Medieval Russian Fortresses
AD 862–1480

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Introduction

According to the historical annals, in the year AD 862 Slav tribes called upon Varangian princes to come and rule over them. Three Varangian princes (whose names were Rurik, Sineus, and Truvor) arrived in Rus', bringing their troops along with them. Rurik settled in Novgorod, Sineus in Beloozero, and Truvor chose Izbornik (hence the name of the first fortified settlement in Izbornik. Truvor’s gordische). The date indicated in the chronicle has, however, been recently called into question and the above developments are believed to have occurred somewhat earlier.

After the death of these princes, Prince Rurik, the guardian of Rurik’s son Igor, seized Kiev and made it his capital, thus uniting the north Russian (Novgorodian) and south Russian (Kievan) lands. This event, which marked the birth of an early feudal state known as Kievan Rus’, took place in 882. Prince Rurik and his successors carried out the policy of subjugation and the bringing together of various tribes; they launched several campaigns against Constantinople as well. This contact with the fortifications of Constantinople, which were among the strongest at the time, did not, however, have any visible impact on the evolution of Russian fortifications. As a result of the policy of expansion the territory of Kievan Rus’ was considerably enlarged: in the 10th century it extended as far as the steppes off the banks of the Dnieper to the south of Kiev, and the Gulf of Finland and Lake Ladoga to the north.

The 11th century saw the beginning of feudal relationships in Rus’, which were further consolidated towards the end of the century. Kievan Rus’ as a political entity gradually disintegrated, breaking down into separate minor principalities. By the 13th century feudal disintegration had reached its apogee. The lack of unity between the princes made Rus’ fair game for Mongol invaders, who captured most of its territory including Kiev. Most Russian principalities found themselves as tributaries to the Golden Horde.

The territory of the feudal principalities of that time can be divided into four large regions: south Rus’ (the lands in the area of the mid-section of the River Dnieper); west Rus’ (the Galich and Volynya principalities); north-west Rus’ (the Novgorod and Pskov lands); and north-east Rus’ (the principalities of Vladimir and Suzdal). The territories of south Rus’ and north-east Rus’ were devastated by the Mongols, and the building of fortifications would cease for several centuries to come. The principalities of west and north-west Rus’ fared better, and it is here that we can perceive the main tendencies in the further evolution of fortifications in Rus’.

The Mongol armies used advanced siege weapons and standard siege methods learnt in the course of their wars in Central Asia and China. It was in this way that the Russians became acquainted with Eastern siege warfare. At the same time both the fortifications and siege weapons of the north-western part of Rus’ evolved, in the midst of frequent armed conflicts with German, Swedish, and Lithuanian armies throughout the 13th and 14th centuries. It was here that the Russians became acquainted with European methods of siege warfare.

The beginning of the 14th century saw the rise and growth of the Moscow principality, at the expense of nearby principalities. In 1326 Prince Ivan Kalita of Moscow obtained dispensation from the Golden Horde attesting his right to rule as the ‘Great Prince’. The Moscow principality now formed the political centre of all the Russian principalities—a status previously enjoyed by Vladimir. From that time on, the title of ‘Great Prince’ was held by Moscow princes only.
In the second half of the 14th century the reinforced Moscow principality was powerful enough to be able to offer armed resistance to the Golden Horde. However, it would take a hundred years for the country to be freed from the Mongol yoke. The process was only brought to conclusion in 1480 when Grand Prince Ivan III (1462-1505) proclaimed himself Tsar and trampled down the Khan's charter. In the battle that followed in 1480, the two armies stood facing each other across the River Ugra for a long time, neither daring to attack the other, before the Mongol army finally retired. The result was the emergence of an independent Russian state, whose history has been dealt with in Fortress Russian Fortresses 1480-1682.

Chronology

AD 862
Slav tribes call upon Varangian (Scandinavian) princes to come and rule over them. The event is mentioned in the annals of this year, however it may have happened a little earlier.

883–912
Prince Oleg rules in Kiev.

907
Russian armies led by Oleg march on Constantinople.

912–45
Prince Igor rules in Kiev.

915
Pechenegs make their first raid on Rus'.

941–44
Prince Igor conducts campaigns against the Byzantines.

957–72
Prince Svyatoslav rules Rus'.

1068
The siege of Kiev by Pechenegs. Besieged on all sides, the inhabitants are close to starvation when Prince Svyatoslav and his army come to the rescue.

Interior view of a wall and a loophole of the boeray hod (well-walls) in the Polovik Kremlin. Polovik's defensive walls lack merlons and crenellations. The parapet is solid and fire was only effected through loopholes.
The principles of defence

The types of fortified settlement

In medieval Rus' a fortified settlement was called a gorod (or grad), as distinct from an unfortified one, which was usually called a ves' or selo. The word gorod was also used in a broader sense—meaning 'defensive walls', and fortifications in general.

Some 400 gorods are described in the historical annals and other sources; many more have been discovered by archaeological work. A virtually complete list of fortified settlements, compiled by A. V. Kuza, details 1,306 fortified settlements dating from the 10th to the mid-13th century; this number will be henceforth used when calculating the percentages of different types of gorod.

With the inclusion of earlier settlements, those ravaged by the passing of time, and those still to be investigated by archaeologists, the number of fortified settlements in Rus' may well have been as high as 1,500 by the mid-13th century.

Unfortified settlements greatly outnumbered fortified ones.

The fortified settlements may be divided into several types according to their social status:

- **Towns and cities**, i.e. centres of craft, trade and culture. The modern Russian word for town or city is gorod but its meaning is not identical to that of the Old Russian word: it now means only a town proper, not a country settlement nor a fortification. Old Russian towns had a specific structure: they comprised a citadel, which was originally called a detinets, and an adjoining trading settlement, called an okol'ny gorod or passad. Each was enclosed within defensive walls, so a town consisted of at least two fortified sites. The detinets was always the oldest part of the town. It was also the most important part, being the last place of refuge in its territory. Accordingly, its fortifications were much more powerful than those of the okol'ny gorod.

- **Fortified villages** were communal settlements. The fortifications were simpler in layout and more subject to the terrain.

  - A castle was a fortified residence of a prince or boyar (aristocrat). A product of the feudal system, castles became widespread with the growth of feudal disparity in the 11th century, and disappeared in the 15th and 16th centuries with the formation of a centralized Russian state. A sharp increase in the number of fortified settlements in the 11th–early 12th centuries (a four-fold increase) and then again between the mid-12th and the mid-13th centuries (a 2.5-fold increase) can be attributed to the appearance of a large number of feudal castles. Many castle sites gradually grew into towns or cities, with the castle itself becoming the detinets – as happened at Moscow. There was no specific term for a castle in the Russian annals of the 10th–14th centuries.
A castle was called either a gord or dvoz. While the former word was a common name for all fortified settlements, the latter was used to describe country castles and town estates. The modern Russian word for castle – zamek – appeared later and is a derivative of the Polish word zamek. It is interesting to note that in today in many Slavic languages this word does not mean castle. For example, the Czech word zamek means ‘palace’ (or fortified residence), while a castle (fortified residence) is called a hrad (or word linked to the Old Russian grad or gorod).

- Frontier fortresses were fortified settlements with a military garrison in situ. These fortresses were usually built on the frontier of a principality, on the borderlines with the steppe, and other suitable places. The remains (gordishche) of such fortresses are generally minimal as a rule, and do not indicate that one site was wealthier than the others (unlike castles). No special word for this kind of fortress existed in medieval Rus'. Like other castles, they were simply called gord. It was not until the 17th century that the modern Russian word knjaz' came into being. The term ‘fortress’ will hereinafter be used in this book in a broader sense, as a synonym for a stronghold, unless specified that it refers to a frontier fortress with a military garrison.

- Refuge fortresses, characteristic of the north-west districts of Rus’. Unpopulated in times of peace, these fortresses were filled with the inhabitants of the neighbouring villages in times of danger. The emergence of these refuge fortresses is explained by the small sizes of villages in those districts. Some villages comprised only a few homesteads, and it was beyond their ability and means to protect themselves with even the most primitive fortifications. Therefore, several villages united to build a fortress. Refugee fortresses are known to have existed in the 10th and 11th centuries, but became rare after this, as with the appearance of numerous towns, castles, and frontier fortresses they were no longer in demand.

- Monasteries, which were built widely from the second half of the 14th century onwards. As soon as it was founded, a monastery was usually encircled by defensive walls; their fortifications were mostly wooden up to the 16th–17th centuries. Nearly half of all the fortified settlements dating from the 10th to the 13th centuries were very small, with the fortified territory not exceeding 0.3 hectares. Most of these small settlements are considered to be feudal castles. Sometimes, however, castles occupied a much larger site (up to 1 hectare or larger), approaching towns in size. These larger castles (i.e. those occupying from 0.3 to 1 hectares) were particularly popular in southern Rus', mainly in the area around the mid-point of the River Dnieper. Fortified settlements of more than 2.5 hectares are generally referred to as towns.

The layout of fortified settlements

An analysis of surviving gordishches allows us to single out several types of layouts for fortified settlements:

- Insular layout. The settlement was situated on an island in the middle of a river or marsh, or on a hill protected by ravines on all sides. Earlier settlements of this type generally had no earthen fortifications. In most cases nothing was done except for scarping the slopes of the hill. Later settlements (from the 11th century on) found themselves protected with a rampart along the perimeter...

Settlements of this type had several shortcomings: the size of a settlement was limited by the size of the island, and communication between its inhabitants and the surrounding area was inhibited by its insularity. This type of settlement was unsuitable for people engaged in agriculture or livestock-breeding, and was thus more characteristic of refuge and frontier fortresses.

- Cape layout, or simple cape layout. The settlement occupied a promontory formed by the confluence of two rivers, or the junction of a river and a ravine, or two ravines coming together. Protected on two sides with water or steep slopes of the ravines, the settlement was open on the third, mainland side. It was this, the most vulnerable side, that received the principal fortifications – a ditch and a rampart surrounded with a wall. If a promontory featured a gentle slope to its tip, the latter was sometimes separated from the rest of the settlement with a ditch and a rampart. There could be up to three or four lines of defence (i.e. ditches and ramparts) on the mainland side as well as on the side of the tip of the promontory. Later, an entire settlement was surrounded with a rampart that was usually higher and steeper on the mainland side. Such settlements with a rampart running all along the perimeter first appeared at the end of the 10th century but became particularly popular in the 11th–13th centuries. The cape layout had considerable advantages compared to the insular layout. It offered better communications between the settlement and the neighbouring lands, and the possibility of extending the site of a settlement as the population grew; a suitable promontory was also much easier to find than a suitable island. Moreover, its defences could be raised with only a moderate employment of labour as two sides were already well protected with natural obstacles. All this made the cape layout the most popular type of settlement.

- Segment layout. The settlement sat on an isthmus, usually bordered by water on two sides. It was protected with ramparts and ditches on the two opposite mainland sides. This type was comparatively rare.

- Complex cape layout. The settlement was situated on a promontory and conformed to the terrain, but unlike the simple cape layout it comprised...
more than one site, each protected with its own defensive lines. The most heavily fortified part of the settlement, the detinets (citadel), was at the very tip of the promontory. The enemy had to seize the outer fortifications first, and only then could tackle the detinets. This type of fortified settlement appeared in the 10th century.

- **Complex layout.** The settlement comprised several fortified sites, as per the complex cape layout, but the defences of the outermost sites were independent of the terrain. The detinets was usually on the promontory, or, more rarely, on a small island. The rampart of the okol’ny gorod or possad (the external site) was never close to the ramparts of the detinets. Moreover, the outer site was never protected with a rampart on the side of the citadel. Gorodishchches featuring complex layouts are generally considered to be the remains of large cities where a cape layout could not be strictly adhered to owing to quickly expanding trading areas (the okol’ny gorod). Here, the fortifications of the okol’ny gorod seldom conformed to the terrain and had no definitive layout; their task was only to protect the vast trading area. This layout may be regarded as the next stage in the development of a town, as compared to the complex cape layout. Settlements of a complex layout began to gain popularity in roughly the late 10th and early 11th centuries.

- **Circular layout.** Circular and oval settlements, widespread in the 12th century, were known earlier (beginning in the 10th and 11th centuries) in some districts. As a rule, they were situated in a valley and did not depend on the terrain. They were mostly small in size, with a diameter varying from 50 to 100m. One or more formidable earthen ramparts and ditches ran all along their perimeter.

- **Semi-circular layout.** This type of settlement bordered a river or a steep slope on one side and was protected with semi-circular ramparts and ditches on the other sides. Thus, it was only partially dependent on the terrain.

With certain assumptions, a connection can be made between a particular layout and the social status of a settlement. For instance, both a complex cape layout and a complex layout were on the whole typical of the defences of large cities. The complex cape layout can also be considered as a certain stage in the development of a city – from a simple cape layout through a complex cape layout to a complex layout. The simple cape layout and the insular layout were typical of fortified communal settlements, castles, and small towns. A cape layout is also characteristic of frontier fortresses. Settlements of semi-circular and circular layout were usually the castles of princes and boyars. There were of course numerous exceptions to these general rules.

The most common type of fortified settlement was one having a simple cape layout. Half of all the listed fortified settlements (654 out of 1,306) belong to this type. It was only in some western Russian districts that an insular layout was as common, or more prevalent. However, a larger number of settlements of insular layout were not surrounded by water but sat on free-standing hills with steep slopes. The number of fortified settlements on islands proper, i.e. land surrounded by a river or a marsh, is insignificant (a mere 15 out of 1,306).

Fortified settlements where natural obstacles played little or no part (i.e. those of circular or semi-circular layout) account for 13.5 per cent of the total number of examined gorodishches. Fortified settlements of a complex cape or complex layout constitute 20.2 per cent of all fortified settlements. A third of all fortified settlements featured an unfortified one next to them.

**General trends and territorial differences**

Fortified settlements in the territory of medieval Rus’ are known to have existed from the Bronze Age (the second millennium BC). The second half of the first millennium AC saw a significant increase in the number of fortified settlements as compared with unfortified ones. Examination of old, pre-Slavic settlements is beyond the limits of this work. It should, however, be noted that, like early fortified Slavic settlements, they sat on hilltops or high up the banks on a bend in a river (insular or simple cape layout), and that their defences consisted of ditches and ramparts surmounted with primitive wooden walls (mostly palisades). Many of these pre-Slavic fortified settlements were later used by Slavs, who usually modernized the fortifications by increasing the height of the ramparts and building new wooden walls on top of them.

The earliest authentic Slavic settlements date back to the 6th century AD. Most of the Slavic settlements of the 6th and 7th centuries were not fortified; however, the situation rapidly changed in the 8th century. A large number of settlements were realized, protected not only by the terrain but by artificial defences as well (ditches, ramparts, and palisades). Several unfortified settlements often became an okol’ny gorod protected by a tyn. Ladoga fortress (3, after E. G. Arapova and A. N. Kirpichnikov) saw its fortifications built in stone as early as 1114, thus becoming the first stone fortress in northern Rus’; Kamenets (4, after E. Kulik) is a typical fortress with a donjon-tower. Fortresses with independently standing towers became popular in the Galich-Volynia principality in the second half of the 11th century, and the 12th century witnessed the founding of a number of strongholds in the zone of Rus’ and capital of the Rostov-Suzdal principality in the first half of the 12th century. By the 13th century the city comprised a detinets enclosed by a wooden log wall...
found on the outskirts of these fortresses, which signifies that the fortresses served as residences of tribal chiefs and gave shelter to the neighbouring population in times of need.

The major threat to the southern Russian lands from the 10th through to the 12th centuries came from nomadic warriors. From the first half of the 10th century to the first half of the 11th century these were the Pechenegs, followed by the Torkis; the mid 11th century brought the Polovtsy. The Pechenegs had crossed the River Volga and invaded the lands to the north of the Black Sea late in the 9th century. They settled within a day's march of the southern borders of Rus', making regular raids on her territory to seize booty and prisoners. The first clash between the Russians and the Pechenegs took place in 915. For more than a century (up to the year 1036) the Pechenegs continually attacked Rus'; in 968 they even besieged and captured Kiev, the capital of Old Rus'. The Polovtsy proved to be no less deadlier an enemy, and first appeared on the south-east Russian borders in 1055. At the end of the 1060s a large-scale invasion was staged by the Polovtsy on Russian lands, and in the last decade of the century not a single year passed without a raid taking place.

The bulk of the nomadic armies consisted of irregular cavalry. They did not know how to properly besiege a fortified place, and rarely engaged in sieges; when they did conduct them, they did not lay a siege. As a result, the rulers of Kievian Rus' fortified existing cities and built frontier fortresses. The nomadic warriors rarely conducted raids inside enemy territory, fearing that the garrisons of any Russian fortress to their rear would attack them from behind or cut off their retreat. Lines of fortresses were built along the main frontier rivers – the Sula, the Stugna, the Ros', the Trubezh, the Desna and others. Another line of fortresses stretched along both sides of the River Dnieper, from the River Ros' as far as Kiev. These fortresses formed a second line of defence and were able to warn the capital city of Kiev of a breakthrough by the enemy hordes well in advance. Fortresses were also built along the routes of potential enemy movement – highways, river fords, and so on. In addition to these fortresses, extensive fortification lines – the Zmiyev fields – were created.

In the late 11th-early 12th centuries Rus' experienced a period of feudal disruption. A weakening of the authority of the Kievian princes and the disintegration of a once united state into independent principalities necessitated changes in Russian defensive strategy. With the incessant strife forcing each principality to defend its own frontiers, Russian princes began to make use of nomadic tribesmen to protect their land from the raids of other nomads. Back in the mid 11th century Pechenegs, Torkis, and Berendeks had been allowed to settle in the border areas. These settlers, known as Chernye Klobuki (Black Hoods), served as a sort of barrier between the steppe and Rus'. In exchange for land they were obliged to participate in military operations against the enemies of Rus'. From that point onwards, raids by the Polovtsy were repulsed by united actions of Chernye Klobuki and Russians, or by Chernye Klobuki alone under the command of a Russian voivode (commander). In addition to defensive warfare, retaliatory raids into the steppe to drive out the Polovtsy from their camps took place from the turn of the 11th–12th century. Vladimir Monomakh and his son Mstislav were especially successful in the elaboration of these tactics.

The second half of the 12th century saw the construction of numerous fortifications comprising two to four parallel rows of ramparts and ditches. Some date from as early as the 10th and 11th centuries, when they were built with the aim of forcing the enemy to overcome one defensive line after another. However, in the 13th century they became especially important owing to the ever-increasing use of (initially stone) throwing machines, which could cause serious damage to wooden fortifications. Man-powered stone-throwing machines possessed real destructive power at a distance of 100–150m. Counterweight stone-throwers were more powerful, but were only effective at a distance of up to 200m. The chief target of a stone-thrower was the main defensive wall. In multi-row fortifications of the 13th–14th centuries ramparts were usually raised some distance away from each other. Together with ditches they created a defensive belt of considerable depth; for example, in Galich the defensive belt of four lines of ramparts and ditches was 92m deep. Therefore, in order to force the enemy to repeated use stone-throwers against the main (most formidable) wall they would have to be placed as near as 50–100m from the external defensive line. However, the soldiers manning these machines would thus be exposed to multi-tiered fire from the defenders, particularly from the outermost defensive line. All this forced the besiegers to tackle several defensive lines one after the other.

A typical defensive layout with three rows of fortifications consisted of the following elements. The first rampart had a very wide boevoy hod or wall-walk (20–32m) intended for archers mounted on horseback. The boevoy hod of the second rampart was narrower, at 2–9m. Both ramparts were usually topped with simple fortifications, such as a palisade or fence, or less commonly wooden log walls. The third defensive line comprised the main fortress wall. This line (which consisted of a rampart and a log wall as a rule) was two or three times higher than the first two. Each rampart was fronted with a ditch, with the inner ditches wider than outer ones. While the ditch in front of the outward rampart was generally 7–8m wide, the one fronting the middle rampart was between 6 and 14m wide, with the one in front of the inner rampart some 14–15m wide. Multi-row fortifications were not usually raised around the whole of a settlement, only on its most vulnerable mainland side. The mounting of throwing machines on the remaining sides was hindered by natural barriers, such as rivers, ravines, marshes, and the like. A single defensive line was thus often deemed sufficient.

Even when faced with the threat of a Mongol invasion, the Russian princes were unable to unite, and Rus' fell easily to the Mongol hordes, who subjugated most of its territory between 1237 and 1240. Many towns and cities were completely destroyed, never to be repopulated again, while others were ordered to pull down their fortifications with a watchful eye kept on them lest they be restored. Fortification building ceased for centuries in many districts, except for in the northwest (Galich-Volynia principality) and north-west (Novgorod and Pskov areas), which escaped the Mongol yoke.

The Galich-Volynia principality, formed in 1199 from the amalgamation of the Galich and Vladimir-Volynia principalities, contained numerous remarkable fortresses, including two unique types not found elsewhere in Russian lands: fortresses with donjon-towers (mainly characteristic of Volynia), and rock fortresses and castles (in the Carpathian mountains of Galicia). The
Volynian towers were built inside fortresses, not in the lines of the walls, and had the same functions as donjons in western Europe. They were frequently built of stone or brick – even when all the other fortifications were wooden. Donjon-towers became widespread in Volhynia in the second half of the 13th century, the result of the influence of its western neighbours Poland and Hungary. Examples of these towers survive in Berestie, Kamenets, Stolpie and Crztorzynik. Out of all the rock fortresses in the Carpathian mountains, Tustan fortress has undergone the most careful examination. Its central point, called Kamien ("Stone"), sat on rocks towering 51m above the surrounding valley. Wooden walls with towers and a five-storey (including the ground floor) building housing living quarters were all built on the rocks.

The north-west Russian district (comprising the Pskov and Novgorod lands) frequently found itself at war with the Teutons, Swedes and Lithuanians in the 13th and 14th centuries. This affected both the fortifications and defensive strategy. To protect their lands Novgorod and Pskov (which became independent from Novgorod in 1348) built a number of fortresses in the most vulnerable northern, western and southern areas. Among them were the fortresses of Izborsk, Porkhov, Kiyov, and Oreshek. Stone (as opposed to a wooden wall. Numerous parts of the ramparts had a wooden intra-rampart structure to make them higher and steeper. The ditch ran along the rampart on its outer, steppe-facing side or, occasionally, on both sides. The Zmiev Val began to be raised in the late 10th century and construction continued through the 11th century.
wooden) fortifications became increasingly common in these lands in the 14th century. At the beginning of this century the cities of Novgorod and Pskov were protected by masonry defences. The eastern areas, where the frontiers between the Novgorod lands and other Russian principalities lay, witnessed little fortress building. Fortresses were also extremely rare on the frontier between Pskov and Novgorod, despite rather cool relations and even the occasional military conflict between them.

North-eastern Rus' suffered greatly during the Mongol invasion; no new fortresses were built there from the mid 13th through to the mid 14th century; only pre-existing ones were restored. The 14th century was marked by the rise in power of the Moscow principalities, which successfully expanded its territory by annexing neighbouring lands. With the frontiers of the principality constantly changing, it was not considered worthwhile to provide them with defensive military works, and the Moscow princes set about building and strengthening fortresses on the main routes leading to Moscow. Particular importance was now attached to Mozhaisk in the west, Kolomna in the south-east, Dmitrov in the north-west, and Serpukhov, and they were built along rivers (such as the Dnieper, Ros', Stugna, and Sula) and between them. Natural obstacles, such as the sloping river banks, forests, marshes, etc., were made utmost use of in the construction.

The Zmiyev Valy comprised a rampart and a ditch in front of it, on the side of the steppe. Occasionally a ditch ran along both sides of the rampart. Today the ramparts are 2–5m high and about 10m thick. These, however, are average parameters – some parts of the ramparts are as high as 6m and as thick as 25m. The ramparts have inevitably shrunk in the course of time. They are known to have been higher in the mid 19th century, when they reached 6.5m in some places. This certainly suggests that at the time of their construction the Zmiyev Valy were higher. The ramparts were not cut from the earth dug out from the ditch, and were sometimes strengthened with clay. Some sections reveal that the rampart was built of sand until it was 2m high and 6m thick, and then provided with a 1.5m-thick layer of clay. After the clay had dried, earth was used to bring the rampart to the required height.

In the territory of the Zmiyev Valy, there are several defensive structures of oak logs, using logs up to 40cm thick, which extended to the top of the rampart, and the wooden wooden-walled earthworks made up of logs. The walls were relatively short, and probably did not exceed 4m in height as a rule. The overall height of the defences (including the rampart and the wall) was about 10–15m, and it could vary depending upon the strategic importance of a particular defensive sector.

The Zmiyev Valy were closely linked with the fortresses built along the rivers. The ramparts served to contain the enemy's advance until troops arrived from a nearby fortress. Considering that the bulk of the nomadic armies consisted of cavalry, and that they lacked the skills and equipment to assault the fortifications, the ramparts were equal to the task, provided that they were properly manned. Only a state as powerful as Kievan Rus' was capable of providing troops for such extensive fortifications and numerous fortresses into the bargain. When this centralized state disintegrated into separate principalities, the latter proved unable to maintain and defend fortifications of that length. Besides, in-fighting between principalities now compelled each to defend its own boundaries. The principalities continued to maintain sections of the Zmiyev Valy that were vital for their own safety and even raised new ramparts from time to time. For instance, in the second half of the 12th century new ramparts were built in the frontier district between the Chernigov and Zmiyev Valy principalities – but these ramparts were neither as high nor as long as the old ones. The changes in the political situation – feudal disunity followed by the Mongol invasion – eventually meant that the Zmiyev Valy gradually fell into oblivion.
Design and development

The defences of a Russian gord comprised earthen ramparts, ditches, walls, gates, and towers. Earthen ramparts were the key feature in artificial defensive works in Russia during the period under discussion here. Earlier fortresses either had no or very few towers. Most walls, with the exception of a few districts, were wooden up to the 15th century.

Ramparts

The height of earthen ramparts (osypy) varied greatly depending on the military importance of the fortified settlement. They rarely exceeded 4m, except for in the larger cities, where they could be much higher. For example, the ramparts were about 8m high in Vladimir and 10m in Old Ryazan. The ramparts of “Yaroslav’s city” in Kiev were the most formidable, reaching 15m in height and 25–30m in width at the base.

Ramparts were often built of earth or clay, or more rarely of sand or stone. Sand (being too loose) was only used in districts where earth or clay was unavailable. A rampart built of sand had to be strengthened with a wooden casing. Masonry bonded with earth or lime was extremely rare, where stone was plentiful, it was easier to build a stone wall. Where hard ground was not present, only the front side of the rampart (the face of the slope) was made of it while the rear side was raised with less compact soil. To hamper the enemy attacking a rampart, its front side was often coated with clay and watered.

The top of a rampart consisted of a horizontal strip of ground on which a certain type of wall was erected. Its minimum width – if it served as a base for a palisade – was 1.3m. If the rampart had a log wall on top, the strip was naturally wider – as much as 8 or 9m, especially when it supported a wall made of two rows of log cells. Access to the top of a rampart was granted by wooden ladders or steps cut into the ground. To ensure the uninterrupted movement of the defenders along the rampart during a siege, the rear side of the rampart was paved with stone, or a horizontal terrace was built there. A stepped profile was sometimes given to the entire rear side of the rampart.

As a rule, a rampart was asymmetrical in cross-section. The front slope was steeper (usually 45 degrees, but no less than 30 degrees) than the back one (25–30 degrees). A considerable steepening of the slope on the front side could be attained by the addition of compacted soil or by facing the rampart with stone or wood. However, in Russian fortresses preference was given to intra-rampart structures. Wooden intra-rampart structures are characteristic not only of Russian but of other Slavic fortresses as well, such as Polish and Czech ones. However, although there are some well-known exceptions, Russian intra-rampart structures differed from those found in Poland or the Czech Republic. In general terms, the typical Polish framework consisted of several layers of logs laid perpendicular to each other, the Czech structure consisted of lattice-work and sometimes featured masonry, while the Russians made use of oak-wood log cells packed with earth.

The intra-rampart wooden structure changed with time. The earliest structures of this type were discovered in fortresses built in the late 10th century under Prince Vladimir. The fortifications of Belgorod, Penza, and some other cities belong to this type. Structures of this early period are particularly complex. The core of the structure comprised oak-wood log cells placed close to each other so that the front wall of the framework was right under the crest of the rampart. The framework was usually built in such a way that the ends of the logs protruded about 0.5m, and these jutting ends of each shell almost touched those protruding from the next shell. Facing the cells, in the front part of the rampart, a wooden carcass filled with mud-brick bonded with clay was built. Both the carcass and the oak framework were covered with earth. This construction method involved much labour, and was simplified early in the first half of the 11th century when the carcass with mud-brick was dispensed with and only a line of oak cells placed close together was left.

If a rampart was fairly broad, each cell would be long, stretched across the rampart. For extra solidity one or more walls were added, creating several small rooms. For example, the interior of the rampart built in the first half of the 11th century in “Yaroslav’s city” in Kiev reveals oak cells about 19m long (running across the rampart) and 12–16m high. Each cell consists of three long transverse (to the rampart) and seven short longitudinal walls, which, together, divide the cell into 12 rooms. Despite the considerable transverse length of the cells, their facade is located right under the crest of the rampart, as usual.

Intra-rampart log cell structures: the structure consisting of separate log cells discovered in the ramparts of “Yaroslav’s city” in Kiev (left), and a solid structure of log cells (right).
Alongside the structure consisting of separate cells, another structure began to be used as early as the first half of the 11th century. The cells of this structure were consolidated by adding overlapping longitudinal logs. This framework also consisted of several rows of cells. Sometimes only the outside cells were filled with earth whereas the inside cells, overlooking the fortress court, were left hollow. The latter were used as storehouses or living quarters.

Wooden log intra-rampart structures of both types – built of separate cells or forming a continuous line – became widespread in the 11th and 12th centuries, particularly in large cities and strategically important fortresses. However, fortresses defending smaller settlements had purely earthen ramparts with no wooden framework inside. In the centuries that followed there was a tendency to simplify the wooden structures, and by the 13th-14th centuries they consisted usually of no more than a primitive oak log wall with short crossbeams directed to the rear.

**Ditches**

A ditch was often created in front of a rampart, although it may not always have run along the entire perimeter of the fortifications. For example, in cape layout fortresses the ditch, as a rule, protected the most vulnerable mainland side, cutting the promontory off from the rest of the land; the remaining sides were protected by rivers, deep ravines, and the like.

The earth dug out in the course of making a ditch was used to raise the rampart, so the depth of the ditch generally equalled the height of the adjoining rampart, except when there already was a ravine where the ditch was to be dug, which naturally resulted in the depth of the ditch exceeding the height of the rampart. A ditch usually had a symmetrical profile with walls sloping at 30–45 degrees, with a rounded bottom. However, where necessary, the ditch was filled with water from a river, lake, or other source. When left dry, the bottom of the ditch was filled with sharpened poles. A narrow, horizontal strip of land (or beam) was left between a ditch and a rampart to prevent the rampart sliding into the ditch. These beams were usually about 1m wide.

**Walls**

There were three main types of fortress walls: palisades (tyn or chustokol), log walls, and stone walls. The tyn was the simplest type, comprising a row of vertical or slightly inclined, sharpened stakes driven into the ground close to each other. This palisade was usually ‘two spears high’, that is, about 3–4m above ground level. The stakes were driven as deep as 0.5–1m into the ground, and according to archaeological research were 13–18cm thick. About 0.3–0.5m below their pointed ends, the vertical stakes were joined together by a horizontal pole which was either run through special apertures made in the vertical stakes or nailed to them on the outside. On the side of the fortress the palisade was provided with wooden flooring on vertical pillars. This wall-walk for the defenders was called a polati or krovat. Sometimes a wall-walk consisted of nothing more than a number of short logs driven into the ground, making movement along it much more difficult than on planks.

A tyn was not necessarily just a row of stakes. It was sometimes supported to the rear by a small earthen embankment or strengthened from behind with angled logs, whose pointed ends jutted out; two rows of tyn might be built (one higher than the other); or a tyn could be combined with a log wall. Some examples of tyn were roofed. Weapons could be fired either over the top of the tyn or through loopholes.

A tyn was the only type of wooden fortification in old Slavic settlements in the 8th-9th centuries; later on it provided protection for small settlements and minor fortresses. However, this simple fortification continued to be extensively used even in large cities and strategically important fortresses. It was erected in less vulnerable sectors of defence where the natural relief of the land hampered attack, for example, along riverbanks in cape layout settlements. Moreover, for a long time the tyn remained the principal type of fortification of the okol’ny gorod. The rather primitive fortifications allocated to these trading areas can be explained by the large areas of land that they occupied. Commercial activities were still closely linked to agriculture, and many citizens were engaged in cattle-breeding and farming. Thus, every homestead had a large plot of land to go with it. Walls of considerable length were difficult to create and hard to defend, and were only meant to protect the inhabitants from wild beasts, gangs of robbers, and nomadic raiders. In times of serious danger the citizens took shelter in the detinets and the okol’ny gorod was set on fire.

Another type of primitive fortification, the fence, was a rare alternative to the tyn. Fences were made of horizontally laid logs squeezed between vertical logs driven into the ground in pairs. The structure of a fence could vary: two, four, or ten pairs. The horizontal logs with earthen filling packed between them could be held in place by vertical ones.

The second half of the 10th century saw the appearance of wooden log walls, created by placing log cells close to each other along the top of a rampart. The cells could have three sides, consisting of a facade stretched along the outer side of the rampart and two transverse walls, or four sides, thus taking on the appearance of a small house. These log cells were called gorodni. They were joined by cross-walls but their façades were not joined together (unlike the later tarass-style structure).

The thickness of the log wall varied from 2m to 6m while its height was 3m to 5m. The wall usually had two floors and was covered with a roof. The upper floor had loopholes, but there were no merlons on the wall. A wall-walk (boevoi hod) ran behind a parapet supplied with loopholes. The upper part of the wall was built slightly projecting beyond the plane of the wall, so that there was a gap between the upper and lower parts of the wall. The clearance served the same purposes as that of the okol’ny gorod. The space at the foot of the wall. This overhanging projection is usually called an oblan and the entire projecting upper part of the wall the zabovola. Disputes, however, continue as to the meaning of the two terms: some consider both terms to be synonymous referring only to the projection, while others assume that zabovola stood for the whole of a wall.

Log cell walls were to be found protecting strategically important fortresses, the detinets in a large city, or the most crucial sectors of defence in other fortified settlements (such as the mainland side in a settlement situated on a promontory). Sometimes a log wall and a more primitive palisade could be found in different sectors of the same fortress.

Up until the mid-13th century most fortresses had wooden walls. In the Novgorod lands, stone fortresses first appeared as early as the 11th and 12th centuries, although these were exceptions. Stone castles could also be found in this period in Bogolyubovo (built about 1165 in the Suzdal lands) and in Khodm (1257–38, in West Volynia). Some urban estates and large monasteries also had
Wooden log walls built in the gorodni style

This type of structure was the most popular in Rus' between the second half of the 10th and the mid-15th centuries. The upper part of the wall projected slightly forwards as a rule, overhanging the lower part. The resulting clearance, called oblam, was designed with the same aim as hoarding or machicolations in European castles – to command the foot of the wall. The wall was usually built on top of an earthen rampart. In order to add steepness to the rampart and prevent the earth from slipping down, intra-rampart structures were often resorted to. These were wooden log cells placed inside the ramparts and usually filled with earth. Occasionally, however, rows of cells on the inner side of the rampart were left empty and used for living in, for household items, and as storerooms.

Stone or brick walls – a choice, however, dictated by artistic and ideological considerations above all, as opposed to military necessity. Wooden walls were considered to be perfectly adequate for military purposes, and were built in most fortresses.

Stone defensive walls began to be widely built in the mid 13th century, but even then this was not done all over the country. In some fortresses wooden walls co-existed alongside stone ones. For instance, in the fortress of Vitebsk built in the late 14th–early 15th centuries, one of the walls was stone, 4.4m thick, and the others were made of wood and stood on ramparts. In such timber-and-stone fortresses stone walls were reserved for defending the most vulnerable (usually the mainland) side.

In the 13th–15th centuries the thickness of stone walls varied in different parts of the fortress, reaching 3–4m on the most vulnerable, mainland side while being only 1.5–2m in other places. The walls became thinner towards the top, were crowned with a stone parapet with rectangular merlons, and were usually covered with a gabled wooden roof. The parapet was not less than 55cm thick. The borpow had (wall-walk) running behind was to be at least 1.5–2m wide to allow two armed warriors to pass each other. Adding the thickness of the parapet to the width of the wall-walk, one can deduce that the minimum width of the top of the wall would have been 2m.

The second half of the 14th century saw a tendency towards increasing the height of stone walls, and from the early 15th century, with the spread of cannon, walls tended to grow in thickness. They were usually 7.5–9m high, although some were higher. External masonry, called prikladka, was added to pre-existing stone walls to thicken them. Machicolations and mural galleries with loopholes were not popular features in Russia at that period. In the mid-15th century loopholes began to appear at the foot of walls; however, these were still rare. Fire was
generally effected only through the crenellations of a battlemented parapet. The top of a wall was reached by stairs inside the towers or by ladders fixed to the wall. Stone walls by no means replaced wooden ones outright. The latter continued to prevail in fortifications. To complicate matters, the wooden walls, unlike stone ones, have not been preserved, which may give the wrong impression as to the scale of their extent. In the 14th and 15th centuries wooden walls were modified due to the development of stone-throwing engines and cannon. They became thicker, consisting not of one but of two or even three rows of logs with earth or rubble filling in between. The most common type of wall now comprised one or two rows of log cells closed on all sides, with their ground floor filled with earth or rubble. This structure had been encountered earlier (from the 10th century onwards) but only became widespread in the 14th–15th centuries.

**Gates**

Gates in Russian fortresses were placed in gate-towers as a rule. Primitive fortifications might have a gate that was cut out of the wall, much like a common household gate. However, in cities or strategically important fortresses gates were always located in gate-towers. In Rus', no gates have been found in the walls between two flanking towers, with the exception of the late Kopor'e fortress, which was probably built with the participation of foreign craftsmen.

In the 10th–12th centuries gate-towers were the only towers in a fortress, with the exception of watchtowers, which were rare. The gate in a gate-tower was placed on the same level as the rampart's base, so the tower itself, sitting considerably below the walls, looked as if it was cut into the rampart, and barely rose above the walls. Nor was the tower designed for flanking fire, leading many researchers to consider it an unusual form of a gate rather than a tower, and that in fortresses of the period there were no towers whatsoever. It should be noted that chroniclers are of the same opinion: gate-towers were merely called gates, not towers.

These gate-towers were mostly made of wood and covered with hip roofs (i.e. roofs with four or more sloping sides). It was only in the large cities like Kiev or Vladimir that gate-towers were made of stone or brick. Here, in addition to their military function, they served as triumphal arches symbolizing the wealth and greatness of the city, and were often embellished with decorations. In Kievan Rus' a tradition began of accommodating a small chapel in gate-towers, which served no defensive function; or sometimes an icon was placed above the gate instead. Chapels and icons were believed to secure 'heavenly protection' for the town. This tradition survived in Russian fortifications until quite recently, such as in the Siberian crenels of the 18th–19th centuries.
While prior to the 14th century the gate was usually placed on the mainland side, after this it was built on one of the sides less vulnerable to attack. The gateway in earlier fortresses, and later on in minor ones, ran perpendicular to the rampart. From the 12th century onwards, however, parts of the rampart flanking the entrance were sometimes shifted, so that the gateway ran parallel to the ramparts. As a result the enemy would find themselves trapped in a narrow passage between the ramparts. In the 14th and 15th centuries this idea developed into an intricate gate complex called a zakhab. This was a long, narrow, often winding corridor between walls, where the enemy could be overwhelmed under cross-fire. The zakhab usually had two gates: one at the entrance and the other at the exit from the corridor, with the outer gate at a right angle to the inner one where possible. In many cases the zakhab was additionally strengthened with a tower placed next to the outer gate, or above one of the gates, or in the middle of the zakhab corridor. Zakhabas could be present in both stone and wooden fortresses. The remains of stone ones can be found at Izborok, Ostrov, Pohkar and Plokov.

From the 14th century onwards gates were provided with portcullises, usually made of iron although examples survive of wooden ones with iron facings.

In some fortresses there were also secret exits (yylaz) used by the defenders to make surprise sorties. The yylaz in a timber-and-earth fortress took the form of a boarded tunnel built through a rampart with a disguised exit on the outside. In a stone fortress, they took the form of a passage in the wall with the exit concealed behind a thin layer of masonry. The masonry could be easily smashed through to make a sortie and then replaced later. The remains of yylaz can be seen in the fortresses of Izborok and Pohkar.

A bridge in front of a gate was usually narrow, and built on permanent pillars. Up to the 15th century all bridges were wooden and could easily be destroyed following news of the approaching enemy. A bridge could sometimes be turned into a trap as, for example, in 1426 in Opolchik, where the defenders let the assailants seize the bridge only to bring it crashing down into a ditch filled with sharpened stakes. The mid 15th century saw the first stone bridges built in Russia, and at the end of the 15th century drawbridges first began to appear.

**Towers**

Up to the mid 13th century there were practically no towers in Russian fortresses apart from the gate-tower, and one or two other towers at most. The second half of the 13th century saw a growth of free-standing towers in the fortresses of the Galich-Volynia principality, which came under the influence of its western neighbours Poland and Hungary. These towers were placed inside the walls and near to the side of the fortress most vulnerable to attack. They served concurrently as watchtowers, a second line of defence allowing fire to be brought to bear upon the assailants, as points for directing defensive operations, and as the place of final refuge if the enemy broke into the fortress. While all the other fortifications were wooden, these donjons were often built of stone or brick. Examples still survive at Berestie, Kamenets, Stolpice, and Czartorysk. The tower in Berestie was virtually square at the base (5.9m × 6.3m) with walls 1.3m thick. Kamenets has a circular brick tower 29.4m high, 13.5m in diameter, and with 3.5m-thick walls. In Stolpice the tower is of stone, 20m high, and rectangular on the outside (5.8m × 6.3m) but circular inside (about 3m in diameter). The round tower in Czartorysk greatly resembles that of Kamenets.

Loopholes in the Vyshka Tower: This was one of the four circular towers of Izborsk fortress, which were built in the late 14th century and modernized in the early 15th and then early 16th centuries. The loopholes are clearly arranged not one above the other but in a "chequered" fashion, to eliminate dead ground. On the left, between the stoneworks, are three square sockets left by the beams of the ceiling.

The arrangement of loopholes in the ground, first, and second storeys (tiers) of the Taborskaia Tower in Izborsk fortress. Note that the arrangement of the loopholes is not repeated. They all face different directions, thus commanding every area in front of the tower.
Ways of joining log ends: 'v ablo' (A) and 'v lipu' (B). The first way, with log ends sticking out, was more popular in log cell walls, while in wooden towers both ways were used. The 'v lipu' way was preferred in polyhedral towers as it facilitated the joining of logs at angles greater than 90 degrees.

A fragment of an oak tower of the Moscow Kremlin of 1329–40 and the method of joining logs in it. The logs are joined 'v lipu', that is with their ends not sticking out. Special grooves and projections were made at the intersections to provide greater strength (they can clearly be seen in the right-hand illustration). The angle between the logs is 135 degrees, which indicates that the tower was octagonal (Historical Museum in Moscow).

The 14th and especially 15th centuries saw the number of fortress towers increase rapidly, and they now played an active part in the defence. They were extended beyond the line of the walls to allow flanking fire along the adjoining curtain walls. The increase in use of cannon enhanced their importance, as it was here, and not on the walls, that cannon were originally mounted. Towers were still usually sited on the most vulnerable, mainland side.

Stone towers could be rectangular, circular, or semi-circular (known as persh, while wooden towers were rectangular or polygonal (hexagonal or octagonal). Circular and semi-circular stone towers are supposed to have been better suited to conducting sweeping fire and better at withstanding direct hit than rectangular ones, whose corners were easily damaged. Nevertheless, from the 14th and 15th centuries onwards even newly built fortresses were still provided with rectangular towers alongside circular and semi-circular ones. Although the latter became more numerous, they did not fully replace the former, which is evidence of certain advantages held by rectangular towers. It is interesting to note that even in a single fortress towers were never identical; their height and footprints differed widely.

Towers dating from the 13th to 15th centuries are narrower towards the top. Moreover, their walls are sometimes slightly curved so that they often resemble inverted cauldrons.

Rectangular towers in Rus' were never built open on the inside (i.e. three-sided). Only semi-circular towers were open. Both open and closed towers had their own specific advantages. Open ones allowed the defenders in the citadel or donjon to shoot any soldiers who turned traitor inside the towers, or to easily push the enemy out of an occupied tower. On the other hand, a closed tower could be turned into an independent centre of resistance in case the enemy seized part of the fortifications. In Rus' preference was given to the closed tower.

Both wooden and stone towers were multi-tiered. The number of storeys varied from two to six but usually was three or four (including the ground floor). The storeys had beamed ceilings and the holes for the beams can still be seen in stone towers. Movement between the floors was via wooden stairs or sometimes ladders; the latter were pulled up in times of danger. As a rule, the upper floor of wooden towers had an overhanging projection (oblam), which allowed fire to be brought to bear on the enemy at the foot of the tower. Towers had wooden hip roofs. The lower part of the roof usually had a gently sloping pitch conducive to draining water off the tower walls. Hip roofs on towers were often topped with a watchtower (sometimes equipped with a bell) where a sentinel could keep watch. This watchtower was, in its turn, covered with a smaller hip roof, itself crowned with a weathervane. Towers open on the top were extremely rare.

A wall-walk (boevoy hod) ran through one of the storeys of the tower, usually with two doors allowing access to it — although from the point of view of defence this was not ideal, as a wooden door was easy enough to destroy. An improvement to this was an exit on the rear side of the tower leading to a small wooden platform connected to the boevoy hod on the walls. The platform was temporary and could be quickly destroyed, considerably hampering the enemy.

Towers could be called stolp, veshua, kostyar, or strel'nitsa. A stolp was a tower not connected with the fortress walls but was free-standing, as per the donjons in the Volynia fortresses. A tower was called a kostyar in the Pskov and Novgorod lands and a strel'nitsa in the Moscow district. Veshua was a general, commonly used term. The word bashnya replaced all these terms in the 16th century and has remained in use ever since.
A tour of the sites

Most Russian fortifications dating from this period were made of timber and earth, of which only the grass-covered ramparts remain. Impressive examples of fortifications only survive in north-west Russia where masonry was widely used. The four sites examined below are two border fortresses (Izborsk and Porkhv), Pskov, and Truvor’s gorodische. Izborski was a strategically important outpost near Pskov at the Russian frontier with Livonian and German lands. Porkhv was one of Novgorod’s frontier fortresses. Pskov, the capital of an independent principality, is an example of a stone citadel and urban fortifications, whereas Truvor’s gorodishe gives an idea of what an old timber-and-earth fortress town looked like.

Truvor’s gorodishe and Izborsk fortress

The fortress of Izborsk lies 30km west of Pskov, and nearby is the site of an earlier fortification, Truvor’s gorodishe. Although the latter was first mentioned in the annals of 862, a settlement existed there as far back as the turn of the 7th/8th century. The 10th and 11th centuries saw the settlement double in size and occupying the entire promontory surrounded by deep, steep-sloped ravines. A rampart was erected on the most vulnerable, mainland side and a ditch dug out in front of it. The entire settlement was enclosed within a wall of oakwood. By the 12th century the fortifications of the settlement had been modified again. The height of the rampart was increased to 6m. The wooden wall along the perimeter was replaced by a stone one 3m thick and 3m high. On top of this stone foundation there was probably a wooden log wall with a wall-walk. A stone hexagonal tower with 1.5m-thick walls was erected on the tip of the promontory, between the ravines – the only tower in the fortress. It had a postern gate to one side, allowing the defenders to make sorties. This secret exit was blocked with a stone on the outside, and was only 0.8m wide and 1m high. Two gates led into the fortress, the western giving access to the trading area (posadi) and the eastern leading to the lake where there must have been a landing point and a market place.

The size of the fortress was limited by the size of the promontory on which it lay. Therefore, in 1303 Izborski was transferred to another site, half a kilometre to the south of the gorodishe. At first, this new settlement had wooden walls and a circular stone tower (the Lukovka) 13m high and 9.5m in diameter. Like that of the earlier Truvor’s gorodishe, this single tower was placed on the tip of the promontory. In 1330, when the wooden walls were replaced by stone ones, the Lukovka was surrounded with external walls, thus turning it into a donjon. The

![Image of the rampart and a reconstruction of the gate in Truvor’s gorodishe. The gate is on one side of the rampart and the road leading to it ran between the rampart and a precipice. Flanking the gate are the remains of a stone layer that was once 3m thick and 3m high and served as a base for a wooden wall.](image-url)
The Lukovka Tower, Izborsk fortress. Built in 1303, it was the only stone tower in the fortress at this date; all the other fortifications were still wooden. In the course of the modernization of the fortress in 1330 the wooden walls were replaced with stone ones and the Lukovka Tower found itself inside the fortress walls, becoming a dungeon.

Porkhov fortress

Situated 75km east of Pskov, Porkhov fortress was a powerful outpost of the Novgorodians. The fortress was founded in 1239 on the banks of the River Shelon. Its defences consisted of two lines of ramparts and ditches. A wooden log wall ran along the top of the main rampart. Between 1300 and 1387 the fortifications were twice modernized: they were raised in height and the slopes of the ramparts became steeper. At the same time a stone foundation 0.7m high and 3.5m thick was built to underpin the wooden wall on the rampart. Nevertheless, by the late 14th century the fortress could no longer provide a sufficient defence of the area, and in 1387 it was abandoned and a new fortress was founded. The latter was built on an island further down the Shelon, 1,300m from the old fortress. The fortress walls built of stone and mortar were 8.8m high and nearly 2m thick, and were crowned with broad rectangular merlons. As the walls followed the contours of the island, the fortress took the shape of an irregular pentagon. It had only three towers, placed in the most vulnerable section. Here the curtains between the towers were straight, providing for flanking fire. The builders considered the western wall sufficiently protected by the river and no towers were erected there; moreover, the wall itself was not straight but followed the limits of the island.

The Malaya (Small) Tower was so called because it was the smallest in height and had the fewest loopholes (16); it had five storeys (including the ground floor). Because the ground in front of it was swampy, only a small tower was deemed necessary. It is curious that the Malaya Tower was not provided with a through-passage on the walk-wall level. One could only get out onto the walls from the butt-end of the tower where there was a removable platform. The Nikolskaya Tower was considerably more formidable. It barred the main entrance to the fortress through the so-called Nikolski zakhab—a passage 21.5m long and 5m wide running between the walls. The Nikolskaya Tower was 17.3m high and was about twice the height of the walls. It had six storeys (including the ground floor) and 27 loopholes, and permitted firing in all directions from the two upper storeys. Its walls at ground level were 2.6m thick, twice as thick as the walls of the Malaya Tower. However, the most formidable was the Sredniaya (Middle) Tower, which was the same height and had the same number of storeys as the Nikolskaya Tower but had 30 loopholes. It is the only semi-circular tower in the fortress, the others being rectangular.

In addition to the entrance through the Nikolski zakhab there was another entrance also defended by a zakhab. The latter, known as the Pskovski zakhab, was a 35m-long passage leading between two parallel walls each 2.5m thick. The entrance would come under fire along the entire passage through the loopholes in the wall. A 20m-long underground tainik leading to the river supplied the fortress with water.

The Sredniaya Tower of Porkhov fortress. There is an arbour over it to shelter the restorers from the weather. Like other towers in Russian fortresses, this one had a wooden hip roof. The adjacent jyra, a (circuit wall) are missing their upper part, which probably comprised a battlemented parapet with a wooden roof over it.
Pskov was built in 1387 when gunpowder artillery was not yet widespread in Rus'. The fortress was thus not suitable for cannon, nor could its rather thin walls withstand fire from heavy bombardment. All these shortcomings were quickly brought to light during the siege laid by the Lithuanians in 1427–28, where the fortress had to pay the attackers off. In 1430 the Novgorodians set about rebuilding the heavily damaged fortress. The thickness of the walls at all vulnerable sectors was increased to 5m at the base. Only the Malaya Tower and the adjacent curtains retained their 14th-century appearance. The loopholes were adjusted for the use of firearms; the fortress overall had 36 loopholes for cannon and about 250 for handheld firearms. Pskov became one of the first fortresses in northern Rus' to be adapted for cannon.

About the mid 15th century both the zakhab of the fortress were improved. A wall with a gate was built in front of the Nikolskaya Tower. As a result, the main entrance turned into an intricate defensive complex: now the enemy had to first seize the passage through the Tainichny Gate with its drawbridge and two portcullises, then the new zakhab between this gate and the gate in the Nikolskaya Tower, then the old zakhab, and finally the last gate in the main wall of the fortress. The Pskovskiy zakhab was provided with the Pskovskaya Tower, which became the second D-shaped tower in the fortress. It had 6 storeys (including the ground floor) and was equipped with 15 loopholes for cannon and 11 for handheld firearms. The fortress was now well equipped for defence on the most vulnerable southern and eastern sides; here the towers projected beyond the line of the walls and the curtains were straight. As for the western side, with its winding walls and lack of machicolations and banking towers, it remained weak from a defensive point of view, since it allowed the enemy a place of relative safety at the foot of the wall. Only one loophole for cannon providing for fire to be brought to bear upon the opposite side of the River Shelon was made on this side between 1445 and 1475.

In 1665 the crumbling zakhab was replaced with a new one, built under the zakhab by the Nikolskaya Tower; soon, however, it began to crumble too. Towards the end of the 17th century the fortress lost its military significance, and its defences thereafter have never been modernized. A bell-tower was constructed on top of the Nikolskaya Tower in the 18th century. The fortifications are decorated with crosses: the large one on the wall facing the River Shelon was laid as early as 1387, while the four smaller crosses appeared on the Sredniya tower and the adjusting walls following the modernization of the 1430s. The fortifications have been well preserved with the exception of both zakhab and the Pskovskaya Tower, which lie in ruins.

**Pskov**

Pskov was first mentioned in the annals of 903. The old town was situated on a promontory at the confluence of two rivers – the Pskova and the Velikaya. The fortifications of the 10th century consisted of an earthen rampart topped with a palisade. On its most vulnerable, southern, mainland side the promontory was protected with a moat connecting the two rivers. The moat had been cut in the rock and the extracted stone was used for facing the rampart that stretched along the inward side of the moat. The formidable rampart was a subject of pride to the citizens and the most important part of the defence; it was called the Persi, which means ‘breast’ in Slav. Although the Persi was first mentioned in the annals of 1065, it already existed as early as the 10th and possibly 9th centuries. In 1192 the Persi was rebuilt; at its ends two gates with zakhab were built. This is the first mention of this kind of construction, which did not become popular until the 14th–15th centuries. The fortifications of Pskov were next modernized in the 14th century when the Livonian Order intensified its onslaught on the city. That century alone saw as many as four sieges laid to Pskov by the Livonian knights. In view of this, the Persi was rebuilt in 1337 and then again in 1394. In the course of the second reconstruction a municipal bell-tower was erected in the centre of the bow-shaped rampart. However, in 1427 a 50m section of the Persi together with the bell-tower fell into the ditch. The same year saw the Persi rebuilt and topped with wooden walls and a new bell-tower. The next wide-scale redevelopment was undertaken in 1466 when the Persi was fortified with three buttresses; a battlemented parapet ran along its top. The Persi still looks impressive today, despite the passing of five centuries. Early in the 18th century the crumbling bell-tower was pulled down, which resulted in the Persi taking on the gate of the Pskov krom (citadel) and a zakhab beyond it. The right-hand photograph was taken very near to the gate. Here the zakhab begins – a long, winding passage commanded on both sides by the occupants (note the surviving loopholes in the right-hand wall). The zakhab ended with a second, inner gate that has not been preserved.
The living sites

The largest part of any city was taken up by the dvors – the estates of princes, boyars, and bishops, and the courtyards of common freeborn citizens. Each davor was separated from the streets and from neighbouring dvors by fences, which were frequently palisades, made of vertical logs 2–2.5m high. It is interesting to note that the boundaries of these dvors remained unchanged for long periods of time. For instance, some dvors discovered in Novgorod did not change their boundaries from the mid-10th to the mid-15th centuries. Each davor was not divided among all the children of a deceased owner, rather it was inherited by one child alone. On the one hand, the ownership of a davor must have placed the owner under certain obligations (paying taxes, building fortifications, paying streets, participating in the defence of the city, etc.); on the other hand, it qualified him to take part in local government. As these rights and obligations were difficult, sometimes impossible, to differentiate, it was considered best to leave the boundaries of city dvors unchanged in Rus'.

Dvors differed in size, depending on the income of the owner. Feudal lords owned estates whose size varied from one city to another. For instance, in Novgorod they were between 1,200–2,000 m² while in minor towns they were usually smaller. In feudal lords' estates archaeologists have discovered up to a dozen and a half dwellings and outbuildings, such as the owner's house, servants' quarters, barns, bathhouses, and even craftsmen's shops. The buildings often stood around the perimeter of the fence, though sometimes they were put in the centre of the yard. Although their outward boundaries remained intact, these estates could be partitioned into several sites. Wealthy feudal families had several dvors, and they were usually grouped in one part of a city or on one street, creating a kind of clan area.

The courtyards of common freeborn citizens were not only smaller (400–460 m² in Novgorod and 300–800 m² in Kiev) but were of regular shape. They were rectangular, and as a rule were of the same length and width. They seem to have been measured and appointed by someone simultaneously according to a pre-arranged plan. A dwelling house was generally placed in the corner farthest from the entrance while two or three outbuildings (barns, cattle-sheds, or bathhouses) were to be found on the other side of the yard.

Churches and a market place were key features of a city. The larger cities had dozens of the former, and Novgorod is known to have lost 15 churches in the fire in 1211. Churches were practically the first urban structures to be raised in stone or brick. Masonry churches were already numerous when urban fortifications and all the houses were still wooden. The Desyatinna church in Kiev was built back in the late 10th century and the famous St. Sophia's cathedral dates from the beginning of the 11th century. One or several churches were usually put close to the market place to pacify the malcontents who frequently gathered there. The churches were also used for the upkeep of trading standards.

The social make up of city districts varied from one town to another. The residences of both the prince and bishop were, as a rule, situated in the detinets (citadel); however, there were cities where the detinets only housed the...
prince's (Kiev) or the bishop's (Novgorod, Smolensk) residence. No clear-cut division existed in the posad between quarters occupied by the nobility and the commoners. For instance, the principal part of Kiev, Verkhniy Gorod (Upper Town), which comprised 'Vladimirov city', 'Jaroslav's city' and 'Tysian's city', was populated not only by the 'upper crust' (the boyars' and prince's families), but also by merchants and craftsmen; there was a Jewish quarter here too. Boyars' estates have been discovered in all the quarters of the posad in Novgorod, and in Galich a number of them lay even beyond the line of the city fortifications. Significantly, not a single case is known of princes or boyars hiding themselves from their rebellious subjects behind the walls of a detinets. When revolts did take place, the princes and boyars would try to flee the city, but did not seek refuge in the detinets. Thus, the detinets was never used in opposition to the rest of the city.

Dwellings were of two types: over-ground ones and so-called semi-dug-outs. The latter were more popular than the former until the late 11th century, and were widespread in the 9th to the mid 10th century in the forest-steppe; they could also be found further to the south in the steppe, and to the north in the forested areas. In other words, they represented the main type of dwelling in the basins of the Dniester, Dnieper, Oka and Don rivers. It was only in the capital city of Kiev that both types of dwellings co-existed. Unlike the southern districts, the northern Russian (Novgorod and Pskov) lands rarely contained any semi-dugouts. Little by little over-ground dwellings began to appear further south, halfway through the forested zone. The second half of the 10th and 11th centuries saw them in the territory of modern Belarus and in the Rytscian lands alongside semi-dugouts. In the 12th century and after, over-ground dwellings were being built almost everywhere. Whilst omnipresent in the north, they co-existed with semi-dugouts in the western (Galich and Volynya) and eastern (the Oka basin) lands; only in the mid-Dnieper districts of Kiev, Pereyaslavl, and others did semi-dugouts still predominate.

Semi-dugouts were rectangular houses, almost square in plan, dug on average 0.5-1m into the ground. They differed from over-ground dwellings in that their earthen floor was below ground level; most of a semi-dugout house towered above

There were different ways of supplying a fortress with water: it could be stored in barrels, or wells could be dug inside the fortress if no natural sources were found, or the fortress itself could be built right on the bend of a river or channel. Natural sources and wells were the safest means as they tended not to run dry and it was practically impossible to drain them. However, natural sources were not always available and it was not always possible to dig a well. Therefore, in Rus' they often resorted to the building of a tank (4), a secret underground passage going down the slope of a hill towards a river, a natural source, or a place where a well could be easily dug out. Until the late 15th century the entrance to a tank was situated close to the fortress wall; later on it was made in the tower closest to the river. The tower then took on the name of tankovaya or tankovaya bashnya (5).
The rampart of Yuriev-Polotski, built in the 12th century. The roughly 1km-long rampart surrounded a settlement that was almost circular in plan. As usual, the rampart was topped with wooden walls. The roofs of a later monastery are visible beyond the rampart.

The entrance to the taïnik in Lziborsk fortress, viewed from the interior. This underground, stone-laid passage that led to a spring was about 40m long. The exit from the taïnik and the spring were enclosed in a wooden log shell and camouflaged. In 1341, however, the Livonians discovered the taïnik and cut off the defenders' water supply.

log cells placed close to each other, but more often they were joined in a system. A larger cell could be found next to a smaller one, and it was often the latter that housed an oven. There is evidence of a two-chamber structure in some dwellings. The cells were as if cut into the rampart; their roof was made of logs covered with the earth of the upper part of the rampart. Archaeologists have discovered a wide assortment of artefacts here: the arms and armour of professional warriors, farming implements, craftsmen's tools, and even women's jewellery. These artefacts show that the cells were used as living quarters and storerooms. Ramparts with such cells occurred in areas where over-ground dwellings were widespread, as well as where semi-dugouts were still built.

For a long time the opinions of researchers differed with regard to the social nature of settlements with cells in the ramparts. Because of their structural peculiarities they were considered first to be feudal castles, then fortresses where the cells were occupied by servants or warior-farmers who engaged in farming in peace but kept horses and weapons at the ready. A recent investigation by A. V. Kuzn of the system of settlement with such cells revealed that the ramparts varied greatly both in size and layout (some conforming to the terrain, others had a complex layout, more characteristic of cities). In other words, the structural peculiarities were not distinctive of a certain type of gordishche, or a certain period of time, or settlements with approximatively the same number of inhabitants. The only feature they have in common is the presence of a vast unfortified posass beyond their fortifications. Therefore, it may be suggested that cells in ramparts served as a refuge for the population of the posass in time of danger. Similar small cells designed to be used in case of a siege and called osadnya klet' and osadny dvor became common in fortresses in the 16th and 17th centuries.

The defence capacity of a fortress directly depended on its stores of water. Russian fortresses were not provided with big water tanks for gathering rainwater; in times of impending siege, water was stored in barrels, which were filled by hand; their size was a limiting factor. Sometimes a river branch or a channel ran through the so-called water-gate of a fortress. This method was not foolproof, though, as the besiegers could build a dam and divert the water away. The safest source of water supply was having a well inside the fortress. However, a low water table or hard ground could make this impossible. In these circumstances, a special feature called a taïnik (from the word taiu meaning 'secret') was resorted to. A taïnik was a secret underground passage running down a hill slope towards the river, or a natural spring, or a place where a well could be easily dug. In order to build a taïnik, an open trench was first dug out and then roofed over, covered with earth, and camouflaged with turf. Taïnik exits were also carefully camouflaged and guarded. For instance, a stone-laid taïnik in Lziborsk was a 40-m-long underground passage leading to a spring. The latter was encircled by a log shell and camouflaged. Nevertheless, it was discovered by the Livonians in 1341. The latter destroyed the taïnik and deprived the defenders of water. The Livonians, however, did not know that it was the defenders' only source of water, and faced with furious resistance thought it better to retreat.

Until the late 15th century the entrance to a taïnik was situated right next to the wall of the fortress. Later it led out from the tower nearest to the river. The tower was then called a taïnikhnya (or taïnikskaya) bastnya.
Territorial gain never was the objective of the nomadic warriors, the main enemy facing Rus' in the 10th to 12th centuries. Their lightning raids on horseback were aimed at capturing prisoners, cattle and property, before tak- ing a rapid retreat back to the steppe. In their retaliatory punitive expeditions, the Russian princes tried to de- liable the enemy, seizing booty and preventing possible future attacks. Neither the nomads nor the Rus' readily resorted to sieges. For instance, during the period between 1060 and 1237 only one in every five armed clashes was centred around capturing a fortified settlement.

Until the 12th century the most common method of capturing a fortified settlement was a surprise raid called an izbyat or izgan. An izbyat was carried out by piling through a gate that the defenders had been unable to bar in time. Numerous instances of this prove that patrolling was poorly executed by the defenders, and watch-towers were an exception rather than the rule.

When a fortified settlement could not be taken by surprise attack, it was either passed by or a passive siege (i.e. a blockade, or oblzhanie) was laid to it. The aim was to force the besieged to surrender for lack of food or water, and in this instance the fortified settlement was surrounded and cut off from the outside world. Oblzhanie was practiced both by the Pecheneg and Polovtsy nomads and the Russians. The best-known siege laid by the nomads to a Russian city is the oblzhanie of Kiev in 908. On the evidence of Russian chronicles, a large Pecheneg army encircled the city so thoroughly that neither beast nor bird could get in or out of it. Provisions and water ran out, and the situation was only saved by Prince Svyatoslav, who came to the rescue at the head of his army. In the struggle to take the throne of Kiev, not once did Prince Vladimir take a fortress by storm; he always used blockades.

A direct assault on a fortress was known in Russian chronicles as a voyatie kap'yom, and this became popular only in the second half of the 12th century. Primitive devices were used during such assaults, such as bundles of wood for filling up ditches, and scaling ladders for climbing walls. The first mention of throwing machines (porok) is made in this period; they were not widespread until the 13th century though. The main weapons of the defenders, apart from arrows, were stones and logs thrown down from the walls on the assailants.

The main attack was usually made on the gate, and understandably so. Gates were cut into the rampart and it was easier to attack them than the walls standing on a high earthen rampart. It is interesting that in settlements of a complex layout, where the external site (skol'ny gord) was never protected by wooden walls were completely pulled down. By the evening of February 6 the Mongols had filled up the ditch and rushed into the breaches. The defenders resisted fiercely and the attack was beaten off. Early the next day, however, the assault was resumed and by noon the outer fortifications had succumbed. The inhabitants took refuge in "Monomakh's city" and in the defiles, but these, too, were soon captured by the enemy. The prince's family, boyars, and common people who had sought refuge in the cathedral were all burned alive as the Mongols set fire to it. Thus, on February 7, 1238, the capital of the Vladimir-Suzdal principality fell to the Mongols.
a rampart on the side of the detinets (citadel) and the rampart of the external site never joined the ramparts of the detinets, the most vulnerable place (the ditch between the okolny gorod and the detinets) was never subjected to attack. One might assume, though, that by following the bottom of this ditch (which may have been barred with obstacles) it would be easy to take the okolny gorod. However, the attackers would probably suffer very heavy losses moving along the ditch and climbing its slope in the direction of the okolny gorod; they would find themselves under crossfire from both the okolny gorod and from the walls of the detinets.

The Mongol invasion of 1237–40 proved a serious test for the Russian fortresses. The Mongols would first surround a city with earth and wooden siege works (palisades or ramparts, or both) and mount throwing machines. The latter were usually placed in batteries facing the most vulnerable sections where a breach (usually more than one) was to be made. The throwing machines would then begin a day-and-night continuous assault. Stone-throwers tried not only to breach a wall but also to destroy the upper zaborina on the adjoining sections, thus suppressing any fire from the defenders. The Mongols then would set about filling up the ditches. This was carried out by the civilian population brought by force from the neighbouring towns and villages. If one of them failed to deliver the necessary material into the ditch or to the wall, he was killed. When the ditch was filled, the assault began. Here, too, captured civilians were made use of. The storming columns quite often drove them ahead of the troops as a sort of first wave. This ruthless method served not only to protect the Mongolian warriors but also to unnerve the defenders. All these siege methods were demonstrated in the siege of Vladimir by the Mongols in 1238.

The defenders of Russian fortified cities had little with which to withstand the onslaught of the Mongol armies. Wooden fortifications were easily destroyed both by stone-throwing engines and fire. With the zaborina knocked off the walls, the besieged could not even effectively defend themselves with arrows. A lack of stone-throwing engines meant they were unable to destroy the siege weapons of the Mongols. Sorties were difficult because of the siege line and numerical superiority of the Mongols. As a result many Russian cities and towns, even well fortified ones, took but a few (usually four to six) days to fall.

However, some fortresses offered up staunch resistance and some were not taken at all. The defence of Kozelets in 1238 is a famous example. The little town put up heroic resistance to the huge army of Batu Khan for seven long weeks. In the interim the Mongols kept the town under constant fire from their throwing machines. The inhabitants, for their part, made sorties to destroy the enemy siege weapons. The Mongols finally managed to destroy the walls and made a direct assault. The inhabitants fought back using whatever weapons and tools were to hand, including kitchen knives. Moments later a group of the besieged made a sortie and killed about 4,000 enemy soldiers in a surprise attack. The Mongols did eventually take the town, but only after all the soldiers and men defending it had been killed; after that they slaughtered all of the remaining civilian population. The events were such a shock to the Mongols that they never again referred to the town by its proper name, but nicknamed it 'Wicked Town'.

Some fortresses proved too strong for the Mongols, particularly those built on hills. Shooting at an upward angle rendered stone-throwers almost useless. The Mongols were not able to destroy the walls of the Kolodyazhnoe fortress, which sat on a hill, and only took it by resorting to a ruse. Realizing that it was hopeless to take the Volynia fortresses Kremenets and Danilov, they made no attempt to besiege them and passed them by.

While north-east and south Rus' became acquainted with the siege methods of Mongols, north-west Rus' came up against western European siege techniques. Here the Germans often besieged Russian fortresses, using approximately the same amount of siege weapons as the Mongols.

In the early 13th century the regular laying of sieges, and thus the use of complex siege weapons, was still a new skill for the Russians. However, by the mid 13th century they became expert in both and laid quick and successful sieges.

It is interesting to highlight a few statistics on this matter. In the sources 302 military conflicts are registered between 1228 and 1462: 171 relate to sieges or the defence of fortified settlements, and only 85 relate to field battles. Such a sharp increase in the number of sieges compared to field battles is not accidental and is connected with new strategic aims. Both the Mongols and Germans aimed to capture territory and keep it for years to come. Later, the same goals were pursued by the Russians in their quests to unite their different principalities. Complete control over territory was only possible once all the centres of resistance had been suppressed. This brought sieges to the fore.

It is also interesting to compare the number of successful and unsuccessful sieges laid by Russian and foreign armies (Mongols, Germans, and others). Data on two Russian regions (north and south) are given in Table 1. The most interesting fact is that the number of successful and unsuccessful sieges remains roughly the same irrespective of who actually laid the siege – despite the advanced siege techniques of the Mongols and the large number of cities taken by them. Only one out of every five besieged cities successfully resisted the siege. The coefficient is at its maximum (4.38) for the sieges laid by the Russians – proving that the Russians had been quick to master siege methods and had become expert in siege warfare.

Table 1: The instances of siege and defence of fortresses between 1228 and 1462.

<table>
<thead>
<tr>
<th></th>
<th>North Rus'</th>
<th>South Rus'</th>
<th>Total</th>
<th>Correlation of successful and unsuccessful sieges</th>
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</thead>
<tbody>
<tr>
<td><strong>Sieges laid by the Russians</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Successful sieges</td>
<td>50</td>
<td>7</td>
<td>57</td>
<td>4.38</td>
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<tr>
<td>Unsuccessful sieges</td>
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<td>1</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td><strong>Defence of cities and fortresses by the Russians</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsuccessful defence</td>
<td>70</td>
<td>11</td>
<td>81</td>
<td>4.05</td>
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<tr>
<td>Successful defence</td>
<td>17</td>
<td>3</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>Total number of captured cities</strong></td>
<td>120</td>
<td>18</td>
<td>138</td>
<td>4.18</td>
</tr>
<tr>
<td><strong>Total number of unsuccessful sieges</strong></td>
<td>29</td>
<td>4</td>
<td>33</td>
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</table>

The ramparts and the white-stone Golden Gate of Vladimir. These defences protected the western pass of the city, the so-called Novy Gorod (New City). It was roughly in this sector that the main thrust of the Mongolian assault was directed in February 1238. At that date, the rampart was topped with log cell walls and the Golden Gate looked rather different.
Which siege weapons and methods were used by the Russians? Fire and axes had been the main weapons of attack from ancient times, and many miniatures show Russian soldiers setting fire to the walls of a besieged fortress or chopping down fortifications with their axes. Fire arrows were almost certainly used too. Siege towers (hury) were not popular and battering rams are very rarely mentioned.

Throwing machines (ponksu) are mentioned in the chronicles 130 times. The first evidence in the sources dates from 1184 when the Polovtsy attempted to use a great crossbow. In the early 13th century, even before the Mongol invasion, the Russians certainly knew of throwing machines and used them occasionally, but they did not become popular until the mid 13th century. Their appearance brought certain changes in fortifications, such as the gradual replacement of wooden walls by stone ones and the use of multiple rows of ramparts and ditches.
Man-powered and counterweight engines were without doubt the main type of stone-throwers, and were used by the Mongols, the Germans, and the Russians. However, some illustrations in the Russian annals represent stone-throwers of an altogether different type – great crossbows that fired stones instead of bolts. These miniatures depict events that took place in the 13th century, but themselves were made in the 16th century when throwing machines had gone out of use. These machines may have been but the fruit of the artist's imagination, but they may also have been copied from an earlier source that has not been preserved to our day.

On the basis of a detailed analysis of the miniatures it has been suggested that two structures probably existed and reconstructions of them have been attempted. One engine had a solid frame with a groove and the other had a slide.

Cannon appeared in Rus' in the 1370-80s. The first mention of firearms in Russian chronicles dates from 1382 when the defenders of Moscow used suyafaks (a small cannon of the howitzer type, which fired case-shot), along with throwing-machines, against Tolkhtamys Khan. Initially the use of cannon was confined to sieges and the defence of fortresses. Until the mid 15th century cannon and throwing-machines co-existed. It was only in the mid 15th century that the destructive power of cannon surpassed that of throwing machines and the decline of the latter began. 1446 saw the first city fall to cannon fire, although its wall was not destroyed. The first instance of a stone wall destroyed by cannon fire dates from 1481.

Sometimes a city was taken by stealth. The best known stratagem was resorted to by Princess Olga in 946 at the siege of the Drevlyan's city of Iskorosten. The siege was a long one, but the city would not surrender. Then Princess Olga started peace negotiations promising to lift the siege on condition that the inhabitants deliver to her three doves and three sparrows from each door. The defenders were surprised, but wishing the siege to be lifted, agreed. When the birds were brought to Princess Olga, she ordered that a piece of tinder be tied to each bird. When it grew dark the pieces of tinder were set on fire and the birds were let out. They flew to their own nests in the city and soon it was all in flames. The story may be nothing but a legend. However, there is no smoke without fire. Even Kautilya, the author of the ancient Indian treatise Arthashastra, recommended tying burning material to birds' tails and letting them fly to the enemy fortresses (Art. XIII. 4, 174-75).

1 Kiprichkun, A. N., 'Mestodruziya antikanaya drevnej Rus', Materitsly i issledovaniya po arkhitekturii 1558, p.7-51 (Moscow, 1938).

Aftermath

A large number of fortified settlements ceased to exist as early as the 10th and 11th centuries. Some of the goroda disappeared as a result of the expansion and strengthening of Kiev Rus'. Kievian princes took tough measures against seats of tribal separatism. Nomad raids proved fatal to many settlements in the 11th century, while others were burned down in internal strife. Even if the inhabitants were lucky enough to survive and returned to the ruins, they often abandoned the old fortified settlement for whatever reason and built a new one some distance away. Not all the fortified settlements, however, were destroyed in war. Some of those in the interior of Kiev Rus' were considered superfluous and abandoned. The inhabitants moved to unfortified settlements better suited to everyday living, believing that the state armed forces, the Zmiyev Valy and the frontier fortresses would offer sufficient protection against nomadic warriors. A small group of fortified settlements vanished altogether around the turn of the 11th/12th century. This was a transition period from early feudalism to its mature stage; rapidly developing cities or castles attracted people in nearby settlements to the centres of political and economic life, and the deserted settlements fell into decay.

The devastating Mongol invasion of 1237-40 proved fatal for a great number of settlements. Two out of every three Russian cities were burned down, and a third of those destroyed were abandoned forever. Even more devastating were the consequences for smaller settlements, such as castles, fortresses, and villages. Three out of four of these were fully destroyed and only one out of four such settlements lived to see the 14th century.

Given that many of the fortifications in the period under discussion were timber and earth, little of them survives today. Most of the gorodidovichi that survive are merely vacant plots of land, surrounded by ramparts and ditches covered in grass – the telltale clue as to their former status. Some ramparts have been so eroded that once formidable fortifications are hard to recognize. Others, however, survive to a fair height. Considerable lengths of impressive remains of the Nikolskaya Tower, Izborisk fortress. It was raised in the 17th century at the end of the Nikolsk zakhab, a long passage between the fortress walls that improved the defences of the entrance. The walls of the zakhab survive only in small sections.
The Golden Gate in Vladimir built supposedly in the mid 12th century. It was flanked with buttresses enclosed in small circular towers and had its upper part together with the church completely rebuilt in the late 18th/early 19th centuries.

The stone gates granted to some cities still survive, usually guarding the city's symbol. The presence of chapels has aided their preservation. The Golden Gate in Vladimir was the pride not only of the city but of the entire Vladimir principality. It was supposedly built in the mid 12th century as an imitation of the gate of Kiev. In Vladimir it was a rectangular gate-tower about 25m high with a chapel on top. The arch over the gateway was 14m high and featured shutters bound with leaves of gilt copper. The gate survives today, though little of its 12th-century appearance remains. In 1798 the weakened corners of the gate were strengthened with buttresses confined in circular towers. In 1810 the upper part of the gate was re-laid and a new chapel was built above the gate. Nothing is left of the battlemented parapet once girdling the tower. The Golden Gate in Kiev, however, fared worse, and nothing of it now survives: the gate was built anew in 1882.

The Zmiyev Valy were abandoned for almost a thousand years, their initial function nearly forgotten. In the late 1920s, however, the Soviet military authorities decided to make fresh use of them for the protection of the southern borders of the Soviet Union. Some ramparts were turned into a fortified defensive line. Numerous permanent firing positions and concrete fortifications were built inside the ramparts. These defensive lines blocked the way of the German invaders in July 1941, and were fought over fiercely for 70 long days and nights. According to a German eyewitness, the Russian defence 'was the greatest praise, and the structures seem impossible to destroy'. Many centuries after their construction, the Zmiyev Valy had served in the defence of their country once again.

Some 1,500 fortified Russian settlements can be traced to the territories of modern Russia, Belarus, Ukraine, and Poland. Some fortifications have been fairly well preserved or reconstructed, others are only represented by grassy ramparts. Only the defences of the most important cities, the best-preserved fortresses, and the most interesting fortified settlements are (brieﬁy) described below. The names of countries and sometimes districts are given in brackets to make it easier for the reader to locate the gordishche on a map.

Belgorod (Belgorodka village, Kievan district, Ukraine)
The fortress was built in 991 to protect Kiev from nomadic raids. The gordishche, comprising a detinets (citadel) and okol'nny gorod, is encircled by ramparts up to 5m high and up to 12m thick at the base. The ramparts are strengthened with an intra-rampart framework of oak log shells, mud-brick, and clay.

Borisov-Glebov (Romanovo-Borisoglebskoe gordishche, Vakino village, Ryazan district, Russia)
First mentioned in the annals of 1180, it grew up on the site of an Iron Age settlement. Semi-circular in shape, the gordishche is surrounded with three lines of ramparts and ditches and a side bordering the river.

Czartorysk (Ukraine)
Ruins of a circular donjon-tower built in 1291.

Dmitrov (Moscow district, Russia)
The city was founded by Prince Yuri Dolgoruki in 1154. Its formidable ramparts survive.

Galich (Krylos village, Ivano-Frankivsk district, Ukraine)
The village occupies a colossal gordishche – the remains of Galich, capital of the Galich and later the Galich-Volynia principality. Defences first appeared here as far back as the 10th century but the major fortifications were raised in the second half of the 12th century. The detinets (citadel) was protected on the mainland side by two rows of ramparts and ditches. Log walls crowned the high ramparts. The okol'nny gorod was encircled by as many as four lines of ditches and ramparts, the latter surmounted with wooden fortifications.

Gдов (Псков district, Russia)
A stone fortress was founded here in 1431. The walls, made of alternating layers of boulders and limestone, were 4.5m thick, about 8m high, and 850m long. The fortress was provided with three gates with zakhab, and with three towers. The gates and the towers do not survive and the height of the walls does not surpass 5.5m today.

Below left: The ruins of the walls of Gдов fortress. Their height is no more than 5.5m now. Built of alternating horizontal rows of boulders and limestone, this type of fortification is fairly rare.

Below right: The ramparts of the gordishche of Kideksha, a small castle built in the 12th century on the site of an earlier settlement. The white-stone church of St Boris and St Gleb was also built in the 12th century and is one of the oldest buildings of this kind in north-eastern Rus'.

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Izeshlov (a village in Ryazan district, Russia)

Only ramparts and ditches are left of the fortified settlement laid waste by Mongols in 1237. It was once protected on three sides by three rows of ramparts and ditches. A detinets only 20 x 30m in size stood in a corner of the settlement protected by ramparts.

Kamenets (Belarus)

A five-storey (ground floor included) brick donjon built between 1271 and 1288 is well preserved here. It is the best surviving example of the characteristic towers of Volynia.

Kideksha (a village 4 km from Suzdal, Russia)

There are earthen ramparts and the whit-stone church of St Boris and St Gleb still to be seen in the gorodische (supposedly the residence of Prince Yuri Dolgoruki). The fortifications and the church were built in the 12th century.

Kiev (Ukraine)

A settlement existed here as far back as the Iron Age. In the 6th and 7th centuries there were several fortified Slavic settlements on the territory of the modern city. In 989 Prince Vladimir had the old defences levelled to the ground and new, much more formidable fortifications were raised to encircle an enlarged area. The new fortified centre, called 'Vladimir's city', was surrounded with ramparts 16m high and 9.13m thick at the base. The ramparts had an intra-rampart wooden framework and were topped with whitewashed wooden log walls. Four gates, some of them of stone and brick, led into the city. Even more formidable fortifications were raised in Kiev in the early 11th century by Prince Yaroslav. The protected territory ('Yaroslav's city') was seven times larger than 'Vladimir's city' and adjoined the latter on the south. The fortifications comprised powerful earthen ramparts (up to 16m high and 25.30m thick at the base) with wooden intra-rampart framework. They were topped with wooden log walls and stretched for 3.5km. Four stone or brick gates led into 'Yaroslav's city', the most famous being the Great (Golden) Gate. Before the invasion of the hordes of Batu Khan no other fortifications in Rus' could rival those of 'Yaroslav's city'. Remains of the gigantic ramparts of ancient Kiev can be seen today in the centre of the modern city. The Golden Gate with the adjoining sections of wooden walls was reconstructed in 1982.

Kleschichin (Gorodishche village, near Pereyaslavl-Zalesski, Russia)

A small (55 x 80m) fortress sat on a hill called Alexander's Mount with an unfortified settlement nearby. The fortress was encircled by a rampart topped with wooden walls. The ramparts are 3.8m high today.

Ladoga (Staraya Ladoga village, Russia)

Only fragments of walls of the fortress of the 11th century, as in the 1490s the fortress was considerably modernized.

Lutsk (Ukraine)

The brick walls and the towers of the citadel of the so-called Verkhni Zamok (Upper Castle) are well preserved. They were built in 1299-1321 on the place where the older wooden walls were destroyed in 1259 in compliance with the Mongols' order. The fortifications underwent modernization from 1430 to 1542. The fortifications of the okol'ny gorod, the so-called Nazhni Zamok (Lower Castle) - a rampart, a ditch, and a stone wall of the second half of the 14th century - survive in fragments.

Moscow (Russia)

Hardly anything is left of the fortifications of the Moscow Kremlin of the 12th-14th centuries. The kremlin we can see today was built in 1485-95 and rebuilt later (see Fortress 39: Russian Fortresses 1480-1682). Out of several gorodishches of the period in question discovered on the territory of the modern city, Dyakovskoye gorodische on the site of Kolomenskoye Park is the one that is best known and most explored. It gave the name to an entire culture of the Iron Age - the Dyakovsky Culture (the 8th-7th centuries BC to the 6th-7th centuries AD). A settlement existed on this site in the late 1st millennium BC through the 7th-6th centuries AD. The original defences (a rampart and a ditch) were modernized at the turn of the 11th/12th century when the gorodische became a feudal castle.

Mtsislavi (Gorodische village, about 10 km from the town of Yuriy-Polski, Russia)

A rampart and a moat survive of the fortifications of a settlement founded in the second half of the 12th-early 13th centuries. The rampart strengthened with an oak intra-rampart structure reaches 6m in height and 32m in thickness at the base. The settlement was nearly circular in plan and was probably a prince's castle.

Pereyaslavl (now Pereyaslavl-Khmelinitski, Ukraine)

Within the confines of the modern town of Pereyaslavl-Khmelinitski there is a colossal gorodische - the remains of the once great city of Pereyaslavl. Pereyaslavl's fortifications comprised a detinets and an okol'ny gorod, both were enclosed in a high rampart, strengthened with an intra-rampart wooden structure, and topped with a wooden wall. A wide and deep ditch ran in front of the rampart.

Pereyaslavl (Pereyaslavl-Zalesski, now Pereyaslavl-Zalesski, Russia)

The city was founded by Prince Yuri Dolgoruki in 1152. Its fortifications consisted of formidable ramparts. Based on wooden cells and topped with wooden log walls, they were 2.5km long. The ramparts are well preserved and even today are imposing: they are 16m high and 30m thick at the base.

Poyarkovo (a village in Ryazan district, Russia)

Opposite the village, on the other bank of the river Zharka, lies a gorodische of the 12th-13th centuries. It was protected by three rows of ramparts and ditches. The innermost rampart goes along the entire perimeter of the settlement, while the two outer ones run down the riverbank and stop at the river. Today the ramparts are 7m high and the ditches are 2m deep.

Ryazan (Pereyaslavl-Ryazanski, Russia)

Earlier known as Pereyaslavl-Ryazanski, the city became the capital of the Ryazan principality in the mid 14th century. In 1778 it was renamed Ryazan. The city's kremlin was enclosed by a strong rampart topped with oak walls. The fortifications were modernized up to the mid 17th century. Only a 220m-long and 12m-high section of the earthen rampart survives. Gorodische Staraya Ryazan (Old Ryazan), the remains of the old capital of the Ryazan principality, is to be found 65km south-east of modern Ryazan.

Stolpnie (Poland)

Remains of a rectangular stone donjon of the 13th century can be seen here.

Suzdal (Russia)

The city was first mentioned in the annals of 1024. One can see the ramparts of the detinets today: they are 1.4km long, 3.2-8.5m high and 35m thick at the base. When built under Vladimir Monomakh at the turn of the 11th/12th century, they were up to 10m high and topped with wooden walls. In the late 13th and the second half of the 14th centuries the ramparts were strengthened and built up with earth. The year 1677 saw a new pinewood wall with 15 towers and gates built on top of them. However, all the wooden fortifications burned down in the fire of 1719.
Tustan (1km to the north-east of the village of Uzhys, Lviv district, Ukraine)
The most famous of the rock fortresses of Galicia. In the 13th and 14th
centuries an earlier settlement known from the 10th–11th centuries was turned
into a powerful fortress. Its citadel (called Kamen or "Stone") sat on a small
ground between four rocks towering 51m above the valley. The citadel
comprised five-storey (ground floor included) living quarters and wooden log
defensive walls with towers about 15m high. The storeys were connected by a
complex system of passages and stairs. A stone wall was raised on the southern
side. A possad protected with ramparts, ditches, and wooden walls lay at the
foot of the citadel on the slopes of the mountain. A stone-paved road leading
to the gate of the citadel ran along the bottom of the cliffs. One kilometer
from the city, on the rocks of the Ostry Kamen (Sharp Rock) and the Malaya Skal
(Small Rock), there was a watch post suited to carrying on independent
defensive activities: wooden walls protected the approaches to the rocks and a
tank 2m in diameter and 8m deep was placed on the top of the Ostry Kamen.

Vladimir (Russia)
The city was founded by Vladimir Monomakh in 1108. Large-scale con-
struction work was under way here in 1158–65. By the end of the 12th century
Vladimir had four sites protected by walls: a detinets, Monomakh's city (the
Middle City), and two fortified possads on the latter's sides. The detinets was
encircled in rather thin (1.0–1.7m) stone walls. All the defences with the
exception of the walls of the detinets and several gates were of timber and earth;
they consisted of a ditch and a rampart surmounted with a wooden wall. The
ramparts were about 8m high and 24m thick at the base. Some sections of
ramparts and the famous stone Golden Gate survive now, although the latter
has undergone considerable modernization.

Yuriev-Polski (Russia)
A 1km-long rampart surrounded a town nearly round in plan. Preserved
from the 12th century, the rampart is 7m high and 12m thick at the base.

Opposite: Kiev in the 12th–13th centuries
The main part of this illustration shows a general overlook
of Kiev's fortifications (after P.Tolochko). In 989 Prince
Vladimir fortified the central part of the city thus creating
the so-called 'Vladimir's city' (1). The fortifications consisted of
formidable earthen ramparts topped with whitewashed
wooden log walls. Among the four gate-towers the St Sophia
Gate (2, after Yu. S.Aseev) was notable, being the first gate
in Rus' built of brick and stone, not of wood. Under Prince
Yaroslav the southern part of the city saw itself encircled by
strong fortifications and acquired the name of 'Yaroslav's city'
(3). Ural Batu Khan's invasion these fortifications were the
most powerful in Rus'. They comprised 3.5km of huge
earthen ramparts provided with wooden intra-rampart
structures and topped with wooden walls. Out of the
four gates the Golden Gate (4, after S.A. Vysotski), which
served as a model for similar gates in other Russian cities
(for example, in Pereyaslavl and Vladimir), is worth a special
mention. The height of the gateway arch exceeded 12m and
its width was almost 7m. The gate shutters were made of
rods, forged with iron and bound with leathers of gilt copper.
The gate was topped with a church, which had a golden
dome. The building of the fortifications of 'Yaroslav's city'
took 15–20 years, and was completed by 1037.
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The Vysotskaya and Ryabinovskaya towers are situated on the most vulnerable, mainland side of the fortress of Tabor. They protected far beyond the line of the walls, providing effective flanking fire. The loopholes, arranged in a fen-la-mene manner, eliminated dead ground for the defenders.
Glossary

bashnya A tower. The term appeared in the 16th century, replacing the earlier words koster, strelnica and vezha.

burevoy hod A walkway.

chatstokol A palisade, or wall of wooden stakes arranged vertically or obliquely in a row.

detinets A citadel. The term was widely used up to the 14th century; later it was used only in the Novgorod principality. It was replaced by the term kreml in the Moscow and Tver principalities, and by the term krom in the Pskov principality.

dvor A rural estate, or a town estate, or a courtyard.

gorod (or grad) A fortified settlement, or defensive walls, or a fortification as a whole.

gorodische Surviving remains of a fortified settlement.

gorodni Log cells of a wooden wall, placed side by side.

tzgon See iz'yezd.

iz'yezd The capture of a fortified settlement by surprise attack.

kostyor The word for a tower, common in the Pskov and Novgorod principalities until the 16th century.

kreml A fortress. The term appeared in the 14th century (first mentioned in the annals of 1331) and replaced the earlier term detinets in the Moscow and Tver principalities.

krepost A fortress. The term appeared in the 17th century in place of the earlier term gorod.

krom A citadel. The term appeared in the 14th century and was used in the Pskov principality in place of the earlier term detinets.

krnov A wooden palisade walk or a palisade wall.

nadvratiotaya bashnya A gate-tower.

oblam (oblom) An overhanging projection in the upper part of a wooden wall or a tower, or kind of machicolation. Sometimes used as a synonym of zaborola.

oblezhatie A passive siege, or blockade.

okhoben A city suburb not fortified with walls.

okol'ny gorod A fortified suburb outside a city's walls. This term can also refer to the external line of urban fortifications.

osadnaya klet A very small room used in the same way as an assaying door.

osadny dvor A small room in a kreml used for living in or for keeping the most valuable property of the nobility and monasteries during a siege.

ossyp An earthen rampart.

pechura A box-room with an embrasure, for placing a cannon in a tower or a wall.

persi Literally 'the breast', in fortifications, a semi-circular (D-shaped) tower. In the Pskov citadel the name 'Persi' was given to the rampart on the most vulnerable, mainland side.

polats A wall-walk on a palisade wall (also known as a krobar).

porok A throwing machine (siege weapon).

possad A settlement populated by craftsmen and traders outside the walls of a citadel.

priladzka An external masonry built for the purpose of fortifying a wall.

pryaslo The part of a fortress wall between two towers (or curtain wall).

selo An unfortified rural settlement.

stolp A tower not usually connected with a fortress's walls but free-standing.

strel'nitza The word for a tower, common in the Moscow district until the 16th century.

tainichnaya (also tainitskaya) bashnya A tower where the entrance to a tainik was situated.

tainik An underground corridor leading out of a fortress and down the slope of a hill to a river, or a natural spring, or to a level where it was easy to dig a well.

tarassy The structure of log walls with longitudinal logs overlapping each other with the help of single cross-wise walls. Unlike the gorodin the tarassy structure was a solid wall, not separate log cells joined together. Torass were first mentioned in the annals of 1553.

tury Siege towers.

tyn See chatstokol.

tyufak A small cannon of the howitzer type, which fired case-shot.

v lapu The way of joining logs at the corners so that their ends did not stick out beyond the external surface of the wall.

v oblo The way of joining logs at the corners so that their ends stuck out beyond the external surface of the wall.

vezha A tower.

ves (pl. ves'i) An unfortified rural settlement, or village.

voivode The commander of a Russian army or governor of a province.

vylaz A secret exit from a fortress used to make sorties during a siege.

vyzhitie kopyo A direct assault on a fortress, as opposed to a siege.

zaborola (zabra) The projecting upper part of a wall covered with a roof and overflowing the lower part of the wall (like a hoarding). The term is sometimes considered to be a synonym of obor, or even to denote a wall in general.

zakhab A type of barricade.

zamok A castle. The word appeared in the Russian language comparatively late and is a derivative from the Polish zamok.
Medieval Russian Fortresses
AD 862–1480

In AD 862, the Slav tribes of modern-day European Russia invited Scandinavian princes to rule them. On the death of these princes, Prince Oleg seized Kiev and united the Russian territories, building extensive fortifications to protect the borders. From the 11th century, these defences fell into disrepair and terrifying Mongol hordes invaded, introducing siege techniques that heavily influenced the fortification styles. Using archeological evidence and first-hand sources, Konstantin Nossov charts the history of the medieval Russian fortress from its beginnings through to the 14th century, paying special attention to the development of the Moscow Kremlin.