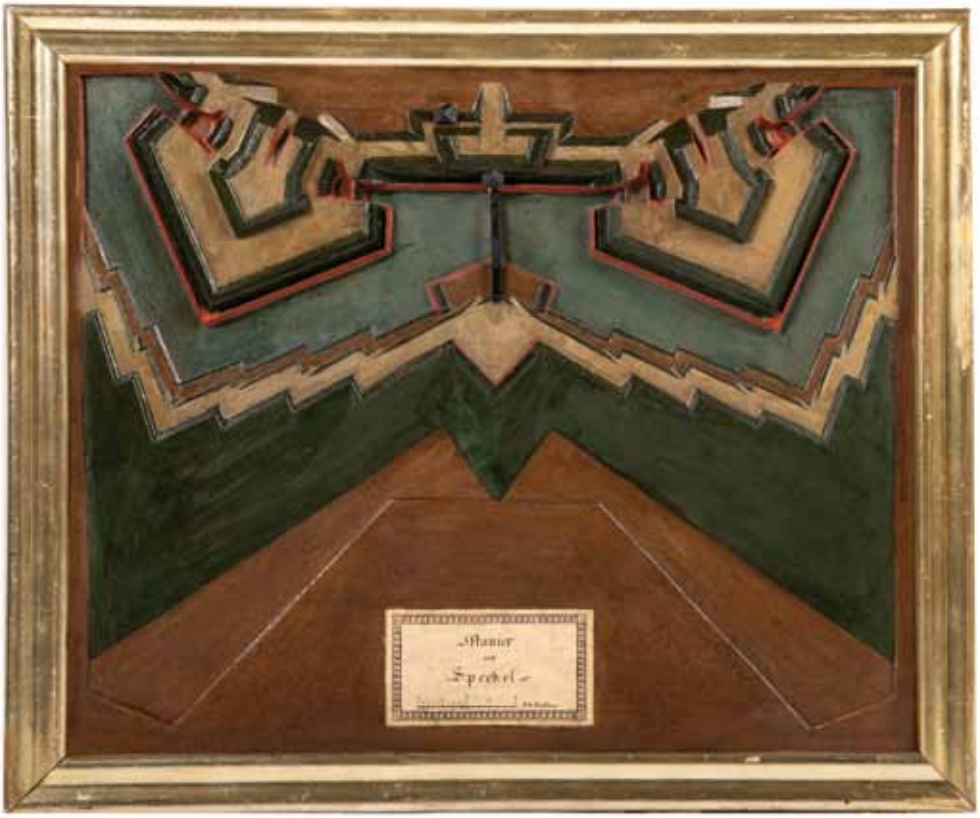
Albrecht Dürer (1471-1528), nowadays famous almost exclusively as a painter and graphic artist, published the first German-language treatise on fortification in 1527. He used massive walls to counter the wall-breaking enemy artillery. The huge rounded bulwarks were fitted with platforms for cannons. On the inside, there were casemates with embrasures from which the moat was to be defended.

Contour model according to Zastrow: "Manieren von Albrecht Dürer", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3273

Italian Fortifications

During the 16th century, the Italians developed polygonal bastions which were aligned with the trajectories of artillery shells in order to completely eliminate blind spots.
This principle of angular bastions, projecting outward from the main wall with two sloping flanks, soon prevailed throughout Europe and dominated the fortress construction of the entire early modern period.
At the bottom, the model shows the older version with very small bastions and at the top the "New Italian System": here the bastions are larger and the rampart (curtain wall) in between is covered by a advanced work (ravelin).

Contour model according to Zastrow: "Manier der Italiener", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3274



Design by Daniel Speckle

The Strasbourg-born fortification engineer and architect Speckle (1536-1589) also drew up some designs for the fortifications of Ingolstadt. Among other things, Speckle designed large bastions with raised platforms for guns (cavaliers). The idea was to provide the defenders with more opportunities to deploy their weapons.

A characteristic feature of Speckle's designs is the jagged "covered path" as the first line of defence.

Contour model according to Zastrow: "Manier von Speckle", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3283

Old Dutch System

Adam Freitag was one of the engineers who adapted the new fortification concepts to the conditions prevailing in the Netherlands.
While massive stone buildings with high walls and deep dry moats were possible in Italy and southern Germany, they could not be realised in the Netherlands. The Dutch worked with low earth walls instead and took advantage of the high groundwater level to create a system of wide ditches. This also increased the extension of the fortress into the forefield.

Contour model according to Zastrow: "Manier von Freytag", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3275

New Dutch System

Menno van Coehoorn (1641-1704) systematically developed the Dutch fortification system further.
Coehoorn considerably improved the defensive capability of the Dutch fortresses. He achieved this partly by making the ditches even wider and deeper, which made the approach of the enemy more difficult. Furthermore, a large part of the fortress was built of bricks and numerous covered positions were constructed from which attackers could be fired upon.

Contour model according to Zastrow: "1te Manier von Coehorn", 1685. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3276

Tenaille System according to Landsberg

The German engineer Hermann Landsberg the Younger (1670-1746) reduced the fortification to a system of staggered acute-angled flanks.
The tenaille system (literally: pincers), developed in 1712, was designed so that the forts could protect each other even better. It was widely discussed, but never fully implemented in any major fortress.

Contour model according to Zastrow: "System von Landsberg", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3277

Vauban's Fortifications

Sébastien le Prestre de Vauban (1633-1707) was the most famous designer and besieger of fortifications of his time. He adapted his creations ingeniously to the local conditions.

An important element gained from experience with sieges was the insertion of sections so that each individual work could be defended separately. Thus, the bastions were separated from the main wall by a moat. Vauban realised his "3te Manier" (Third System) shown here in 1699 when building the circular ideal city of Neuf-Brisach (Alsace).

Contour model according to Zastrow: "3te Manier von Vauban", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3280

"School of Mézières"

Following Vauban, first the military engineer Cormontaigne and later the military engineering school in Mézières developed the French fortifications further.
The line of defence was advanced even further by placing large outworks (lunettes) in front of the bastions. This model is based on a concept from 1764.

Contour model according to Zastrow: "Manier von Cormontaigne nebst den Zusätzen der Schule von Mézières", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3281

The Montalembert Fortification System

The French cavalry officer de Montalembert (1714-1800) rebelled against the generally accepted system of the bastion fortification.

The basic principle of his very numerous designs was the strengthening of the defences. This he wanted to promote through a multitude of solidly bricked casemates and towers with emplacements for cannons and infantry for close range defence.

His proposals, which he published in extensive volumes from 1776 onwards, were for the most part not taken up until the 19th century.

Contour model according to Zastrow: "System von Montalembert", 1828. Wood, oil colours, gypsum plaster, 32 x 38.5 cm
Bavarian Army Museum, inventory no. C 3282

With Spades and Sweat

The building of a fortress, its preparation for defence, but also besieging it involved enormous earth movements. In the early modern period this meant hard physical labour.

This work was not done by the soldiers alone as the citizens of a fortified city and the peasants from the surrounding villages were also recruited. While the citizens dug trenches (in German "schanzen" – hence the moniker "Schanzer" for the Ingolstadters) to protect their hometown, the peasants had to labour for both sides: first for the defenders, then for the attackers.

This work became perilous during the siege, as everything that showed up came under fire. Therefore, the construction of communication trenches and gun emplacements usually took place under cover of the night.

Spade

The most important "weapon" in siege warfare was not the gun, but the spade. Approaching a fortress was only possible by laboriously digging saps. The defenders also required such entrenchment tools, either to repair any damages caused by shelling or, if there was a sortie, to fill in the trenches of the besieger. The enormous earthworks during the construction of fortifications and during a siege were primarily the result of human muscle power. The achievements of the trench workers, which were accomplished with this simple tool in a short time, are astounding.

Spade, German, late 18th century. Iron, wood, length 146 cm
Bavarian Army Museum, inventory no. A 10710

Parade Axe of a Sapper

Sappers carried out the most dangerous sapping and earthworks around enemy fortresses. Their name is derived from the French "la sape" (approach trench).
The grenadier companies included some sappers (also called pioneers) too. With their axes, they had to smash wooden obstacles during an assault.
The decoratively forged axe shown here was not employed as a tool – as a symbol of this special force it was carried for representational purposes at parades and other ceremonial occasions.

The sappers of the French Foreign Legion still carry their axes and wear leather aprons every year during the 14 July military parade, on the French national holiday.

Parade axe, German, late 18th century. Iron, wood, length 98.5 cm
Bavarian Army Museum, inventory no. A 2343

Wheelbarrow

The construction of the large fortifications was manual work, and wheelbarrows were the most important means of transport for moving the excavated earth.
The fortifications of the early modern period consisted only to some extent of stones and bricks, but mainly of heaped-up soil. Not only are earth ramparts cheaper than brickwork, but in many cases, better, because cannon balls simply got stuck in them.
Wheelbarrows are verifiable from images ever since the High Middle Ages. The ones found in Ingolstadt in 2013/14 are the oldest preserved specimens in Europe to date. They were discovered during archaeological excavations opposite the New Castle at the former Eselbastei. Their wood is dateable to the year 1537.
The oldest preserved invoices for the expansion of the Ingolstadt fortress date from the same year.

Wheelbarrow, German, 1537. Wood, iron, length 151 cm, width 41 cm, height 39 cm
On loan from the City Museum Ingolstadt
Bavarian Army Museum, inventory no. L 7089

Siege of Mainz 1689

Mainz was one of the biggest fortified cities on the River Rhine. In 1688 it was occupied by French troops of Louis XIV. One of the main attacks during the siege was led by Maximilian Emanuel, Elector of Bavaria.

The Reichsheer (Army of the Empire) which was put together for the reconquest under the command of the Duke of Lorraine, consisted of about 60,000 men, including a large contingent from Electoral Bavaria under Maximilian Emanuel.

After a seven-week siege, the attackers succeeded in assaulting the southern and western front of the fortress on 6 September 1689. Two days later the French garrison capitulated in exchange for safe passage and surrendered the city. The losses of the besiegers amounted to about 5,000 dead and wounded, those of the defenders to about 2,200 men.

The painting depicts the Bavarian point of view in two separate scenes: On the elevated foreground, the Bavarian camp can be seen. Maximilian Emanuel, the central actor on the right front (in a blue coat and with hat), is having a discussion with his high-ranking officers.

The assault of the Bavarian troops on the bastions in the south of the fortress is shown in the background. You can make out the gun emplacements and the approach-trenches that were systematically dug up to the edge of the fortress; from there the assault columns advance.

Siege of Mainz 1689, painting by Franz Joachim Beich, c. 1720. Oil on canvas, 246.3 x 219.8 cm
Bavarian Army Museum, inventory no. A 11356

Attack and Defence

There was a constant race between the techniques of attack and defence. The more effective the artillery became, the more the fortresses were strengthened and expanded.
The attackers constructed a sophisticated system of trenches and emplacements in order to minimize the losses caused by the fire from the fortress.
Both sides utilized weapons specially designed for siege warfare: wall guns with their wide range and precision posed a danger for everyone, who ventured out of cover. Then there was a large range of explosive and incendiary projectiles, that could be fired by mortars in a high arc over the positions (and at the houses in the city). For close combat, hand grenades were available.

Siege Armour

Helmets and cuirasses used during sieges were particularly heavy. When approaching the defences, only very thick armour offered sufficient protection against the aimed musket fire of the defenders.
Particularly at risk during sieges were the sappers, the special troops working in the saps. Thus, they were equipped with armour that could withstand shots from the fortress.
Senior officers also wore such heavy armour during sieges, as they were forced to expose themselves during their observations. Only very few such special equipment is still extant.

Helmet and cuirass originate from the armoury of the princes of Brunswick and are extremely heavy at 6.3 kg (helmet) and over 22 kg (cuirass) respectively. The velvet cover of the helmet, the silver braid and the lining of quilted silk show that it was made for a high-ranking individual.

Siege armour with helmet, Brunswick (?), c. 1680.
Steel, leather, velvet, brass, height c. 47 cm
Bavarian Army Museum, inventory no. 0277-2017

Wall Gun with Matchlock

Wall guns were special firearms for siege warfare.
Firearms used for sieges called for a longer range, more penetrating power and greater accuracy than those used for combat in the field, where mobility was of more importance. Hence, wall guns had a longer barrel and a larger calibre than standard infantry muskets. The hook forged onto the barrel was placed on a parapet to absorb the recoil of the heavy weapon. Until 1868 this gun was located in the armoury of Rosenberg Fortress in Kronach.

Wall gun, German, c. 1600. Iron, elm,
length 182 cm, calibre c. 22 mm
Bavarian Army Museum, inventory no. A 412

Wall Gun with Flintlock

From the late 17th century on, the matchlock was superseded by the flintlock.
While firing a matchlock musket required a smouldering slow-match, flintlocks worked like a lighter and were thus ready to fire at any time.
Wall guns formed part of the armament of fortresses and siege depots. In times of peace they were stored in armouries, often for decades. This gun found its way from the Würzburg Armoury into the Army Museum in 1880.

Wall gun, German, 1690-1700. Iron, steel, beech wood, length 184 cm, calibre 22.5 mm
Bavarian Army Museum, inventory no. D 229

Austrian Wall Gun

Thanks to a small mark, this flintlock wall gun can be identified as "Made in Austria".
The marking stamp on the top of the barrel of this gun depicts a crowned "L". This stamp was used in the 18th century as an approval mark for arms produced in Wiener Neustadt.
The shape of the butt and the iron ramrod indicate that this weapon was manufactured around 1750; it's possible, though, that this rifle was still kept for emergencies as late as the 19th century. When it was handed over from Rosenberg Fortress in 1868, however, it had long since become obsolete.

Wall gun, Austrian, c. 1700. Iron, steel, beech wood, length 168 cm, calibre 22.5 mm
Bavarian Army Museum, inventory no. A 1597

Hand Mortar

Hand mortars were employed to fire a small grenade over a long distance.
A small cup-shaped mortar was fitted to the bottom part of a flintlock musket. Using a strong powder charge, a small hand grenade could be launched up to 250 meters.
The grenade's fuse tube was either ignited when the propellant exploded or had to be set on fire by hand before firing. Both were rather unsafe and dangerous for the shooter.
Because of the strong recoil the butt is padded on this specimen. It has a calibre of 72 mm.

Hand mortar, German, c. 1720 to 1730. Iron, bronze, wood, length 67 cm
Bavarian Army Museum, inventory no. A 1833

Grenadier

Grenadiers were experienced infantry soldiers trained in the dangerous handling of hand grenades.
The grenadier companies were considered to be elite troops and used in particular for assaults on fortifications. They were armed with hand grenades whose internal time fuse was lit with a burning slow-match; the latter was housed in a small metal container attached to the bandolier.
The grenadiers' most conspicuous feature was their headgear, the so-called mitre cap. As the usual wide brimmed hat got in the way when "slinging the firelock" over the back – as both hands were needed to ignite and throw the grenade –, they had initially worn a small pointed cap. This was followed by ever more splendid (but also more impractical) caps made of fur or fabric and sheet metal, which were designed to show the elite status of their wearers.

Prussian grenadier igniting a hand grenade, etching by J. M. Mannert, c. 1750; 15 x 8.5 cm
Bavarian Army Museum, inventory no. G 1979

Hand Grenades

Hand grenades were employed in fights over fortifications. They could be hurled behind the enemy's cover where they exploded.
Hand grenades were hollow spheres made of various materials and filled with black powder. They were detonated with some delay via a phosphorous tube or short fuse inserted into them. Their fragments caused severe injuries. The grenadier ignited his grenades with a burning slow-match which he had to carry with him.
Most hand grenades were made of cast iron or thick glass. They were handier and more effective than grenades made of the cheaper clay.

Hand grenade made of cast iron, German, 1670-1770, diameter c. 8 cm
Bavarian Army Museum, inventory no. A 1704.a

Two hand grenades made of glass, German, 1670-1770, diameter c. 8.5 cm
Bavarian Army Museum, inventory nos. A 1704 und A 3059

Hand grenade made of clay, German, 1600-1800, diameter c. 11 cm
Bavarian Army Museum, inventory no. 0288-1976

Grenade Pouch for Grenadiers

Grenadiers carried larger ammunition pouches, in which several hand grenades could be carried in addition to the cartridges for their muskets.
This bulky pouch was worn on a wide bandolier over the left shoulder. The flaming grenade made of brass points to a grenadier unit.
It was probably carried by a grenadier from Electoral Bavaria or Palatinate, as it originates from the old collection of the Army Museum.

Pouch for hand grenades, German, c. 1700-1730.
Leather, brass, height 23 cm, width 37 cm, depth 18 cm
Bavarian Army Museum, inventory no. N 3241

Artillery and Explosive Weapons

In siege warfare, artillery played the main role. Heavy cannons were placed on the walls of the fortresses. The besieging army had to haul their guns and ammunition over a long distance.
In contrast to field warfare, mobility was of little importance here. Heavy cannons were the only ones that were effective over long distances, and their cannonballs had great penetrating power. Howitzers and mortars were used to launch gunpowder-filled grenades and bombs, baskets of stones, and incendiary devices at the target in a steep arc.
This required specialized personnel. Gunners had to master the perilous handling of explosives. They tried to calculate the distances and trajectories of their projectiles, a task that was still very difficult with the methods of the time.

Linstock

With the linstock it was possible to ignite heavy cannons and mortars from a safe distance. Under the blade there are curved brackets for the fuses.
This pole arm in the shape of a partisan was furthermore a rank badge for officers and NCOs of the artillery.

This specimen came to the Bavarian Army Museum in 1868 from the armoury of the Marienberg Fortress in Würzburg.

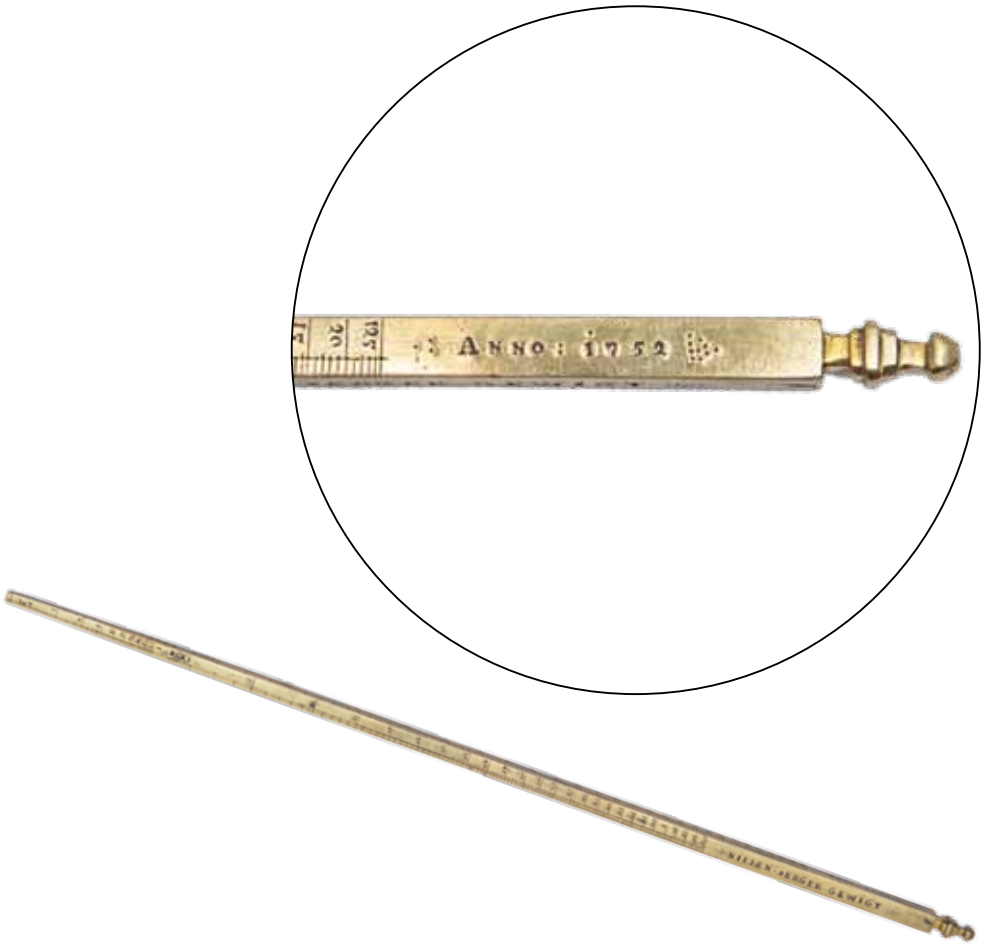
Linstock-partisan, German, late 17th century.
Steel, wood, length 214 cm
Bavarian Army Museum, inventory no. D 65

Artillery Levels

Measuring instruments such as this gunner's quadrant were placed on the barrel for gun-laying, i.e. for elevating and pointing the cannon.
By using a plumb line the instrument could be aligned exactly horizontally.
The clinometer on the left has a vertically adjustable aperture sight to get bearings on a target.
The artistic design of the right level with the engraved Bavarian lions illustrates that such precision instruments were often used for representative purposes as well.

Clinometer with plummet and aperture sight, German, 1700-1750. Height 11.5, width 10.5 cm
Bavarian Army Museum, inventory no. D 1192

Plummet clinometer with two symmetrical scales, Bavarian, 18th century. Messing, iron, height 11 cm, width 12.2 cm
Bavarian Army Museum, inventory no. A 9676

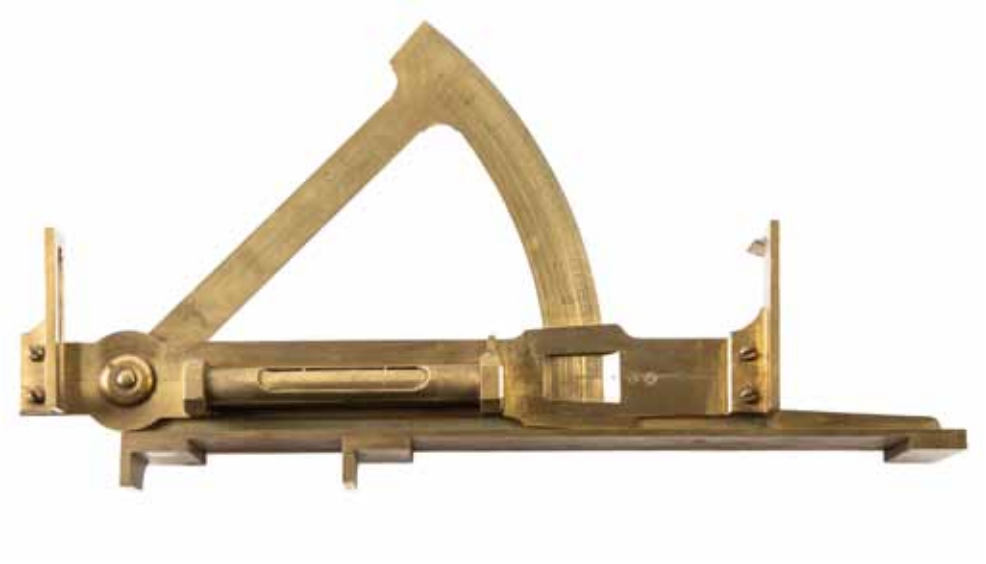


Calibre Rod

The calibre rod, or artillery measuring-rod, was used to determine the calibre of iron, stone or leaden balls of different weights. On the four sides of the metal rod there are scales for iron, lead and stone as well as one for the unit of measurement used at that time, the Zoll (or "inch" in English). As there were no uniform dimensions and standards yet, such aids were indispensable in practice.

This piece is engraved with the Nuremberg measuring system ("NIERENBERGER GEWIGT") which was widely used at that time.

Calibre rod, South German, 1752. Brass, length 31 cm
Bavarian Army Museum, inventory no. E 741



Siting Clinometer

This artillery level employed a spirit level in lieu of the plummet.
It was used to set the desired angle of elevation for the indirect target bearing of mortars and howitzers.

Siting clinometer, J. C. Voigtländer, Vienna 1790.
Brass, glass, length 42.5 cm
Bavarian Army Museum, inventory no. E 716

Priming Flask of the Artillery

Gunners carried a powder flask used to fill the touch hole of the muzzle-loading "piece".
It contained a fine black powder enriched with sulphur (meal powder), which ignited more easily.
This priming powder flask is painted with the Bavarian diamonds, so it was certainly used by the Electoral Bavarian artillery.

Meal powder flask, Bavarian, c. 1700.
Wood, iron, diameter c. 15 cm
Bavarian Army Museum, inventory no. A 1181

Scale Model of a Siege Gun

The heavy siege artillery had two main tasks: putting the fortress artillery out of action and breaching the walls.
Siege guns were fitted with carriages and large wheels just like field guns, so that they could be manoeuvred easily into their emplacements outside the fortress. For battle, however, they were too immobile due to their size and weight.
Guns of this type first engaged the defenders' gun emplacements from a great distance (from about 600 meters). Later on, they played a decisive final role: at a close range (100 meters or less) they breached the walls of the fortress with their fire.
After that, the fortress was "softened up" for an assault.
The 1/6 scale model shows a 24-pounder. The wheels of the original had a diameter of about 1.60 m, the barrel was about 3.5 m long. Solid iron balls with a diameter of 15 cm were used as ammunition.

Model of a 24-pound siege gun, French c. 1780 (1/6 scale). Bronze, wood, iron, length 86 cm, width 39 cm, height 31 cm
Bavarian Army Museum, inventory nos. E 477 (barrel), E 478 (carriage)

25-pound Mortar

Mortars were high-angle guns with a short barrel, which were only used in siege warfare.
Mortars launched powder-filled iron balls, so-called bombs, but also stone balls and incendiary devices. From a concealed position the projectiles were launched in a high arc. This made it possible to hit targets that were impossible to reach with direct fire. Their accuracy was poor, however.
The calibre of mortars was given in the weight of a stone ball: A barrel diameter of 22 cm corresponds to a 25-pounder.
The Hohenzollern coat of arms and the letters "C.E.M.Z.B." – denoting Christian Ernst, Margrave of Brandenburg-Bayreuth – are cast into the barrel. The weapon thus belonged to the artillery of the margraviate of Brandenburg-Bayreuth in Upper Franconia.
The mortar came from the Augsburg artillery depot to the Army Museum in 1880.

Mortar, cast by Johann Conrad Roth in Forchheim, 1687. Bronze, iron, pine wood,
height 75 cm, width 66 cm, length 133 cm
Bavarian Army Museum, inventory no. C 14

Hail Shot

This ammunition could be fired from guns or howitzers and was used against "soft targets" due to its scattering effect.
On a wooden disc, about 30 small balls in a fabric cover are fixed around a vertical rod. The base plate was of the same calibre as the gun barrel and served as a sabot for the projectile.

Hail shot, German, 17th century. Wood, iron, textile, cord, diameter c. 6.5 cm, height c. 21 cm
Bavarian Army Museum, inventory nos. D 1116 and D 1117

Pitch Sack

This cylindrically shaped incendiary projectile is a variant of the fire ball.
The fabric sack, containing an incendiary agent, is coated with pitch on the outside and held in place with a net-like cord.
The iron construction in which the pitch sack has been inserted may have been a support that was only attached later to display the piece. It came into the Army Museum in 1914 from the collection of the Artillery and Engineer School of the Bavarian Army.

Pitch sack, German 1600-1800. Sheet iron, wood, textile, pitch, cord, height c. 18.5 cm, diameter c. 12 cm
Bavarian Army Museum, inventory no. D 1153

Fire Balls

Fire or light balls could be used for various purposes: depending on their filling, they were employed as incendiary projectiles, explosive bombs or flares.
This fire ball consists of an oval sack made of textile, which is inserted into a framework made of sheet iron; the top and bottom calottes are joined by iron bands. The ball is broken open so that remains of the filling are visible. It probably consists of a mixture of pitch, charcoal and black powder. The Bavarian Army Museum acquired this rare object in 1907 for its collection.

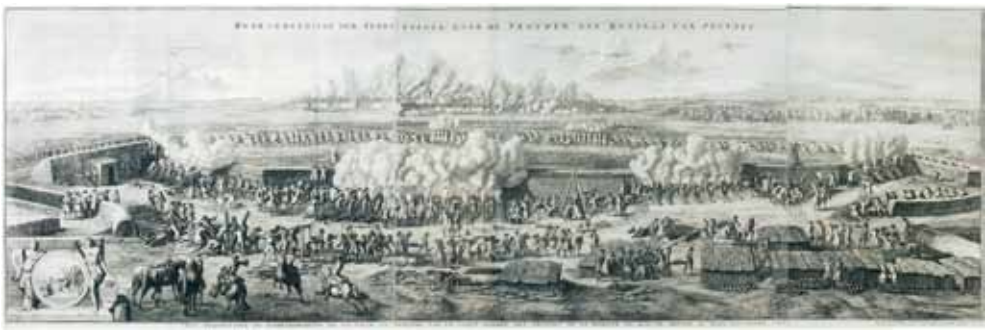
Fire balls, German, 17th century. Sheet iron, textile, pitch, charcoal, diameter c. 16.5 cm, height c. 20 cm
Bavarian Army Museum, inventory no. D 132

Pitch Wreath

Pitch wreaths were designed to set flammable parts of emplacements and defences on fire, but also buildings and vehicles. They were used by defenders and attackers alike.

A pitch wreath consisted of a braided ring of cord or willow, which were usually treated with saltpetre in advance. They were then dipped into various compositions of melted pitch and black powder. They were designed to burn either explosively or slowly and could not be extinguished.

Pitch wreaths, German, 16th to 18th century.
Cord, tow, cloth, pitch, diameters 19.5 cm and 30 cm
Bavarian Army Museum, inventory nos. D 177 and 0408-2005.a, b



Bombardment of Geldern, 1703

In order to speed up sieges, fortresses were often only shelled by the artillery, which usually caused more damage to the houses of the city than to the actual fortifications.

The fortress of Geldern on the Lower Rhine, for example, was under fire from 40 cannons and 29 mortars from 3-15 October 1703. Although the vicious bombardment inflicted heavy destruction on the city, its military effect was negligible. The fortress didn't capitulate until two months later.

The illustrator Jean de Bodt (1670-1745) took part in the siege as a Prussian military engineer. The battery positions are shown in detail. You can see, among other things, the mending of gun carriages, the heating of cannon balls as incendiaries and the covered powder stores.

Bombardment of Geldern by Prussian troops 1703, copperplate by Jan van Hugtenberg after a drawing by Jean de Bodt, 1704. 47 x 142 cm
Bavarian Army Museum, inventory no. 1279-1983

The "Small War"

Battles and sieges were but isolated events in all the months and years over which campaigns and wars dragged on. But the everyday life of the war was not shaped by these large-scale actions. Rather, for the soldiers and armies it consisted of endless marches and life in military camps. The daily concerns related to the procurement of all the supplies the hungry armies needed. So, the troops were constantly on the move to feed themselves.

In the early modern societies of lack, the maintenance of their armed forces posed the biggest problem for the generals. Armies could only operate in areas where enough provisions and forage were available. Under the conditions of the pre-industrial era, this meant that warfare would always take place in the same fertile and densely populated regions. Around the time of the Thirty Years' War the armies increasingly fragmented and were occupied solely with their own supplies. This led to large-scale devastation in all those areas that were repeatedly traversed and plundered by the armies and their enormous retinue of soldiers' families, merchants and camp-followers. And so the war fed itself. Later and in the 18th century, there were efforts to improve the organisation of the troops' supply. The armies were supposed to be easier to deploy and to this end the fighting troops had to be kept together. Light troops were increasingly used for the task of, on the one hand, guarding the supply depots and transports for their own side and, on the other hand, harming the enemy. Lightly armed horsemen and so-called free corps or "partisans" roamed the countryside on the peripheries of the main armies. They were much faster and more mobile than the "regular" troops that were to be deployed in battles and sieges. Moreover, they were cheaper for the warlords, as they had to supply themselves from the land and live largely from the spoils of war.

For this type of warfare, the term "small war" was coined around 1750. It included attacks on supply trains and depots, raids on small sections of enemy troops and often intimidation of the population. The light troops were also tasked with gathering intelligence and exploring the war zone, which often had not yet been mapped.

Often they were units that brought with them fighting methods and weapons that they had practiced in the small war against the Ottomans, such as the Hungarian Hussars, Croats and Pandurs in the service of the Habsburg rulers or the Russian Cossacks. They also served as models for similar units and free corps, which were raised by all other armies.

It was the civilian population, though, that suffered most from this "small war"; it was robbed, pillaged and terrorised. It did not make much of a difference whether it was the soldiers of their own sovereign, those of the enemy or gangs of marauders who had become "self-employed" and made a living from war.

Foraging

Armies were always hungry. Wherever there were large numbers of soldiers and horses, they quickly started to compete for food with the population.
Whenever troops were marching through, but especially when they were quartered in one place over a longer period of time without long-term provisions, there were problems: because now the supplies of the locals were accessed.
The forage for horses posed particular difficulties. Each mount required about 25 kg of green fodder per day, which had to be freshly mowed; additional dried grain also had to be fed.
If harvest time had not yet arrived, even unripe grain was ruthlessly mowed as horse fodder. This not only destroyed the bread grain for winter, but also the seeds for the following spring.
The illustration shows an episode from the vicinity of Augsburg in the War of Spanish Succession in July 1704.

“Die feindliche Fouragierer schneiden weit und breit die noch unzeitige Feldfrüchten ab und führen sie in das Lager”, etching by Georg Philipp Rugendas, Augsburg, 1705; 26 x 40 cm
Bavarian Army Museum, inventory no. G 2825

Water Transport

Since the land-route networks were still poorly developed in the early modern period, waterways remained of paramount importance for long-distance transport.
Rivers and canals were the main arteries of the war. Everything that could not be carried by men and horses was very difficult and slow to transport on land. Wagons were cumbersome, and draught animals needed large amounts of fodder. For supplies, ammunition and heavy artillery in particular, waterways were used whenever possible.

The model shows a Danube raft carrying Bavarian dragoons and their horses. During the wars against the Ottomans, the Danube and its tributaries were also used to transport troops to the distant theatres of war in south-eastern Europe.

Raft model with tin figures, c. 1/32 scale, workshops of the Bavarian Army Museum, 2004.
Wood, linen, tin alloy, oil colours; length 100 cm
Bavarian Army Museum, inventory no. 0171-2004

War Chest

The armies carried the money for the soldiers’ pay in iron chests. These were a coveted war booty that needed special protection.
“What wonder that a certain person, being asked what were the things necessary for war, should reply that there were three, to wit, money, money and money!” – goes a famous 17th century quote.
The loss of a war chest containing the money for pay and rations could quickly lead to the complete collapse of discipline and the dissolution of entire units.
The chest consists of a lattice of thick iron bands riveted together. The front is adorned with a mock lock. The real lock – a so-called “Spinnenschloss” – is hidden in the lid and features bolts in three directions. These snap into place with springs when the lid falls shut. Numerous damages show that the chest was used intensively. Its tall, narrow shape is unusual.

Chest, Southern German, 17th century. Iron, height 58 cm, width 74 cm, depth 42 cm
Bavarian Army Museum, inventory no. A 8393

Franz von der Trenck

To this day, Colonel Franz von der Trenck (1711-1749) is regarded as the embodiment of a "warlord" whose brutal actions in the "little war" included deliberate terror against the civilian population.

Franz von der Trenck came from a noble family from Pomerania. His father, though, served as an Austrian officer. Trenck began his military career in a Hungarian regiment, but was dismissed for his conduct. Although he distinguished himself in Russian service in the fight against the Ottomans, he did not last long there either.

In 1740 he raised a unit of volunteers from the Balkans for the Habsburg ruler Maria Theresa and led them in 1741-43 in operations in Silesia and Bavaria. Trenck's Corps of Pandurs was feared for its brutality, but at the same time proved to be a very effective force.

For a short time, he was held in high esteem, but his ruthlessness quickly landed him in conflict with the authorities again after the end of the war. In 1749 Trenck died in fortress custody.

Franz von der Trenck, painting by an unknown master, German, 1742. Oil on canvas, 57.5 x 45 cm
Bavarian Army Museum, inventory no. A 6129

Johann Daniel von Menzel

Aside from Franz von der Trenck, Menzel was the best-known leader of the irregular troops spreading terror in Bavaria in 1742/43.

The son of a Leipzig barber-surgeon, he entered Russian military service in 1711 at the age of 13. After serving with the Saxon, Swedish, Polish and then again the Russian army, he was enlisted as a Hungarian lieutenant-colonel by Queen Maria Theresa in 1741.

As a companion (and competitor) of Trenck, he commanded the latter‘s Pandur Corps for a while. In 1743 he raised his own corps of hussars.

He was killed in June 1744 as a lieutenant-general near Stockstadt am Rhein by a French sniper.

Johann Daniel von Menzel, mezzotint by Gabriel Bodenehr, Augsburg, 1743; 41 x 28 cm
Bavarian Army Museum, inventory no. 0095-2019

Officer of Menzel's Free Hussars

In 1743, the notorious Pandur officer Colonel Johann Daniel von Menzel also formed a hussar corps of his own. Hussars were armed and equipped in "the Hungarian manner", even though these units were often not made up of Hungarian soldiers at all.

Light horsemen like these were the main actors of the small war, as they were very mobile and could be used for reconnaissance and raids.

"Ein Hußaren Officier von neu aufgerichten Menzlischen Regiment", copperplate and etching by Martin Engelbrecht, Augsburg, 1743; c. 30.5 x 19 cm
Bavarian Army Museum, inventory no. G 2162

Grenadier of Trenck’s Pandurs

Many of the irregular troops for the “little war” came from the border areas to the Ottoman Empire. They were generally referred to as “Pandurs”. The Free Corps of colonel Franz von der Trenck, mainly made up of Croats, Serbs, Romanians and Hungarians, spread fear and panic in Bavaria during the War of the Austrian Succession 1742-1744.

Their foreign appearance and the fighting style adopted from the Ottomans ensured that the Pandurs were particularly feared.

“Ein Granadier von dem Trenkischen Corpo aus Schlawacken”, copperplate and etching by Martin Engelbrecht, tinted with watercolours, Augsburg, 1743; c. 31 x 20 cm
Bavarian Army Museum, inventory no. 0008-2014

Encamped Pandurs

The members of irregular units often received very little pay. Therefore, they were entitled to the booty made during their raids.

"Pandurs and Croats" and other free troops lived directly off and from the land. The way this was done frequently meant that they were a scourge for the population.

This was expressly approved and tolerated by the army commanders. The messy "small war" was intended to relieve the main armies.

The frugality of the south-east European irregulars also generated a certain fascination, which can be gleaned from the caption of the etching: "Pandur & Croat, jolly even with little & bad food". Whether it reflects reality is open to question.

"Der bey geringer u. schlechter Kost, vergnügte Pandur u. Croat", copperplate and etching by Martin Engelbrecht, tinted with watercolours, Augsburg, 1743; c. 31 x 21 cm
Bavarian Army Museum, inventory no. 0011-2014

A Bavarian Free Corps

As a reaction to the threat posed by the Austrian light troops, the Bavarian electorate began to form its own free troops from 1740 on who were supposed to wage the "little war" on their own account.
Johan Michael Gschray (1692-1763), a Bavarian court usher ("Eisenamtmann") from Deggendorf, assembled a small force in 1741, which grew to 600 men by 1744. Being a specialist in irregular warfare, Gschray was later put to use in French and Prussian services.

The imaginative etching shows one of the bold members of Gschray's Free Corps. Although he is labelled a hussar, neither his costume nor his armament are Hungarian.

"Ein Husar von des Herrn von Gschrey Frey Compagnie", copperplate and etching by Martin Engelbrecht, Augsburg, 1743; c. 29.5 x 18.5 cm
Bavarian Army Museum, inventory no. A 7515

Ottoman Pistol

The troops from the south-eastern European border regions brought their own weapons with them, many of which originated from the Ottoman Empire.
Decorative ornaments played a major role in arms from the Orient. The fittings of this pistol are made of silver; its ornaments are gilded. An ivory ball rounds off the butt. The barrel bears the name of the gunsmith: "Amil Kücük Muzzaffar" (product of Kücük Mustafa).

The ignition device, a so-called Miquelet lock, was widely used in the Ottoman world. The calibre of 12.6 mm is quite small.

Pistol with Miquelet lock, Ottoman, c. 1800. Iron, steel, silver, gold, wood, leather, ivory, length c. 42 cm
Bavarian Army Museum, inventory no. 0691-1972

Sabre of a Pandur Officer

The officers of irregular units often carried particularly sumptuous weapons.
This formidable sabre is said to come from a Pandur officer whose unit was attacked by armed Bavarian peasants on 3 April 1742.
A blued section of the blade features a Hungarian cross with the inscription "IN HOC SIGNO VINCES" (In this sign thou shalt conquer) on one side and a representation of the Virgin Mary above the royal Hungarian coat of arms on the other.

Sabre of a Pandur officer, Hungarian c. 1742.
Steel, iron, gold, leather, length 101 cm
Bavarian Army Museum, inventory no. A 11203

Sword-Belt for the Pandur Officer's Sabre (Fragment)

The splendid sabre of the Pandur officer was worn on a sword belt, of which only a fragment remains, namely the cords and tassels shown here.

Sword belt for the officer's sabre, Hungarian c. 1742. Camel hair, metal wire, length of tassels c. 17 cm
Bavarian Army Museum, inventory no. A 11204

Pandur Sabres

Sabres of different shapes were the typical weapons of the fighting-men from south-eastern Europe, some of whom brought their own equipment with them.
The simple, short sabre was carried by foot soldiers, sometimes as a secondary weapon. The engraving with a generic image of a Pandur was based on a German print from around 1740. The sabre also bears the inscription "V[ivat] PANDUR".
The longer sabre is a typical weapon of Hungarian origin. It has the name "MICHAEL ZACHII" engraved on it.

Sabre (top), Hungarian, c. 1650-1750. Steel, iron, brass, wood, leather, length 90 cm
Bavarian Army Museum, inventory no. A 10963

Pandur sabre (bottom), Hungarian (?), c. 1740. Steel, brass, wood, length 59 cm
Bavarian Army Museum, inventory no. A 11555

Morions of Marauders

Soldiers who plunder, pillage, steal, rape and murder off the battlefield are called marauders. The civilian population suffered enormously under these unchecked men of war.

Again and again the peasants defended themselves by violent means. Elector Maximilian of Bavaria was so enraged by the excesses of the Swedes in the countryside that on 20 May 1632 he even ordered his subjects to beat every Swede they could get their hands on to death.

These morions were found along with two skeletons near Forstenried or Grünwald (today districts of Munich). It is likely that the soldiers were bludgeoned to death and buried by peasants. The primitive repairs to the helmets indicate that their last owners were runaway soldiers who had roughly patched up some damaged booty for further use.

Two morions, German, c. 1630/1640. Iron, height of each 18 cm
Bavarian Army Museum, inventory nos. A 7302 and A 7646

The Horrors of War

In 1633, Jacques Callot, a native from Lorraine, published a series of 18 etchings on the horrors of war, the so-called “Great Miseries of War”. These prints are among the best-known contemporary depictions of wartime atrocities.

The scenarios follow the “daily routine“ of the soldier‘s life. First, the enrolment is depicted, then the battle, followed by the cruelties of the small war with plundering, robbery, murder and pillaging. These are followed by exemplified depictions of the punishments that the military provided for infringements, because maintaining discipline was essential for the cohesion of the motley army of mercenaries. But misery, disease and revolts that went hand in hand with war are also addressed. One print shows the poverty and hardship of the war invalids, another the peasants‘ revenge on the soldiers, who are clubbed to death with cudgels and flails.

In a way, Callot‘s pictures are akin to illustrations of a parable from the Bible or a saint‘s legend. The soldier‘s life is treated like an ordeal. The etchings are meant to remind the soldier that there is also a virtuous and honourable path he can follow. If he fails to do so, draconian punishments loom.

In some pictures Callot chooses different perspectives, so that the viewer‘s gaze is directed to various points in the foreground and background, giving the impression of an undisciplined event.

The captions are verses that explain what is happening, but do not condemn the war. Rather, the moral appeal is directed at the soldiers themselves and against those responsible for the armies.

In 2014, the Army Museum could acquire a complete series of “The Great Miseries of War“ in the arts trade, twelve of which are shown here.

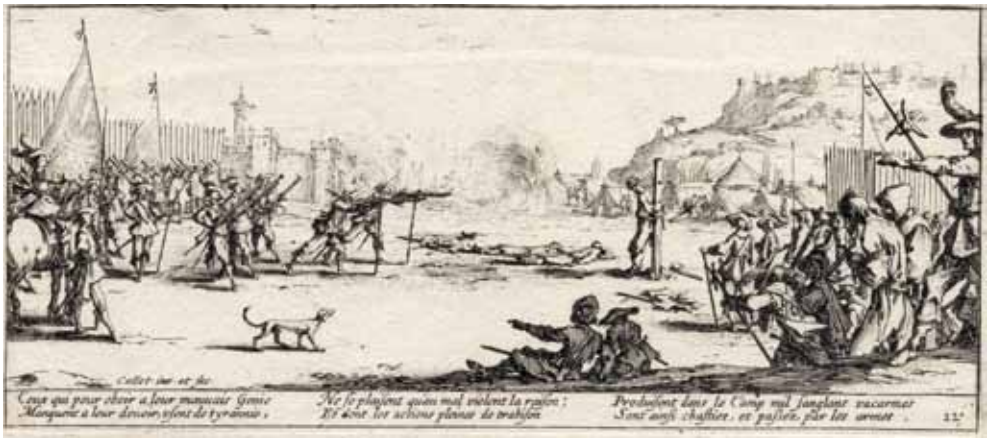
“Les misères et les malheurs de la guerre”, 12 etchings by Jacques Callot (from a total of 18), 1633; c. 9.5 x 19.5 cm each
Bavarian Army Museum, inventory no. 0003-2014


LES
MISERES ET LES
MAL-HEVRS
DE LA GVERRE
Representez Par IACQVES CALLOT
Noble Lorrain.
ET mis en lumiere Par ISRAEL
son amy.
A PARIS
1633.
Auec Priuilege du Roy


Callot inv. et fec.
Voyla les beaux exploits de ces cœurs inhumains
Ils ravagent par tout rien n'echappe a leur mains
L'vn pour auoir de l'or, inuente des supplices,
L'autre a mil forfaicts anime ses complices ;
Et tous d'vn mesme accord commettent meschancetez
Level, le rapt, le meurtre, et le violement. 5


Callot inv. et fec.
Icy par vn effort sacrilege et barbare
Ces Demons enragez, et d'vne humeur auare
Pillent, et bruslent tout, abattent les Autels :
Se mocquent du respect qu'on doit aux Immortels,
Et tirent des sainctes bras les Vierges desolees
Dont gemt enleuer pour estres violees. 6


Callot inv. et fec.
Ceux que Mars entreprent de ses actes meschans
Accommodent aussi les pauures gens des champs
Ils les font prisonniers ils bruslent leurs villages,
Et sur le bestail mesme exercent des rauages.
Sans que la pour des Loix nomplus que le deuoir,
Ny les pleurs ez les cris les puissent esmouuoir.




Voyez que c'est du monde et combien de hazars
Persecutent sans fin les enfans du Dieu Mars
Les vns estropiez se trouuent sur la terre
Les autres plus heureux s'esleuent a la guerre
Les vns sur vn gibet meurent d'un coup fatal.
Et les autres s'en vont du Camp a L'Hospital
15

Attacking a Supply Waggon

Sometimes the population resisted exploitation and suppression by hostile troops. This painting depicts the attack by Bavarian peasants and militiamen on an Austrian supply waggon. The scene is set around 1705 in the War of Spanish Succession, when the Electorate of Bavaria was under Austrian occupation.

A cuirassier and a hussar on horseback try to fight the attackers off with backsword and sabre. More horsemen approach from the rear. Some of the insurgents wear peasant dress, others pieces of uniform. They are armed with war scythes, flails and muskets.

Even though the painting was not made before 1918, it vividly depicts such an everyday scene of war in the early modern period. The painter Anton Hoffmann (1863-1938) took great pains to ensure military historical accuracy. His genre scenes and battle scenes have had a lasting influence on the perception of the Bavarian army and its history.

Attacking a supply waggon, painting by Anton Hoffmann, 1918. Oil on canvas, 39.6 x 60 cm
Bavarian Army Museum, inventory no. 1159-2002

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