RUSSIAN MEDIEVAL MILITARY ARCHITECTURE

BY

PAVEL RAPPOPORT

IN the Middle Ages considerable attention was always accorded to for-
tifications. The uneasy situation and the frequent military conflicts
created the conditions under which a more or less peaceful life was only
possible behind strong walls. For that reason defensive walls were built
round not only strongholds but all medieval towns. Feudal castles were
also fortified.

The study of medieval fortifications requires a comprehensive ap-
proach. Yet until very recently this study was mostly of a lop-sided
nature. As a rule, stone fortifications were mostly studied as relics of
architecture and little interest was taken in their military engineering
aspect. Remains of wood-and-earth fortifications usually attracted less
attention. And in the cases when they were studied it was purely from
the archaeological angle. Yet along with the architectural and archaeo-
logical aspects of defensive works it is necessary to study them from the
functional standpoint, i.e., their military designation. It is only by such
a comprehensive study that the general picture of the history of military
architecture and the reasons and laws of its development can be brought
to light.

The study of all monuments —in Western and Central Europe, in-
cluding the territory of Ancient Rus— requires a comprehensive approach.
It turns out that it is harder to ascertain the development of Ancient
Russian defensive works because in Rus stone fortifications were rarely
erected, almost all the fortifications until as late as the 15th century being
wooden. Naturally, the upper, above-ground part of these structures
has totally disappeared, and the military arrangement of these fortifica-
tions can only be studied by the lower portion that has remained intact
in the ground.

In Rus defensive works were not less important than in Western
Europe. Russian chronicles are full of reports of the building of *towns,*
of their siege and defence. In Ancient Russian the word *town* meant
not a town in the modern sense, but only a fortified settlement as distinct
from an unfortified one. Thus the concept *town* applied to medieval
towns proper and to citadels, feudal castles and even fortified villages.
Every population centre with a wall round it was called a *town.* More-
over, until the 17th century this word was frequently applied to mean
the fortifications themselves.

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The architectural design of defensive works depended on local condi-
tions or national traditions. But the social functions of these works
could be extraordinarily similar. West European scholars, for instance,
have noted that a feudal castle was not necessarily a stone fortress: wood-
en defensive works could also fulfil the functions of feudal castles.[1]
The social designation of many Ancient Russian wooden defensive works
was, therefore, identical to that of the stone fortresses and castles of
Central and Western Europe. Naturally, there also were essential dis-
tinctions —for instance, in Central and Western Europe the castle and
the town usually stood close to each other, while in Ancient Rus the cas-
tles were usually situated far from the town—. In towns of Ancient Rus
the main fortification was not the feudal castle but the central citadel of
the town itself. The national features of Ancient Russian defensive
works is seen clearly in their layout and military-tactical organisation.

The principal source for studying the history of Ancient Russian
military architecture consists of the remains of the defensive works them-
selves —the walls and moats of the ancient strongholds. Considera-
ble headway has been made during the past 25 years in the study of
strongholds.[2]

Archaeologists have conducted excavations in the fortifications of
Kiev, Vladimir, Galich, Pereyaslavl, Ryazan, Novgorod, Moscow and
other major centres of Ancient Russian military architecture. A consid-
erable part of the Ancient Russian strongholds have been investigated
and the design of the defensive walls of many of them has been studied.
A detailed analysis of many of these relics has served as the foundation
for a more or less authentic reconstruction of the original forms and
external appearance of ancient fortifications. This, in its turn, has
made it possible to attempt tracing the development of the compositional
methods of Ancient Russian military architecture. A thorough investiga-
tion of the strongholds in a number of territories has answered many
questions of history and geography and more fully revealed the general
strategic principles of the defence of the various Russian principalities.

The factual material on the history of Ancient Russian defensive
works now no longer consists of a casual collection of relics but of large
series, which allow to judge the military architecture of Ancient Rus with
an adequate degree of objectivity and fullness. This has made it possible
to raise the question of the general laws of the development of defensive

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[1] For example, see R. ALLEN BROWN, *English Medieval Castles,* London, 1954,
p. 33.
[2] For a review of archaeological investigations of Ancient Russian strongholds,
see P. A. RAPPOPORT, *Die altrussische Burgwaelle,* «Zeitschrift für Archäologie»,
Berlin, I, 1967, pp. 61-87.

works. Through a survey of relics of military architecture in the process of their development scholars have established the principal periods of military engineering in Ancient Rus. A comparison of Russian defensive works among themselves and with similar relics in neighbouring countries has revealed that the various regions of Ancient Rus had their own local variants and also brought to light general national features of Ancient Russian military architecture.

Of course, many problems of the development of military engineering in Ancient Rus are yet to be solved. But despite essential gaps and the still inadequate study of available material, we now have a quite definite general picture of the development of military engineering in Ancient Rus.[3]

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The period prior to the final establishment of the early feudal state, i.e., 8th-9th centuries, is the earliest stage of the development of Russian military architecture. This stage is represented by relics of military architecture which are to be found only in some parts of the territory of Ancient Rus. In the South-East, along the left bank of the Dnieper there are the remains of many defensive works of this period, while practically none occur in the more westerly regions. Only a few of the strongholds in the regions adjoining the steppe (mainly in the territory of modern Moldavia) and some of the strongholds of Polessye region date from the mid-10th century.

The relics of this period are remains of fortifications, which are extremely primitive as regards the organisation of their defence. Here artificial defensive works (chiefly moats and palisades) played a very small role, attention being given mainly to utilising the natural defensive possibilities of the terrain. The purpose of fortifications of this kind was only to afford the population temporary refuge during an enemy invasion. It was surmised that the enemy-steppe nomads were quite unable to lay an organized siege to fortifications and could capture fortified settlements only by a sudden attack. Under such conditions it was enough to have the most primitive defensive works adapted for passive defence. Even in those days fortifications of this primitive type did not

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[3] A three-volume monograph by P. A. RAPPOPORT deals with the history of Ancient Russian military architecture: 1) *Sketches of the History of Russian Military Architecture of the 10th-13th Centuries*, Moscow-Leningrad, 1956; 2) *Sketches of the History of Military Architecture of North-Eastern and North-Western Rus of the 10th-15th Centuries*, Moscow-Leningrad, 1961; 3) *Military Architecture of Western Rus of 10th-14th Centuries*, Leningrad, 1967. The development of stone fortresses of the 14th-16th centuries is dealt with more fully in: V. V. KOSTOCHKIN. *Russian Defensive Architecture*, Moscow, 1962.

always ensure the safety of the population, particularly when the nomads attacked in large numbers. Evidence of this are the numerous strongholds along the left bank of the Dnieper that were burned down by the Pechenegs at the close of the 9th and the first half of the 10th century.

The change to a new stage in the development of Russian military architecture took place in the second half or end of the 10th century. This period witnessed the final shaping of the early feudal state with the result that the military forces were better organized and better armed and there were much greater possibilities for organizing the defence of fortifications. Roughly at this time more organized siege tactics —passive but systematic and prolonged blockade— took final shape. Improved fortresses with massive artificial defensive works making it possible to fire at the enemy along the entire perimeter of the walls were built to counter these new siege tactics. The economic possibility of building such fortresses only emerged with the establishment of feudal society: much more manpower could be mobilised for the building of the feudal citadel, the fortifications of a medieval town or even the fortified seat of the feudal lord than for the erection of communal fortifications.

The earthen parts of the fortifications —natural slopes, scarps, walls and moats— were the basic works of the Russian fortresses of the 11th-12th centuries. Particularly great significance was attached to earthen ramparts. They were built of soil taken from the vicinity, most frequently of the earth removed during the digging of moats. These ramparts were usually asymmetrical: their outer slope being steeper (from 30 to 45° to the line of the horizon) than the rear slope (from 25 to 30°). The top of the rampart was a sort of narrow horizontal platform on which the wooden defensive wall was erected. Not all the ramparts were built solely of earth: some had a wooden framework within them to keep the rampart from sagging. In Ancient Russian ramparts this wooden framework almost always consisted of oak logs driven into the ground. The earliest of these frameworks were found in some fortresses dating from the end of the 10th century. They were built during the reign of Prince Vladimir. In addition to a line of oak logs, the external part of the rampart had a framework made of squared timbers and filled with unbaked bricks. This entire structure was covered with earth, which formed the slopes of the rampart. This construction within the rampart required a huge amount of labour and, evidently, did not justify itself. During the first half of the 11th century it was substantially simplified: the external side of the ramparts consisted exclusively of earth without an unbaked brickwork. All that remained was the line of oak logs standing close to each other and driven deep into the ground. This was the design of many Russian fortresses dating from the 11th-12th centuries.

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The most striking example of wooden reinforcement is the rampart of «Yaroslav town» in Kiev, built in the 1030s under Prince Yaroslav the Wise (Fig. 1).   The woodwork and the entire rampart were initially from 12 to 16 metres high.   The ramparts of the Kiev fortifications were about 3.5 kilometres long.   According to rough estimates, it took
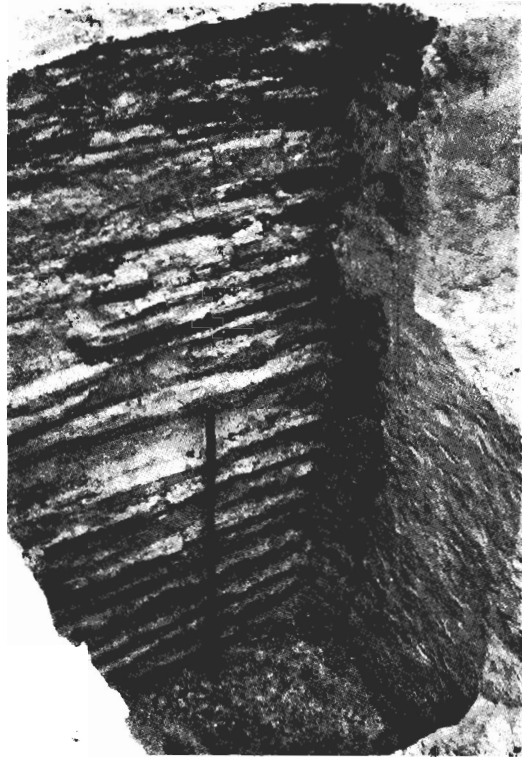

Fig. 1.—*Oak logs in the wall of «Yaroslav town» in Kiev.* 1030s (excavations in 1952). (Phot. APN.)

more than 1,000 labourers at least four years to build this mammoth defensive system.

Important as the earthen ramparts were in the Ancient Russian fortresses, they were only the foundation on which the defensive wall stood. In Rus in the 11th-12th centuries brick or stone walls were known in only solitary cases; the walls were almost exclusively made of wood. They stood on the crest of the rampart and consisted of a solid line of
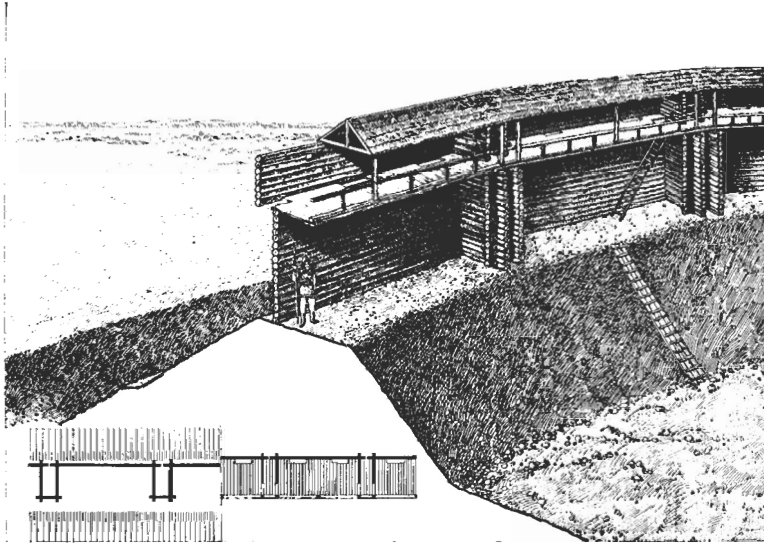
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FIG. 2.—*Defensive wall of an 11th-12th century Russian town*. Reconstruction. (Phot. APN.)

timber (Fig. 2). The walls were about 3-5 metres high. Along the top they had a passage in the shape of a gallery covered with a breastwork of logs. This was from where the defenders fired on the enemy.

The gates were always the key sector of the defence of a fortress. Usually they were built as a wooden tower with a passage beneath it (Fig. 3). Only in such large towns as Kiev, Vladimir and Novgorod were there brick or stone gates in the wooden walls. Remnants of the main gates of Kiev and Vladimir, which were called Golden Gates, have survived to this day. Besides their military function, they served as triumphal arches, reflecting the wealth and glory of the town; over them were churches.

At the next stage of the development of military architecture —11th century— the fortifications were not quite similar in the various parts of Ancient Rus. Along the Middle Reaches of the Dnieper and also in the North-East and North-West they were exclusively fortifications completely subordinated to the natural protection afforded by the terrain. However, at the close of the 10th and in the 11th century, as distinct from earlier fortresses, very great importance was attached to artificial

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defensive works —wide moats and log walls—. The terrain remained very important, but the prime role gradually passed to the man-made parts of the defensive system. In the West Russian lands the pattern was somewhat different. There parallel with fortifications that used the terrain and were irregular in form in accordance to the configuration of that terrain, diverse variants of round fortifications sited in flat localities became widespread as early as the 10th-11th centuries. This was due to the close ties that existed between the Western regions of Rus and

FIG. 3.—*Gates of an 11th-12th century Russian town.* Reconstruction.
(Phot. APN.)

the West Slav lands, where the round type of fortress had long traditions. Tactically the round fortresses of Western Rus were similarly in accord with military strategy as the fortresses situated on promontories or hills. Indeed, inasmuch as a long siege was at the time the principal method of taking a fortress, the defence pattern had to allow for firing along the entire perimeter of the walls directly at the enemy, i.e., for frontal firing. This firing was the principal means preventing the enemy from breaking through the gates into the fortress. But round fortresses were better

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adapted for such firing than fortresses whose configuration followed the hilly terrain.   It must be noted that, as a rule, the Russian fortresses of the 11th and 12th centuries had no towers.   Each *town,* naturally, had a gate tower, but it was regarded only as a gate and is always referred to as such in Ancient Russian chronicles.

Non-gate-towers were built very rarely, and if they were built they served exclusively as observation towers and were sited on the highest elevation with the purpose of keeping the surrounding locality under observation and thus securing the fortress against a surprise attack.

This system of organizing the defence, which took shape in the second half or close of the 10th century, was predominant in Russian military engineering throughout the 11th and 12th centuries.   Tactics were improved, of course, but the fundamental principles did not undergo any essential change.

Of all the types of defensive works existing in Rus during the second half of the 10th and in the 11th centuries, the round fortresses, which were widespread in the Western Russian lands, satisfied the tactics of the period most fully.   These fortresses were situated on flat or low-lying terrain and this ensured them against a secret approach by the enemy or a sudden attack, and also made it possible to provide the

FIG. 4.—*Mikulino stronghold (ancient town of Mikulin).* 12th century. (Phot. APN.)

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fortresses with water in the event of a long siege. This type of defensive works became standard particularly in the building of feudal castles, a circumstance that made round fortresses widespread throughout Rus in the 12th century (Figs. 4 and 5).

Siege tactics changed essentially in Rus as early as the end of the 12th century and this was particularly pronounced in the first half of the 13th century. Passive siege increasingly gave way to assaults. Assault tactics, supported by catapults were adopted in Rus in the 13th century; the Russians encountered similar tactics in battle against the Poles,
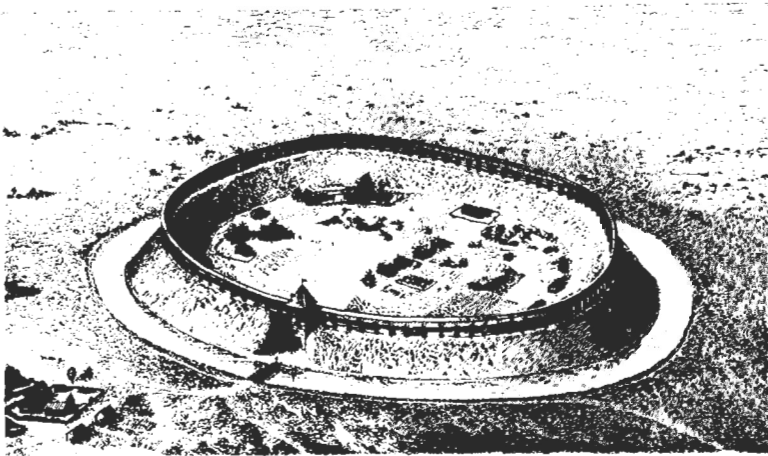

FIG. 5.—*Town of Mstislav in the 12th century*. Reconstruction. (Phot. APN.)

Hungarians and the German knights. The same tactics were also brought by the Tatar-Mongol hordes which invaded Rus in the 1230s. The Mongol invasion had a contradictory impact on Russian military architecture. On the one hand, it caused a general slide of the level of Russian military engineering, due to the grave consequences of an overwhelming defeat. The building of defensive works was halted for a fairly long period in a considerable part of Rus. On the other hand, the Mongols had mastered thoroughly elaborated assault tactics, and although such tactics were being adopted in Rus before the coming of the Mongols, it is unquestionable that the Mongol invasion accelerated the final transition of new defensive tactics. By the mid-13th century assault became the predominating method of capturing fortifications. A new form of defence

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organization and, correspondingly, new forms of defensive works were developed to counter assault tactics.

We only have very fragmentary data on the development of fortresses in the second half of the 13th century. The building of defensive works ceased for a long time in Kiev Rus after the Mongol invasion. No fortresses dating from this period are known in Northern Rus, although building or, at least, the restoration of destroyed fortifications was conducted on a small scale. The development of military architecture of the second half of the 13th century can only be traced on the example of the Western regions of Volhynia. A new tactical pattern of defence organization emerged in those regions during that period. This was the «single-

Fig. 6.—*Tower in Kamenets - Litovsk.* Second half of the 13th century. (Photograph APN.)
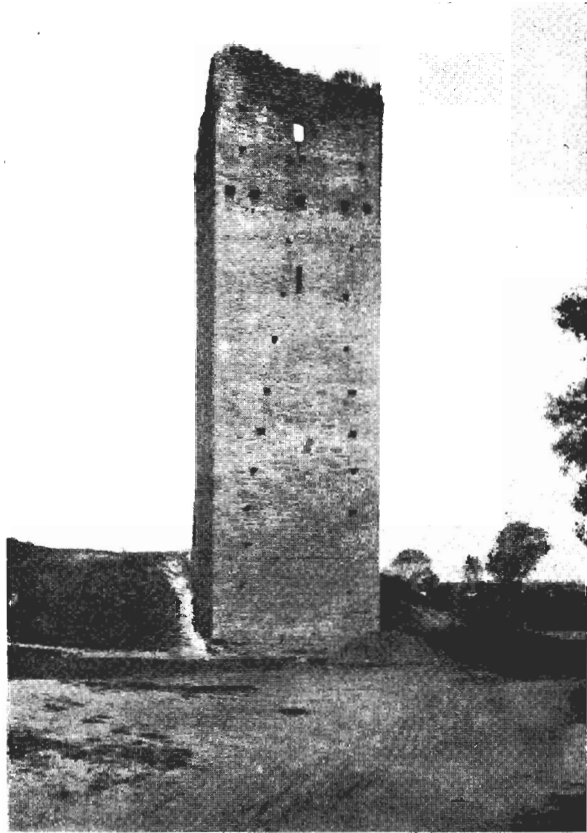
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Fig. 7.—*Tower in Stolpye near the town of Kholm.* 13th-14th centuries. (Phot. APN.)

tower fortress», i.e., a fortress, whose centre of defence was a massive tower situated mostly not along the line of the fortress walls but inside the fortified territory. Tactically, this fortress was a complete analogy of the West-European donjons. This type of fortress fully satisfied the demands made on defensive works in connection with the development of new siege methods, but in Volhynia this type acquired specific forms as a result of the influence of the military architecture of the Western neighbours. Several stone and brick towers of this period have survived (Figs. 6 and 7). The foundation of another tower has been excavated by archaeologists (Fig. 8). According to the latest investigations it is highly probable that to some extent «single-tower fortress» became

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widespread also in Novgorod principality in the first half of the 14th century.[4]

Another trend, a return to making the maximum use of the protection afforded by the terrain, became manifest in the 13th century and acquired great importance in the first half of the 14th century. During the Mongol invasion it was found that the Mongols were unable to capture the fortresses situated in places of access and against which they could not use their catapults. Indeed, inasmuch as an assault was only launched where with the aid of catapults the besiegers could crush the resistance of the defenders, those sides of the fortress where catapults could not be
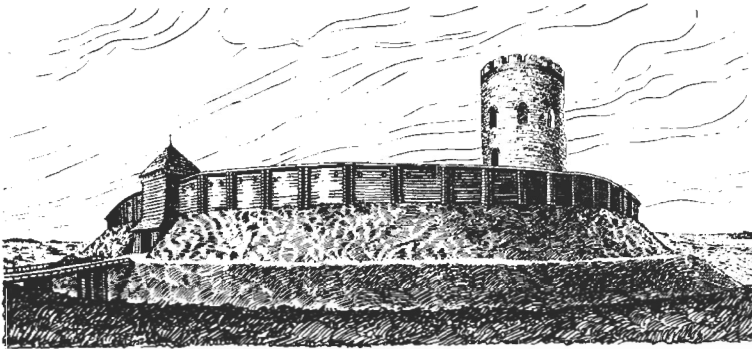

FIG. 8.—*Town of Chartoriisk in the 14th century.* Reconstruction. (Phot. APN.)

set up close to the defensive walls (not farther than 100-150 metres) were guaranteed against assault. Therefore, fortifications began to be erected on sites protected by steep banks of rivers, high slopes or wide ravines. It was only possible to storm such fortifications along a short sector of their perimeter, which had no natural obstacles to protect them and where the besiegers could set up catapults. This most vulnerable sector was fortified more strongly than the others, and towers were concentrated in it. As distinct from the donjons of an earlier period, these towers were designed not for all-round defence but for firing at the adjoining sectors of the fortress walls, i.e., they protected the flanks. Where possible the sectors of the wall between the towers followed a straight line to make the flanking fire effective (Fig. 9). This flanking fire was the most effective way of beating off an assault when the enemy was massed at the foot of the defensive walls and tried to scale them.

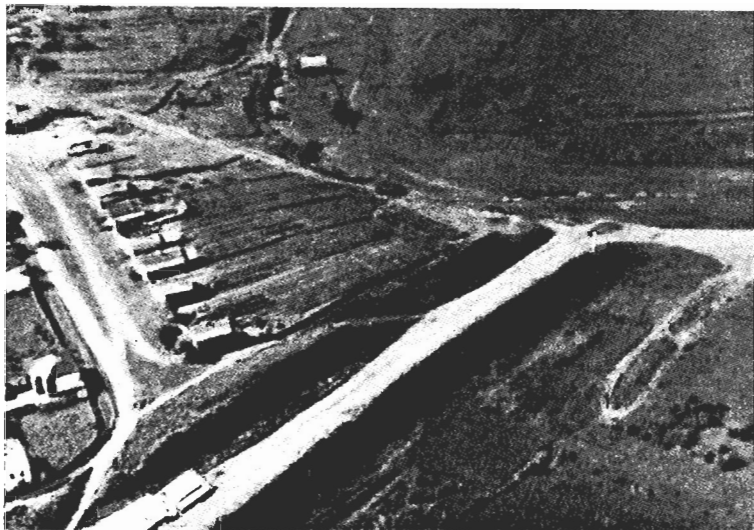[4] Investigations by V. V. KOSTOCHKIN (Moscow).

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FIG. 9.—*Rampart of the town of Staritsa.* 14th century. (Phot. APN.)

The other sides of the fortifications were adopted solely for frontal fire. This explained the «one-sided» nature of the fortresses that became finally predominant in Rus towards the mid-14th century.

Thus, there are grounds to believe that this stage of the development of Ancient Russian fortifications, a stage that began in the latter half of the 13th century, had two phases: the first, when «single-tower fortresses» became the predominant type but there already was a striving to reinforce the most vulnerable side; and the second, when the «one-sided» system of defending fortresses, ensuring flanking fire along this most vulnerable side of the wall, took final shape. Chronologically, the new stage of the development of military architecture (second half of the 13th century) does not coincide with the beginning of the feudal dismemberment of Rus, although these phenomena are undoubtedly interrelated. The emergence in the 12th century of strong and independent feudal principalities, which were frequently at war with each other and which had well-organised armies, created a situation in which assault tactics involving the use of catapults might have been evolved. These tactics became established in the first half of the 13th century, but in military architecture they were distinctly mirrored only in the second half of the same century.

Pavel Rappoport

A distinguishing feature of the defensive works of the 14th century was the differentiated approach of the builders to the structures in accordance with the place in which the given structures occupied the system of defences. The ramparts and walls facing sufficiently massive natural barriers were very small and their construction was of the simplest. The ramparts and walls facing the side where an assault could be expected were much stronger, and higher, and their design was much more complex.

As a rule, the walls of the Russian fortresses of the 14th century were made of wood. In North-Eastern Rus the only exception was the wall of the Moscow Kremlin, which was built of hewn stone in 1367-1368, when the oaken walls built thirty years before fell into decay. However,

FIG. 10.—*Porkhov. Small tower.* 1387. (Phot. APN.)

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beginning in the 14th century the Novgorod and Pskov lands built not only wooden but also stone fortresses. At this point it must be noted that while the stone towers in Volhynia of the end of the 13th and beginning of the 14th centuries were built under the influence of Polish and Hungarian military architecture, there is no trace of foreign influence in the Novgorod and Pskov stone fortresses. Some of the Novgorod and Pskov stone fortifications have survived, true, in rebuilt form. Part of the Porkhov Fortress (Fig. 10) is the only example of an unreconstructed 14th century fortification.

The appearance of cannon in Rus in the 1380s did not first introduce any change into siege tactics or the design of fortresses. True, along with catapults, the besiegers and defenders now used cannon, but in range and efficacy these early cannon were not much superior to catapults. The assault tactics of the 14th century did not therefore undergo a change. On the contrary, these tactics were vastly improved during the first half of the 15th century, and this was the period when the «one-sided» fortress achieved its perfection. Due to the development of firearms essential changes took place in the design of the towers, the thickness of the walls and, particularly, the design of the loop-holes. The walls were now made not of one but of two rows of logs with the space between them filled with earth or stones. In many cases the stone walls were reinforced with additional brickwork. The loop-holes in the stone towers built in the 15th century were wider on the inside to form chambers of a sort for cannon. The loop-holes themselves were also wider to make room for the muzzle of the cannon (Fig. 11). The design of the fortress gates became extremely intricate in the 14th-15th centuries. The simple towers over the gates gave way to short narrow corridors between the two walls. To get into the fortress it was necessary to pass through the gates, then through the corridor and then through the second, inner gates. The entire route was controlled by the defenders and was exposed to their fire. In the 15th century the gates were reinforced with a sliding grating. This grating (or portcullis) was made of iron or iron-bound timber.

The further development of artillery and, particularly, the increase of its range gave rise to new assault tactics. Under the new conditions, the cannons supporting the assault were set up at a considerably greater distance away from the fortress walls than catapults, and ensured the bombardment of the wall not from one but usually from all sides. Moreover, the bombardment now had another objective —not only to demolish the defensive breastworks but to make a breach in the walls themselves and thereby clear a path for the besiegers. The natural response to these new tactics was the building in the second half of the 15th cen-

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FIG. 11. *Fortress of Izborsk.* 15th century. (Phot. APN.)

tury of a new type of fortress —with towers evenly spaced along the
entire perimeter, thus making it possible to defend all the walls with
flanking fire. The most advanced expression of this new structure
was the «regular» fortress shaped mostly as a rectangle, in rare cases as
a triangle or a polygon. The earliest fortresses of this type are known
in Pskov region, where in the latter half of the 15th century defensive
works were built in close co-operation with Moscow to strengthen the
Western frontiers of the Russian state. In its ideal shape the new pat-
tern was first expressed in the fortress of Ivangorod, erected by the
Moscow Government on the frontier with the «Dog» Knights at the very
end of the 15th century. Originally this fortress was a square of stone
wall with four towers, one in each corner. Later, in the 16th century,

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this type of fortress became widespread in Russian military architecture (Fig. 12).

The regular geometrical lay-out of the fortresses most fully conformed to the tactical requirements of the day. But in many cases the terrain made it necessary to build irregular shaped fortifications. Nonetheless, even in such cases the towers were evenly spaced along the entire perimeter of the wall, while the sectors between the towers were straight.
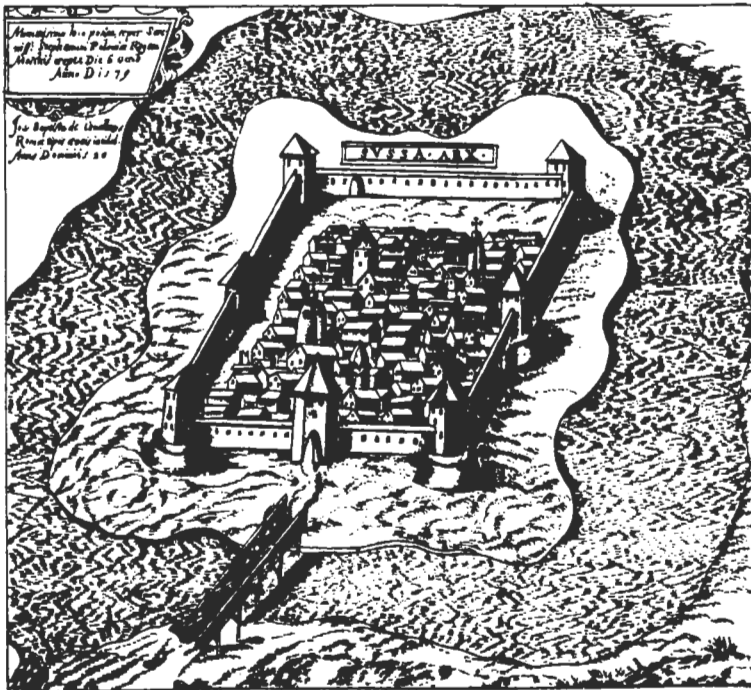

FIG. 12.—*Fortress of Kopye on Susha Island.* 16th century. (Phot. APN.)

Similarly, it was impossible to give a regular geometrical form to the fortresses built earlier or only reconstructed in the second half of the 15th century or the beginning of the 16th century on account of the new requirements of military engineering. The reconstruction of these fortresses consisted mainly in the erection of towers spaced more or less evenly, and in the straightening out of the sectors of the wall between

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the towers. Many fortresses had to be entirely rebuilt. This was the
period —from the second half of the 15th century— when in Rus stone
and brick fortresses became fairly common. Many of the stone fortresses
built in those days have survived to the present. The switch to stone
and brick defensive works was due to the advance of Russian military
engineering, chiefly to the evolution of new tactics involving the wide
use of cannon in siege and defence. However, some forms and details
of the brick fortresses sprang from the influence of Italian builders who
helped to build the Moscow Kremlin at the close of the 15th and begin-
ning of the 16th century. Some 16th century fortresses are outstanding
works of architecture, significant as relics of military arquitecture and as
works of art (Fig. 13).

Although from the close of the 15th century onwards stone and brick
fortresses became much more widespread than before, the main type of
fortification in Rus in the 16th century, too, remained wooden defensive
works. Walls in the shape of a single row of logs continued to be built
in the fortifications which were unimportant militarily. In the more
important fortresses the walls consisted of two or three parallel lines of
timber with the space between them filled with earth. These wood-

FIG. 13.—*Novgorod Kremlin. Walls and towers built anew at the close of the
15th century. Superstructure added to the high Kokui tower in the 17th cen-
tury.* (Phot. APN.)

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earth walls were as well adapted to withstand cannon balls as stone walls. In order to leave loop-holes in the wood-earth walls, log structures not filled with earth were set up at definite intervals and were used for cannon (Fig. 14).

The mass production of cannon and the wide use of artillery in the army for the purposes of siege and the defence of fortresses proved possible in Rus after it became a centralised state. Thus, the new stage of the development of military architecture, which began in the second half of the 15th century, dates from the epoch which saw the emergence of Rus as a centralised state.
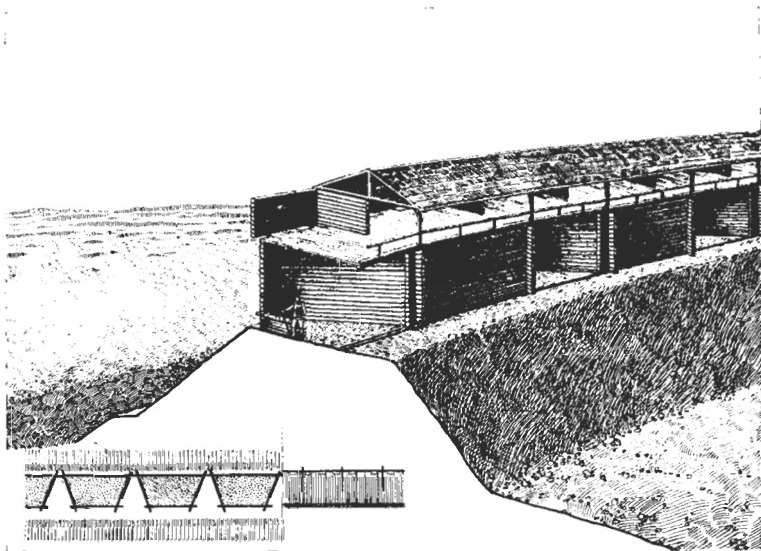

FIG. 14.—*Defensive wall of a 15th-16th century Russian town.* Reconstruction.
(Phot. APN.)

The next stage in the development of military architecture, linked with the further improvement of artillery, began in Rus only at the close of the 17th century, when the building of bastion-type earth fortifications commenced.

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A study of defensive works, their mutual territorial distribution and their military use enables us to ascertain, in the most general way at

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least, the strategic principles governing the organization of the defence of Ancient Rus and of individual Russian lands.

The early feudal state in Rus took shape under geographical conditions in which a considerable part of its territory and many political centres, including Kiev, the capital, were situated in the forest-steppe zone and were accessible to the raids of the steppe nomads. The organization of the defence of the Southern Russian lands facing the steppe was, therefore, a cardinal military-political task of Kiev Rus. But it was impossible to create a continuous defensive line along the frontier guarded by a special garrison or at least by outposts; the administrative apparatus of the early feudal state could not cope with a task of this magnitude. The assumption that in the 10th-11th centuries Rus was covered on the south by frontier lines with the so-called Zmievy Walls being their remnants has proved to be mistaken. The Zmievy Walls are actually relics dating from the Early Iron Age and have nothing to do with Ancient Rus.

The only real possibility for fortifying the South Russian boundaries in the epoch of the early feudal state was the building of fortified settlements —*towns* (in the Ancient Russian meaning of the word). During enemy invasions the population not only of the settlement itself but also of the nearby villages could take refuge in such fortifications. Over and above that, the fortified settlement played a more important, strategic role. Situated on convenient routes of approach to vital centres of Southern Rus, they were an obstacle to nomad raids. Even if under these conditions the steppe nomads undertook raids they did not penetrate far into Russian territory because they could always expect to be attacked from the rear, from the Russian fortified settlements which they failed to capture. For that reason the Kiev princes attached very great significance to the building of fortresses in the southern regions of Rus. Archaeological data and the chronicles tell us of the large scale of this military construction under the princes Vladimir and Yaroslav the Wise.

The military situation in the Southern regions of Rus changed radically in the second half of the 11th century when new enemies, the Polovtsi, appeared in the steppes. Towards the close of the 11th century the onslaught of the Polovtsi increased to the extent that the Southern boundaries of Rus were moved considerably to the North. The large number of Russian settlements throughout the forest-steppe, where their life ceased at the end of the 11th century, is evidence that the Polovtsi invasion played a much bigger role that may be surmised on the basis of records. The threat that the whole of Southern Rus would be devastated by the Polovtsi made the Russian princes strive to unite for collective resistance. With this are connected the congresses of princes and then the «autocracy» of Prince Monomakh and of his son Mstislav.

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After the defeat of the Polovtsi by Monomakh the tension in Southern Rus was somewhat relaxed and a southward migration of the Russian population began. The Russian fortresses along the Dnieper up to the mouth of the Sula and the region of Porosye were restored, and westward they were restored up to the upper reaches of the Southern Bug. However, some regions on the boundary with the steppe were not repopulated by the Russians, remaining in the hands of the nomads.

In the 12th century the result of the feudal dismemberment of Rus was that the territory of each individual principality was defended independently. To defend the Southern Russian regions against the Polovtsi, the fortresses of Porosye were manned by nomads allied to Rus, and outposts (mentioned in the Russian epic as «outposts of warriors») were set up along the boundary with the steppe. Another major element of the defensive system was the building throughout the forest-steppe zone of fortresses manned by special garrisons. Fortresses of this type were built in accordance with plans drawn up beforehand and had dwellings and outhouses linked by passages to the defensive walls. The inhabitants of such fortresses were free warriors —farmers whose social origin was apparently close to that of the Cossacks of a later day.

The emergence of many independent principalities in Rus led to the need for fortified lines not only on the external frontiers of Rus but also between the individual principalities. By virtue of specific historical conditions this fortification of the frontier was in some cases very pronounced and in others it was hardly perceptible. Particularly notable was the fortification of the frontiers between the principalities in the 14th century, chiefly where these frontiers were more or less stable. However, even in the period when feudal dismemberment flourished, greater importance was attached to the fortification of the external frontier than of the frontiers between the principalities.

There was no change in the nature of the frontier fortifications right until the 15th century: they consisted of individual fortresses situated on vantage points mainly along the routes of a possible advance by an enemy. The switch to the creation of a continuous frontier dates from the days when the Russian centralised state was formed, chiefly from the 16th century.

* * *

During the early Middle Ages the building of simple, economical and, at the same time, reliable defensive works was a task on whose successful fulfilment depended not only the property but the very lives of the people. For that reason, at fairly early stages of their development the Eastern Slavs evolved their own military engineering traditions,

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which differed somewhat in the various tribal groups but were in the long run adapted with the greatest benefit to defence needs in the conditions of the given terrain.

Later, after the Ancient Russian state was formed and consolidated, and particularly during the period of feudal dismemberment, the similarity and distinctions in the arrangement of defensive works were determined not by tribal traditions but by political factors. The building of defensive works played much too important a role in the destiny of the country for the princes to let it out of their hands. Fortification builders were not artisans but military engineers who were drawn from the administration of the various principalities. Political trends typical of the principality in which the fortifications were built, therefore, acquired vital importance in the development of military architecture. As a matter of fact, functional expediency was also decisive in the design of defensive works: the princes could fight each other, but the fortresses had to be built in one and the same way if the given type was militarily the most advanced for the given age. The link of types and designs of defensive works with political trends was, therefore, never so close as in civil architecture, where local architectural schools not only conformed exactly with the political division of Rus but largely reflected even the political relations between the different principalities.

During its initial phases the feudal dismemberment of Rus did not give rise to local schools of military architecture. On the contrary, during the 11th century the distinctions between local variants of defensive works disappeared and almost all Russian lands lost most of their distinguishing features in the development of fortresses. This process of levelling continued in the 12th-13th centuries, but the situation changed perceptibly during the latter half of the 13th century. After the Mongol invasion Galicia-Volhynia Rus and the rest of the Russian lands each adopted different schools of military architecture. The difference between the military engineering schools of Northeastern and Northwestern Rus became clearly defined.

The different variants of military architecture were influenced not only by the social system and local traditions but also by foreign political factors —the military organization and armaments of the enemies against whom the given defensive works were erected.

* * *

By studying the basic laws governing the development of Ancient Russian military architecture we are able to trace the general periods and main stages of its history. In the 8th, 9th and first half of the 10th cen-

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tury all the Ancient Russian defensive works were subordinated entirely
to the defensive possibilities afforded by the terrain and were adapted
mainly to passive defence.   The period from the latter half of the 10th to
the mid-13th century witnessed the next stage in the development of
Ancient Russian military architecture, when the organisation of frontal
firing along the entire perimeter of the walls was the predominating
principle.   The purpose of this firing was to prevent the enemy from
drawing close to the defensive walls.   The defensive possibilities of the
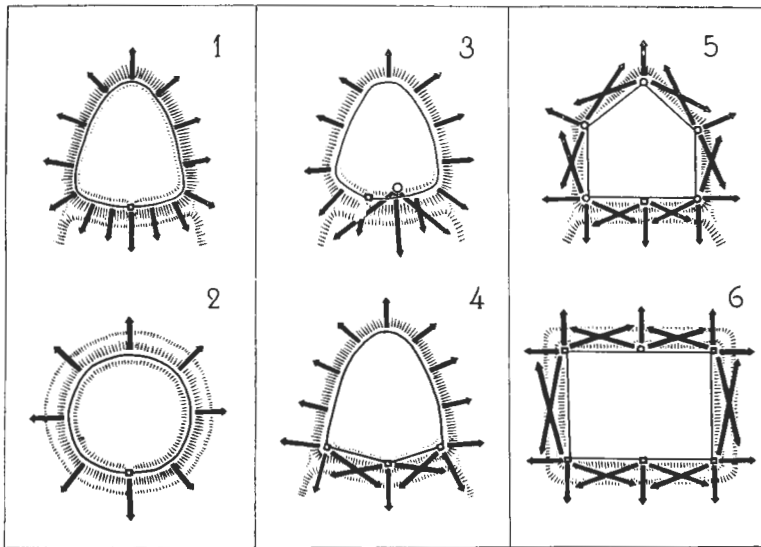terrain (Fig. 15-1) were used in the design of most of the fortifications,

Fig. 15.—*Arrangement of the defences of Ancient Russian fortresses.*
(Phot. APN.)

but in the 12th-13th centuries fortifications unconnected with the terrain
became widespread throughout the length and breadth of Rus.   They
had a regular geometrical shape (round) and were situated in flat coun-
try (Fig. 15-2).   Essential changes took place during the second half of
the 13th century, when fortresses were built to prevent the enemy from
taking them by assault.   It was taken into consideration that an assault
could be successful only if it was supported by catapults.   During the
latter half of the 13th and first half of the 14th century fortresses were

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built with one massive donjon, from which the defenders could conduct an all-round defence and aim their fire in the direction of the expected assault (Fig. 15-3). But from the mid-14th century onwards the fortresses that were built were designed for «one-sided» defence. On the side of such fortresses, where an assault could be expected, the walls were reinforced with towers which allowed for flanking fire along these sectors of the walls (Fig. 15-4). During the second half of the 15th century the development of artillery led to further changes in the arrangement of defensive works: all the walls now had to be provided with flanking fire. For this purpose the towers were spaced evenly along the entire perimeter of the walls and, particularly, in all corners (Fig. 15-5). The most advanced type of defensive works of this period were fortresses that had a regular geometrical shape, most frequently the shape of a rectangle (Fig. 15-6). The bastion system of fortification was adopted in Rus only at the close of the 17th century, following the further development of artillery.

The periods in the development of military architecture in Ancient Rus, founded exclusively on Russian records, may, quite naturally, not coincide with the periods based on the records of other, even neighbouring countries. An attempt to ascertain the most general laws of the development of the military architecture of entire regions of medieval Europe may be made only after the main stages and periods of the development of the military architecture of a whole series of countries have been established.

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