

1 RUSSIA'S HISTORICAL EXPERIENCE IN MOUNTAIN WARFARE

The knowledge basic to the art of war is empirical.

Carl von Clausewitz¹

The French victories in the Italian Alps in 1796–7 that paved the way for the defeat of the First Coalition against the French Republic, and the Swiss campaign of 1799 that provoked the disintegration of the Second Coalition, showed that armies able to extend the theatre of war to the mountains could gain a strategic advantage over their enemies. The General Staffs of the Alpine countries began to implement special training for mountain warfare in the late nineteenth century, and soon thereafter the Austrian and Italian mountain troops proved their worth during actions in the Alps in World War I. Russia's traditional theatre of war – its European portion and the lands of its western neighbours – consists mostly of plains. Since the Russian Army had rarely fought in the mountains, its generals came to the idea of special mountain forces only in the late 1920s, and even then this urge was a response to trends in Western armies rather than a product of their own original strategic thought. Once the Red Army General Staff decided to address this issue, they had to learn the strategies, tactics, and logistics of mountain warfare and raise divisions with special structure, training, and gear. As Clausewitz argues, 'Historical examples . . . provide the best kind of proof in the empirical sciences', which 'is particularly true about the art of war'; therefore, 'the detailed presentation of a historical event, and the combination of several events, make it possible to deduce a doctrine'.² In searching for a doctrine of mountain warfare, the Red Army could lean on the historical experience of the

imperial army in the mountains. Although limited, it had the potential to provide valuable lessons for future wars. Russian imperial military history includes five important episodes related to mountain warfare: the campaign against revolutionary France in the Swiss Alps in 1799, the counterinsurgency in the Caucasus in 1817–64, the war against the Ottoman Empire in 1877–8 in the Balkans, and the actions in Transcaucasia and the Carpathians during World War I. These campaigns demonstrated the scope of the strategic, tactical, and logistical challenges presented by mountain warfare. The following survey of Russian military endeavours in the mountains shows the extent of knowledge about mountain warfare available to the Red Army on which it could lean while preparing for actions during the interwar period.

The Swiss Campaign (1799)

In the summer of 1799, Russia and Austria, members of the Second Coalition against revolutionary France, planned to counter the French invasion of Switzerland. Alexander Suvorov, arguably the best Russian general ever, led his corps of 21,286 men on an impromptu 270-kilometre trek from Italy across the Swiss Alps, planning to join another Russian corps stationed near Zurich and his Austrian allies deployed to the north of the Alps; together they aimed to expel the French Army from Switzerland.³ He started the trek on 21 September without detailed maps or knowledge of the region. He planned to reach Zurich by the shortest route: via the St Gotthard pass (2,106 m) and along the Reuss valley to Lake Lucerne, and then, he thought, a shortcut along the lake's bank would lead to Schwyz and to a good road to Zurich. His force consisted of professional and battle-hardened soldiers who, however, had never fought in the mountains. Armed with the four-page *Manual on Mountain Warfare*, hastily written by Suvorov, his corps confidently headed towards the Alps, which were higher than any terrain the Russian Army had ever visited. Suvorov did not anticipate serious problems along his route in September but soon learned that the 'fog of uncertainty' was thicker and the 'friction of war'⁴ more severe in the mountains than on the plains.

The chosen shortcut route along Lake Lucerne turned out to be impassable, which forced Suvorov to march through three additional mountain passes, two of them higher than 2,000 metres (Map 1.1).



Map 1.1 The routes taken by Suvorov and his baggage train, September–October 1799

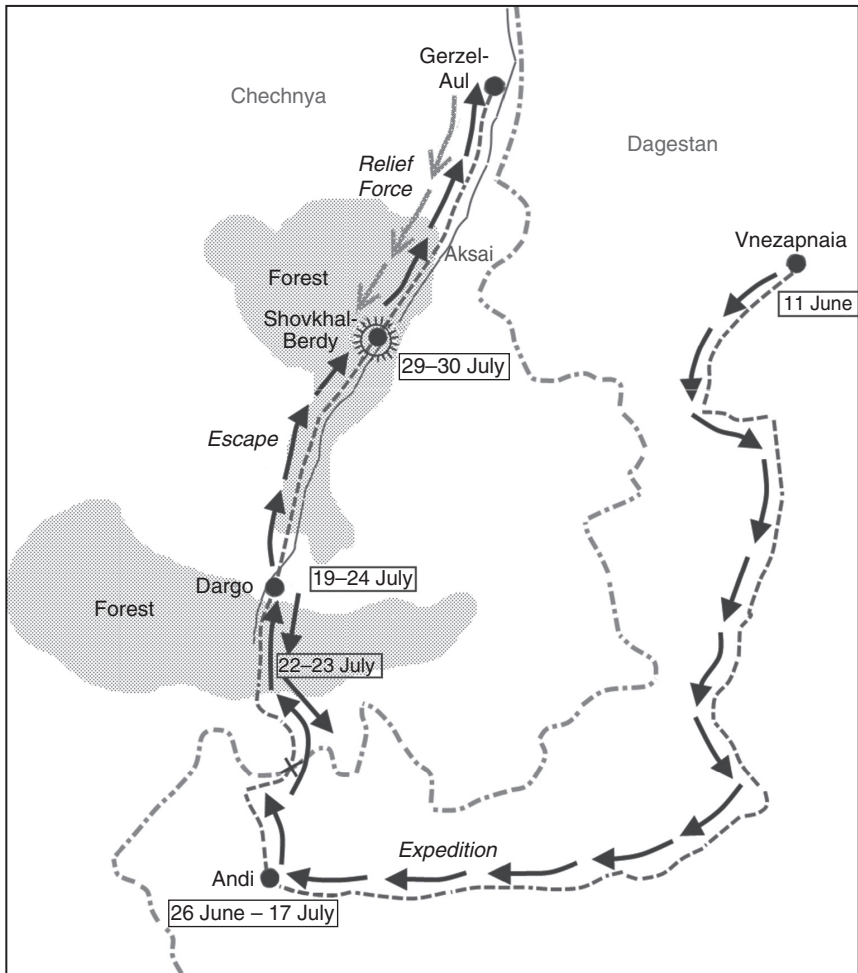
Exposed to icy wind and rain at high altitudes and shivering in their summer uniforms, the only ones they had on the hot Italian plains, his men suffered also from malnourishment because they could not live off the land in the sparsely populated highlands, while animals of the supply train suffered great attrition on rocky mountain trails, and those that were left could not keep up with the soldiers. Within two weeks, the boots of most soldiers became so worn down that their officers referred to Suvorov's army as 'mostly barefoot'.⁵ Cavalry was useless in the high mountains; the greatest service that cavalrymen provided to Suvorov

was compensating for the fallen mules by carrying supplies with their horses. Suvorov's corps experienced enormous attrition both from 'the elements, the most terrifying and merciless enemy',⁶ and from the staunch resistance offered by much smaller French forces that had, however, experience of mountain warfare and occupied good defensive positions. Suvorov could break repeatedly through the French lines only because he always attempted to outflank these positions and most often succeeded. However, Russian soldiers became increasingly demoralised by hunger and fatigue. Being unable to carry hundreds of wounded men across high mountains, Suvorov abandoned them to the mercy of the French.⁷

By the end of the seventeen-day trek on 7 October, Suvorov had lost half of his soldiers, killed, wounded, sick from hypothermia, frostbitten, or taken prisoner,⁸ many more than the French had, and all the artillery with which he had started the march.⁹ The trek across the Alps did not attain its goals because Suvorov could not link with the other Russian corps or his Austrian allies before the French crushed them. Suvorov escaped annihilation but suffered so many casualties that, in the words of Clausewitz, they 'equalled those in a lost battle'.¹⁰ Russia left the coalition as a result of the Swiss campaign and tensions with its allies, thus vitally undermining the cohesion of the alliance; the subsequent actions ended with a French victory and the disintegration of the coalition.

The Dargo Expedition (1845)

The Russian Army faced its next mountain endeavour during the Caucasus War. Russia's expansion to the mountain regions of Dagestan and Chechnya caused fierce resistance from the local tribes that began in 1817 and lasted for half a century until the Russians captured Imam Shamil, the rebels' last important military and religious leader. The Caucasus War was a long series of predominantly small-scale unconventional actions that could hardly provide valuable lessons for future campaigns against a regular enemy army. The exceptions were several large punitive expeditions intended to decisively defeat the rebels, the most dramatic of which was an expedition in the summer of 1845 launched by General Mikhail Vorontsov against Dagestani and Chechen rebellious tribes. A competent commander, Vorontsov had arrived in the Caucasus only a month before the raid; he had never



Map 1.2 The Dargo expedition, June–August 1845

fought in mountains elsewhere.¹¹ The Vorontsov force consisted of 10,616 professional soldiers with an impressive military record, most of whom, however, had no experience of action in the mountains.¹² The daring raid into the depths of the territory controlled by insurgents targeted Dargo village, the residence of Imam Shamil (Map 1.2). Vorontsov believed that the destruction of Dargo would terrify the rebels, ruin their morale, and thus end the decades-long insurgency with a single decisive blow.¹³

The expedition departed from the Vnezapnaia Fortress on 31 May 1845. The first misfortune came in early June when a vanguard regiment, advancing without tents, blankets, or food, was hit by a blizzard

at a mountain summit well above the treeline and lost 200 men frostbitten and many more sick.¹⁴ Poor weather, insufficient forage, and attacks by small insurgent bands aggravated the numerous logistical problems that inevitably occurred on the long, steep mountain trails. At the approach to Dargo, the expedition ran into a long series of barricades blocking the trail. The rebels, whose number was fifteen times smaller than the Russian force,¹⁵ stubbornly defended the barricades made of huge trees, which were hard to bypass because of dense vegetation. The expedition found itself under fire from the barricades, from ravines above and below the trail, and from trees. Firing long muzzle-loading rifles, slow to load but more accurate and with a greater range than Russian muskets, the rebels devastated the Russian column from a distance. Demoralised by their impotence, and occasionally succumbing to panic, members of the expedition struggled through knee-deep mud from one barricade to another, increasingly losing tempo.¹⁶ They reached Dargo and destroyed it but this action did not affect the rebels' determination. The expedition could not live off the land because the local population had fled their homes, while re-supply across the mountains teeming with rebels was extremely difficult. Having exhausted their supplies, the Russians had to retreat along another road.

During the retreat, the rebels, poorly armed but familiar with the mountain terrain, inflicted a decisive defeat on the expedition and surrounded it at Shovkhal-Berdy village, intending to destroy it to the last man. Only mountain artillery kept them at bay. Vorontsov began planning a breakthrough but it was possible only if the Russians abandoned their wounded men to certain death at the hands of the rebels.¹⁷ In the end, a Russian relief force lifted the siege and allowed the expedition to escape. The expedition lost one-third of its manpower. Its participants perceived the Dargo raid as a strategic defeat which 'boosted the morale of mountaineers, who saw that large military formations with a proven record of courage, well armed, well trained, and well supplied, those who had scored many glorious victories in Europe, could do almost nothing against their disorganised hordes'.¹⁸

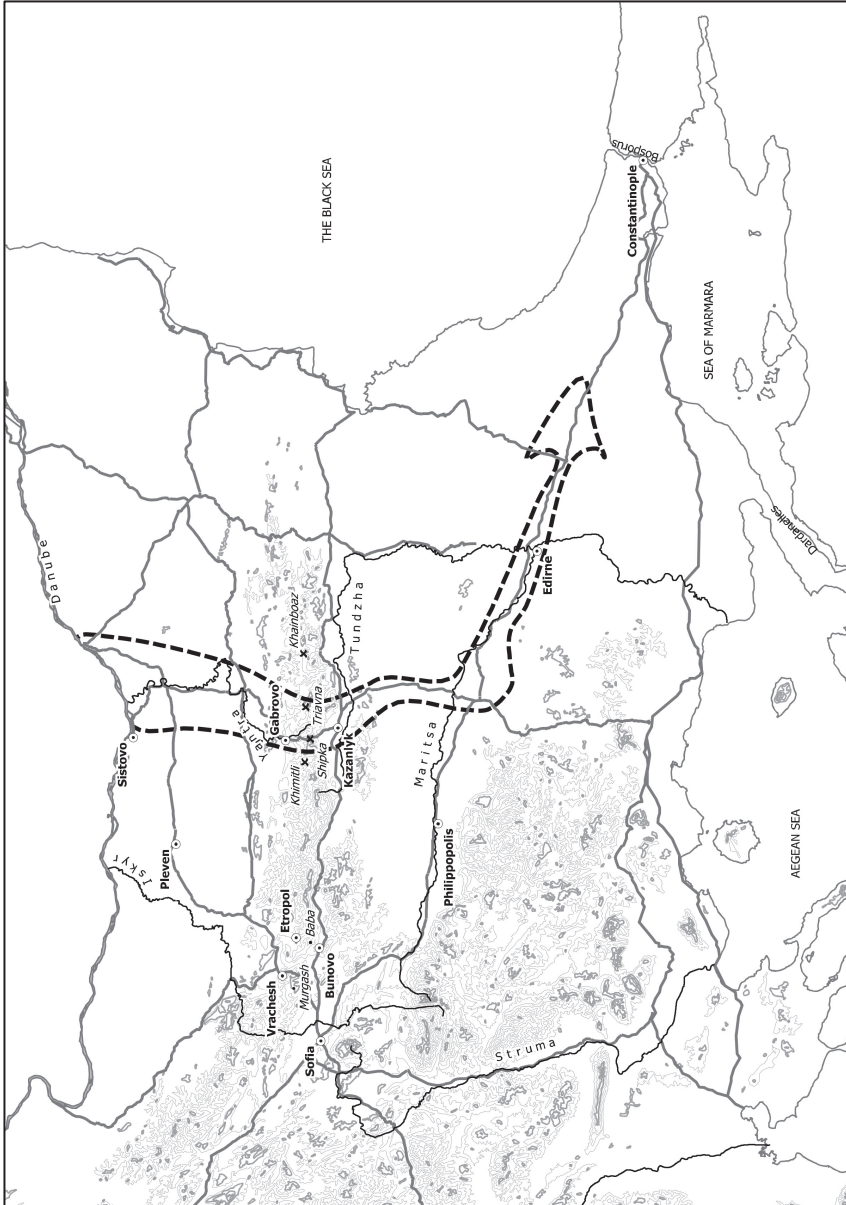
War in the Balkans (1877–1878)

In June 1877, the Russian Army invaded Bulgaria with the goal of crushing the Ottoman Empire, setting up, in its European portion,

several independent states dominated by Russia, and obtaining leverage on the Ottomans sufficient to keep the Bosphorus and Dardanelles Straits permanently open to the Russian merchant marine and the navy. The Russians planned to quickly cross the Balkan Mountains via the Shipka pass (1,150 m) and then march along the Maritsa River to Constantinople. The whole campaign was to take about a month (Map 1.3).¹⁹

The Russians took Shipka in mid July by outflanking its defenders through a neighbouring pass but postponed their march to Constantinople until the fall of Pleven, whose 40,000-strong garrison²⁰ could potentially threaten the right flank of the main forces if they advanced to Constantinople. The Shipka garrison received an order to hold the pass at any cost²¹ but was slow to fortify its positions because its officers believed that the rugged terrain provided cover in itself. Instead of digging in, engineers set seven ‘stone-throwers’ (*kamnemety*) – mines filled with gunpowder and stones – around the major positions.²² When it became clear that the Ottomans planned to retake Shipka, the Russians began building trenches in earnest, but, as it turned out, it was hard to dig the rocky soil; the standard quantity of spades and picks per unit was insufficient, and the work proceeded slowly. When the Turks attacked on 21 August, the fortifications were still embryonic.²³ In the face of the charging Turks, the nervous engineers exploded only two ‘stone-throwers’, and both were released too early to inflict any harm on the enemy.²⁴ The Russians beat off the assault in a six-day battle, although they suffered heavy casualties that could easily have been avoided had they made an effort to dig in earlier. Pleven turned out to be a hard nut to crack, which led to a stalemate at Shipka. The Russians had arrived at Shipka mostly with field guns but discovered that they also needed mortars because field guns could not hit the Ottoman living quarters and the large-calibre mortars located on the opposite slopes. After they brought several mortars and developed correction tables for firing at targets located at high angles, they began matching the Turks in the effectiveness of artillery fire.²⁵

However, they faced the rapid advance of the cold season. This part of the front remained uneventful but, despite the absence of action, in late autumn the Russians began suffering daily non-combat casualties equal to those occurring in bitter battles. These casualties stemmed from cold weather, miserable living conditions, and the inability of Russian commanders to foresee these problems and address them promptly. Since the



Map 1.3 Russian plans for the campaign against the Ottoman Empire, 1877

Russian General Staff had initially planned to finish the campaign in summer, the army had no winter uniforms, and it took a long time to deliver them from Russia. Firewood had to be brought from the valley below the pass along a road that the Turks kept under fire, so it was always scarce. Standard field kitchens were too bulky and could not surmount the steep trails leading from the main road to the highest positions located above the pass; soldiers defending them received no hot meals.²⁶ Although the average temperature in the Balkan highlands was not that low – between -5°C and -12°C , even in December and January – it dropped to -20°C during snowstorms;²⁷ extreme humidity created what felt like bone-penetrating cold, and the strong winds made the wind-chill temperatures much lower. Once ice had covered the Shipka positions, the evacuation of the wounded and the sick became a grave problem; some soldiers froze to death at the front-line dressing station while waiting for evacuation.²⁸ In November and December, the average daily casualties from disease and frostbite among the regiments deployed in the Balkan Mountains were ten times as great as the average for the entire army. From 22 November to 25 December, the defenders of Shipka lost 12 men killed and 122 wounded by enemy fire and 6,563 frostbitten and sick.²⁹ The stalemate at Shipka ended when, soon after the surrender of Pleven on 10 December, the Russian Army began crossing the Balkan Mountains through several passes simultaneously. The Ottomans did not expect such a daring manoeuvre in the midst of winter. Although some regiments lost up to 15 per cent of their personnel due to exposure during this offensive,³⁰ the Russians successfully crossed the Balkan Mountains and surrounded the Ottoman forces at Shipka, which surrendered after a two-day battle on 9 January 1878. The following swift march towards Constantinople ended with a decisive Russian victory which brought the end of the war.

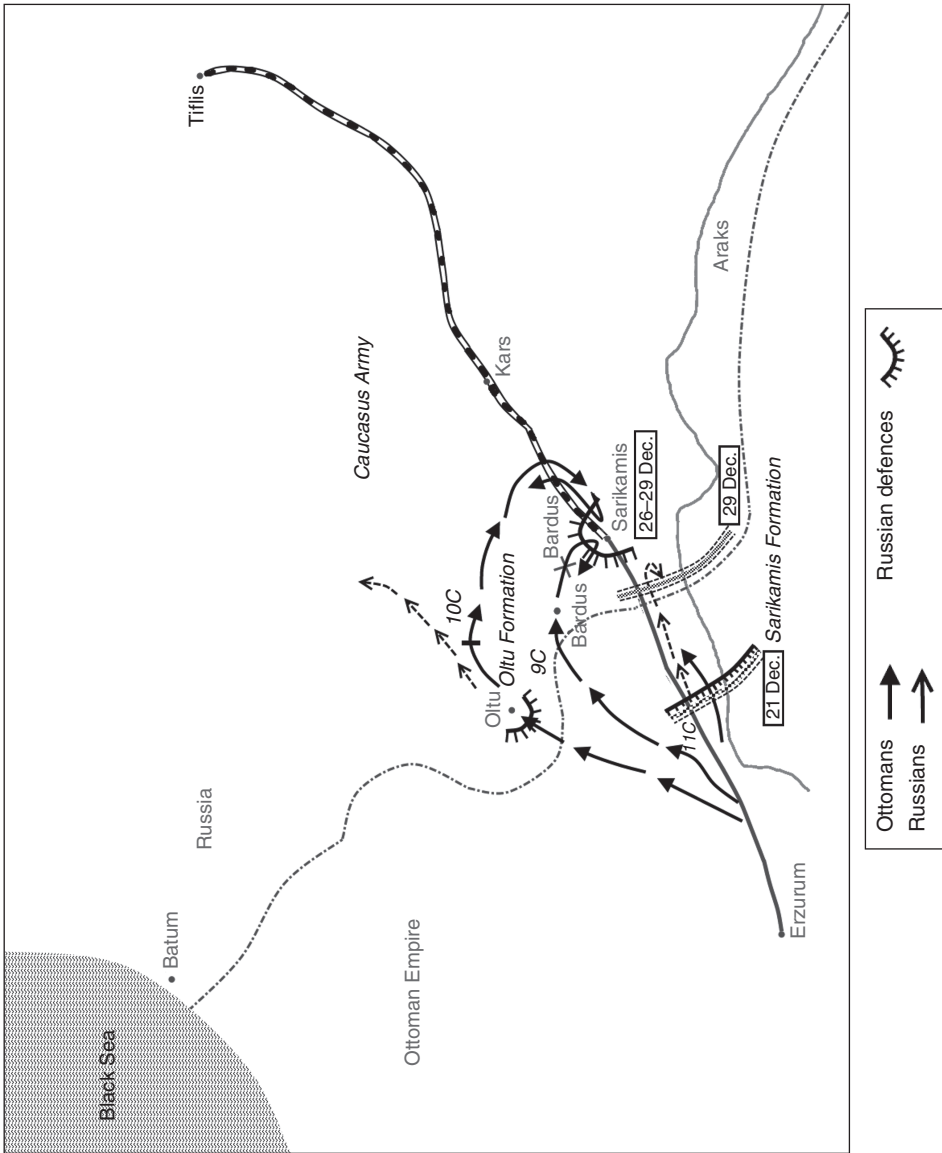
The Russians had not anticipated serious action in the mountains when they initiated this campaign. Indeed, having easily conquered the Shipka pass, they could have exited the mountains within two hours; the good road descending from the pass was free of Turks. However, the stubborn defence of Pleven forced them to interrupt their march to Constantinople and engage in mountain warfare. Since such a course of events was unplanned, it caught the Russians unprepared. Their endeavours at Shipka and during the crossing of the Balkans were the logical outcome of their ignorance in this type of action.

World War I (1914–1915)

The experiences of the Russian Army in the mountains during World War I were limited to two winter campaigns: one was a series of brief mobile actions in the Sarikamis region at the frontier between Russia and the Ottoman Empire from late December 1914 to mid January 1915, and the other, much larger in scale, occurred in the Beskids, the lowest northern part of the Carpathians, between mid January and April 1915, when the Austrian and Russian armies launched simultaneous offensives against each other. By the beginning of the war, more than a dozen military studies had already examined in detail the Swiss campaign, the Caucasus War, and the actions in the Balkans, and their participants had left many more descriptions of these campaigns. World War I provided the first occasion when the Russian Army could have utilised this limited knowledge. To what extent did it help the Russians to operate in the mountains during the war?

Sarikamis (1914)

As soon as the Ottoman Empire entered World War I in November 1914, Enver Pasha, the Ottoman war minister, began planning a major campaign against the Russian Army in Transcaucasia, intending to rout it as swiftly and decisively as the Germans had done at Tannenberg in August of that year. The Ottoman strategic offensive was the outcome of this ill-thought-out plan, which presumed a swift march by the 9th and 10th Army Corps against the Sarikamis Formation, a part of the Russian Caucasus Army, and its total destruction. The march was to proceed across the Sarikamis plateau, which was 1,500–2,000 metres high (Map 1.4). In summer, the region could be crossed in most places, even without a trail. However, in winter, the hills and the cart road network were under snow. Enver planned this offensive under the palms of Constantinople, 1,200 kilometres away from the battlefield; he arrived only nine days before the beginning of the operation.³¹ Ottoman maps showed goat paths as roads. To secure a fast-paced advance along these 'roads', Enver ordered his soldiers to leave their supply wagons behind and to reckon on living off the land. However, few people lived in the region and the advancing army, dressed in thin tunics and having no tents, had to spend the nights in the open in subzero temperatures.³²

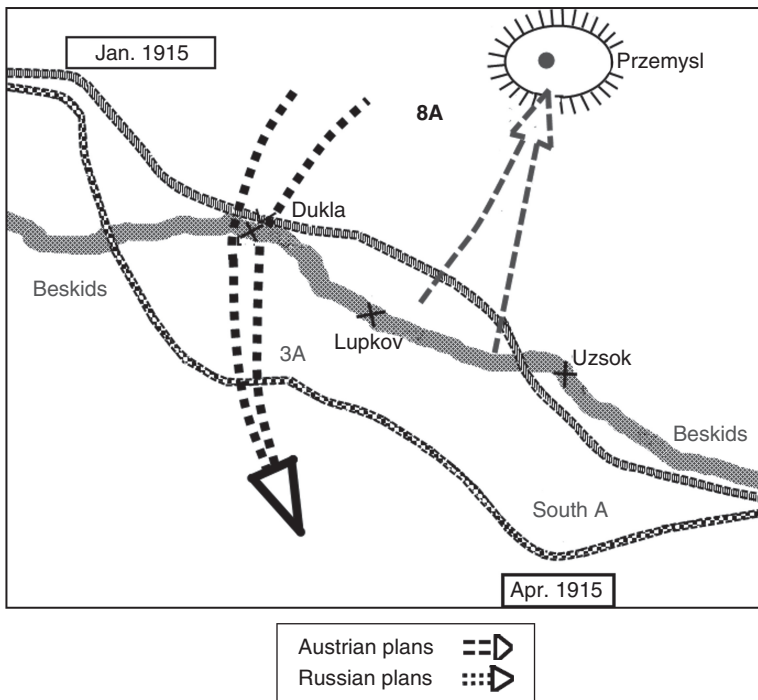


Map I.4 The Ottoman assault on Sarikamis, December 1914

The Ottoman offensive began on 22 December 1915, and on the night of 25 December the Turks approached Sarikamis town, where Russian regional headquarters were located, but the defenders beat off the assault.³³ The Russians had their quarters in the immediate rear, whereas the Turks found themselves in sparsely populated hills, exposed to bitter cold. By the time the Ottoman 9th Corps arrived at Sarikamis, its soldiers had already eaten all their food, and the draught animals of their meagre supply columns had been quickly depleted because of the cold and the absence of forage.³⁴ The starving soldiers easily succumbed to cold. The temperature plummeted to -20°C ,³⁵ and by 26 December the 9th Corps had lost half of their manpower as stragglers, sick, frostbitten, and frozen to death.³⁶ The Russians launched a counteroffensive on 30 December, planning to destroy completely the two Ottoman corps. However, during the counteroffensive, the Russians suffered from the same problems that had plagued the Ottoman attack. They had to advance without artillery because it was impossible to move it across the snow, which increased their casualties during assaults on the Ottoman positions. The co-ordination between units separated by ridges was poor; it took messengers six or seven hours, one way, to deliver information.³⁷ The Russians lost few men to frostbite while they were in positions around Sarikamis with a well-maintained rear, but during the counteroffensive frostbite knocked out 10 per cent of their manpower within three weeks.³⁸ Yet their casualties did not match those of the Ottomans, who lost 78,000 of the 90,000 men who had begun the offensive on 22 December³⁹ – killed, frostbitten, frozen or starved to death, sick with typhus, or taken prisoner. The remnants of the Ottoman 9th Corps, demoralised by their ordeal, surrendered, along with their entire headquarters, while the 10th Corps escaped with only a fraction of its manpower.⁴⁰ The battle of Sarikamis thus ended on 18 January in the rout of the Ottomans. Yet the experience Russians had gained in earlier campaigns in the mountains played no role in this outcome. Despite the fact that the Caucasus Army was deployed in a mountainous region, it had no knowledge of mountain warfare, nor did it have any special equipment. The Russians merely reacted to circumstances; it was Enver's bungles rather than the skills of his adversaries that brought them a decisive victory.

The Carpathians (1915)

The battle of the Carpathians was a long, bloody, and messy static campaign with action at a depth of about 30 kilometres. In early January 1915, the front line followed the Beskids – a series of parallel, gently sloped, forested ridges (Map 1.5). The Russian and Austrian armies both planned offensives in directions perpendicular to the ridges, which meant that the attacking army had to cross all the ridges before it could get to the plains on the other side. The Austrian offensive, launched by General Franz Conrad von Hötzendorf, chief of the Austria-Hungary General Staff, pursued the relief of Przemyśl, a fortress besieged by the Russians about 90 kilometres from the front line. Nikolai Ivanov, commander of the Russian Southwestern Front, planned an offensive across the Beskids that would open perspectives for a future advance towards the Hungarian plains.⁴¹ Neither the Austrian nor the Russian General Staff took into account the terrain or the weather conditions.



Map 1.5 The battle of the Carpathians, January–April 1915

The campaign in the Carpathians earned, in the words of Graydon Tunstall, 'the dubious title of Stalingrad of World War I', and it 'could hardly have been conducted under worse conditions', with temperatures at times plummeting to -20°C .⁴² The Russian 8th Army attacked the Austrians on 20 January, and the Austrian 3rd Army launched its offensive two days later. The action was inevitably slow because soldiers, according to Aleksei Brusilov, commander of the 8th Army, had to fight in snow 'up to their necks'.⁴³ Neither side had warm uniforms. Boots that served fairly well on the plains fell apart within several days in the mountains. The absence of white camouflage provided for good targets in the snow. It was extremely hard to pull the guns and the ammunition wagons to new positions through the snow, which was 1 to 2 metres deep. Thaws turned the Beskids' soil, infamous for its heavy clay even in summer, into impassable mud. Draught animals died in droves, both from exposure and from lack of fodder. The Beskids offered good defensive positions but the logistical difficulties led to attacks without artillery support and to the slaughter of the attackers by machinegun fire, which was hard to suppress without artillery. The Austrians suffered from lack of artillery support more than the Russians did, because they had few mountain artillery pieces,⁴⁴ whereas about a quarter of the Russians' artillery comprised mountain guns.⁴⁵ However, many Russian commanders believed that mountain terrain itself provided sufficient cover⁴⁶ and failed to fortify their positions, which led to unnecessary casualties. Supply to the front-line units disintegrated. Field kitchens got stuck in the snow far away from the front line, and food carried on soldiers' backs arrived frozen solid. The soldiers frequently found themselves without food for several days at a time. Evacuation of the wounded required enormous effort; they often froze to death before they were transported to dressing stations or died during wrenching cart rides down mountain slopes.

The combined impact of the severe environment and heavy battle produced horrendous casualties on both sides that rivalled those sustained at Verdun and the Somme.⁴⁷ Non-combat casualties from frostbite, lung and respiratory diseases caused by hypothermia, and typhus far outnumbered the casualties inflicted in battle. In early February 1915, the 3rd Austrian Army was losing an average of 500 men a day to frostbite and death by freezing. The enormous fatigue caused by such unbearable conditions ruined morale. Entire

battalions surrendered to the enemy, unable to withstand the privations any longer.⁴⁸ In the end, the Russians repelled the Austrians and then crossed the Beskids, but the Russian offensive did not achieve its goal: although Przemysl surrendered and the Russians created a large bridgehead for further advance to the south of the Beskids, their divisions – plagued by enormous casualties, insurmountable logistical problems, and the exhaustion of the demoralised soldiers – could not use this bridgehead to develop their offensive.⁴⁹ The Austrian and German reinforcements pinned down the Russians when they had already exited the Beskids. When the action stopped in mid April, the total Russian casualties equalled about 1 million men, including those sustained during the siege of Przemysl, whereas the Austrian and the German armies lost about 800,000 men.⁵⁰ Nikolai Ivanov attributed this failure to turn a tactical success, attained at an enormous cost, into a strategic one to fatigue from the severe battle environment and logistical problems. However, as Mikhail Bonch-Bruевич remarks, the Russian offensive was doomed primarily because Ivanov ignored

the local conditions in the mountains, whereas . . . the difficulty of action in the mountains in winter is the most important factor that must be taken into account during operational planning . . . The formations entering the mountains . . . broke down in their vain efforts to overcome the resistance of the elements, which was insurmountable in the absence of painstaking preliminary calculations.⁵¹

Unlike the actions at Shipka or Sarikamis, the winter offensive across the Carpathians was an operation planned by the Russian General Staff. However, there is no evidence that the masterminds behind this offensive had studied past campaigns in the mountains or undertaken any steps facilitating action in such an environment, except that they supplied this section of the front with mountain artillery. Ivanov had no knowledge of the operational terrain; his divisions had a standard infantry structure; his officers were ignorant of mountain warfare and his soldiers had only standard equipment, continued to wear standard uniforms, and ate standard low-calorie rations. To be fair, the Austrians showed even less competence in the Carpathians than the Russians did.

Lessons of Past Campaigns in the Mountains

By the end of World War I, the Russian Army had accumulated some experience in mountain warfare. While not extensive, it still offered many lessons, demonstrated specific risks and challenges, and illuminated possible ways to mitigate the risks and meet the challenges. This experience suggested strategies and tactics suitable for mountain warfare, principles of fortification, and emphases in the training of units operating in the mountains. It helped to identify necessary items of soldiers' equipment, rations, and weapons and revealed the peculiarities of logistics and medical service. The imperial Russian General Staff spared no effort in examining in detail Russian military history, including campaigns in the mountains. Its high-profile publications intended to enlighten the officer corps about various aspects of these campaigns, such as strategic planning in the mountains; tactics in mountain terrain; possible solutions to inevitable and formidable logistical problems; and specific training, gear, and composition of the units expected to operate in the mountains. These deliberations were spread across a broad range of studies that included chapters on action in the mountains. If distilled from a plethora of publications printed during the imperial period,⁵² these ideas would have read as follows.

In terms of strategy, the campaigns conducted by the imperial Russian Army implied that the margin of error is inevitably narrower in the mountains than on the plains and that impromptu actions would most likely end in failure. Mountain warfare defies amateurism, diletantism, and spontaneity. An army planning a campaign in the mountains must invest extra effort in preparations for it during peacetime. It should acquire comprehensive information on the potential operational region and take into account the limitations imposed by terrain, high altitude, and seasonal weather variations. Strategy should be simple in the mountains, because grave communication and logistical problems frustrate the coherent actions of large formations scattered at great distances, but it is hard to make it simple because the landscape inevitably splits the armies. It is easier to surprise and be surprised in the mountains than on the plains because the landscape impedes intelligence acquisition and conceals manoeuvres, and the weather complicates things by piling surprises on top of those prepared by the enemy; it can disable more men than enemy actions and often becomes a factor directing strategy. Meticulous study of the terrain during the

operational planning can thin ‘the fog of uncertainty’; therefore topographers should provide accurate large-scale maps and detailed descriptions of the potential mountainous theatre of operation well before the war, not only to facilitate operational planning but also to familiarise commanders with this theatre during exercises in peacetime. It is difficult to calculate many factors involved in mountain warfare while planning a campaign. Such planning, therefore, has to be flexible, and commanders should pursue alternative solutions if unforeseen circumstances bring the operation to a halt.

As for tactical lessons, the past campaigns showed that numerical superiority brings fewer benefits in the mountains than on the plains because the mountain landscape often prohibits the concentration of the available units at a certain point and may help a handful of soldiers to pin down a far superior force through thoughtful defence. Since both sides understand it, they should race against the enemy for better positions. The defender, rather than relying on the mountain landscape for personnel protection, should fortify not only the main position but also the neighbouring heights dominating it, and cover all the minor trails in the proximity with strongholds to block the enemy’s infiltration along these trails. Strongholds and artificial obstacles built at the right place can be more effective in the mountains than on the plains; this means that engineers should learn fortification techniques constrained by rocky terrain and test a variety of obstacles to find out which ones would be optimal in different landscapes. It is hard to dig the rocky soil; therefore, units fighting in the mountains must have extra spades, picks, and crowbars.

However, even if the fortifications are perfect, ‘the defender cannot count on pinning down a courageous and resolute enemy’ who can bypass these fortifications.⁵³ Envelopment of a well-entrenched enemy rather than frontal assaults should be the main tactic of mountain warfare, notwithstanding the frequent failures of such manoeuvres due to impassable terrain. Such envelopments can be conducted by small units. As Clausewitz observed, ‘Mountain warfare leads to atomisation of military formations; their various elements often fight on their own, which means they have to take initiative. This is true for both . . . generals and . . . every private.’⁵⁴ The atomisation poses additional challenges for command and control, especially in conditions of limited visibility. This implies that formations deployed in the mountains should have more signals personnel and

signalling equipment than those operating on the plains. Since 'the efficiency of riding messengers is low, or it may be impossible to use them',⁵⁵ alternative means of communication must be developed. The rough terrain makes it hard to quickly close in on the enemy; this means that long-range infantry weapons and skilled marksmanship are crucial in mountain warfare. Infantry should be backed by mountain artillery, which, although inevitably inferior to regular field guns, is still able to provide adequate support in a terrain prohibitive for regular cannons. Mortars and howitzers should be a part of the arsenal in the mountains because they can hit enemy positions on the opposite slopes. Artillery crews need to introduce corrections while firing at targets located at high angles; therefore, correction tables with range/elevation ratios should be developed during peacetime exercises in mountain terrain. Cavalry, however, has 'very limited use'⁵⁶ in the mountains, especially in winter.

Logistics is often the *Schwerpunkt* of mountain warfare, and logistical miscalculations are deadlier in the mountains than on the plains. Logistical problems are enormous: marches are slow and exhausting; a shorter but steeper trail often takes more time than a longer but gently sloped one. The scarcity of population in the mountains makes it difficult to live off the land or find accommodation. Soldiers are exposed to cold, bitter winds, and possibly blizzards even in summer; consequently, they must carry the most essential supplies, such as reserves of food, ammunition, warmer uniforms, and tents. However, every additional kilogram in the knapsack enhances fatigue, and the quick attrition of supply trains increases the loads carried by soldiers. Subsequently, commanders must be able to foresee what soldiers can and cannot do in a certain season, given the topography on which they operate and calculate the smallest details of logistics, such as the option of living off the land; the maximum capacity of the supply routes in certain seasons, as well as the supply priorities; the number of pack animals and local civilians that the army needs and can mobilise to secure an uninterrupted flow of supplies; and the reserves of harnesses, horseshoes, and packs. Only elaborate preparations can secure a constant flow of supplies in the mountains, preparations that would include the formation of pack animal columns, the establishment of shelters and forage depots for these columns, the deployment of numerous engineering units to maintain the trails, and the transfer of considerable manpower from the front line to logistics.

The mountain environment alone, even in the absence of enemies, distresses soldiers unaccustomed to such an environment. Since operations in the mountains presume more physical discomfort than those on the plains, and poor weather has graver consequences, a special effort must be made to maintain soldiers' morale and health, such as the prompt building of decent shelters, regular delivery of hot meals and firewood, and frequent rotation between the front line and the close rear. Since standard field kitchens cannot surmount steep and narrow trails, smaller portable kitchens and stoves have to be designed, and enough pack animals allocated to transport a steady stream of firewood from lower valleys. Given the likely interruptions in the delivery of hot meals to positions in the high mountains, soldiers deployed there should have tinned food as a substitute for regular meals. Soldiers need warmer uniforms to survive in the mountains, especially those deployed above the treeline – where winds are much stronger, temperatures are lower, and no firewood is available. They also need sturdier boots than usual. Even if soldiers are dressed appropriately, the mountain environment guarantees that casualties from non-combat causes – disease, frostbite, and injury – will be considerably higher per capita in the mountains than on the plains and, while the number of casualties inflicted by enemy fire will likely be smaller, the transportation of the wounded and sick is a thorny problem that requires special attention but offers no easy solutions; their abandonment at the mercy of the enemy can ruin the morale of able-bodied soldiers. Failure to anticipate all these problems and find viable solutions may cause far graver repercussions in the mountains than on the plains.

The mountain campaigns of the imperial army showed that an admirable past record on the plains cannot guarantee similar performance in the mountains, while the experience of the Italian Front in World War I suggested that special forces organised and trained for mountain warfare were particularly effective in the highlands. The structure of these forces – raised, preferably, from physically robust residents of mountain regions – should be adjusted to the terrain in which they are expected to operate, with a higher proportion of signals, engineering, medical, and logistical personnel than are necessary on the plains as well as reconnaissance parties able to access the most difficult sections of such terrain. Their equipment should be light because it must often be carried on horseback or on the backs of soldiers, and it should include a variety of items different from those used on the plains:

long-range infantry weapons and mountain artillery, warmer uniforms, sturdier boots, small tents and portable field kitchens, warm blankets, extra digging tools, special means for transportation of the wounded, and possibly skis and climbing gear, depending on the terrain. The individual training of a soldier fighting in the mountains must be more diverse than that of his counterpart operating on the plains. In order to acquire the expertise needed for war in the mountains and to smooth the anticipated 'friction of war', these special units should invest much time in exercises on terrain similar to that on which they are expected to fight and should learn the tactics of mountain warfare with an emphasis on the training of junior officers and individual soldiers in the development of initiative, climbing, and marksmanship skills.

All of these ideas were either expressed explicitly or were implied by imperial military scholars. However, no one summarised them in a single succinct manual. Despite impressive analyses of the past campaigns, the conclusions made by military academics had a minimal effect on how the Russian Army fought in the mountains because institutional inertia made the generals ignore the peculiarities of mountain warfare and prompted them to fight in the mountains in the same way that they fought on the plains, which resulted in costly errors.

The Intellectual Impact of Past Campaigns on Soviet Military Thought

A new approach to mountain warfare became possible only after the Red Army General Staff, impressed by the actions of mountain units in the Alps during World War I, decided to organise mountain divisions in 1929. The experience of the past, accumulated through trial and error, gave Soviet senior officers ample information to prepare the Red Army for action in the mountains, or at least for avoiding the pitfalls suffered by its imperial predecessor. In 1937, Nikolai Korsun, a professor at the Soviet Frunze Military Academy, published a detailed study of the Sarikamis operation and offered a number of ideas regarding war in the mountains. Some of those ideas repeated earlier observations made by the imperial General Staff, others developed those observations in depth, and some were advanced for the first time. Korsun's thoughts, expressed five years before the battle of the Caucasus and during a quickly deteriorating international situation,

could have given the Red Army General Staff at least a rough outline of the action needed to prepare for operations in mountain regions. He argued against an impromptu approach to mountain warfare: 'Any improvisation replacing painstaking calculations can ruin the operation. In short, two factors are most important for operational planning: precise calculations and expertise in mountain warfare among all commanders.' The troops operating in the mountains have to be able to move across rugged terrain, 'which requires the organisation of mountain units in peacetime'. These units are to be 'supplied with appropriate uniforms, including white camouflage and sunglasses, and climbing gear'.⁵⁷ Most importantly, the mountain divisions had to learn new skills that would turn them into a force able to operate in highlands far more effectively than conventional infantry.

However, while the emergence of mountain divisions as a separate army branch reduced institutional inertia, ideological constraints limited generals' ability to learn from the past. Although Suvorov's essay 'The Science of Victory' was a part of the curriculum in the Military Academy of the Red Army General Staff, and some of its ideas were even incorporated in soldiers' identification cards,⁵⁸ party leaders pointed to the fact that Suvorov was 'a devout monarchist' whose 'activities strengthened the feudal-absolutist state'.⁵⁹ Furthermore, in 1774, Suvorov marched to suppress Pugachev's Rebellion, wrongly interpreted by Soviet leaders as the greatest peasant uprising against the monarchy. That is why the Soviet interwar studies of Suvorov's heritage were limited to a small chapter in a single book and a one-page article.⁶⁰ The earlier excellent studies of the Swiss and the Balkan campaigns were kept in research libraries, but it is unknown how many Soviet officers read them. The imperial General Staff had no opportunity to study the mountain campaigns of World War I, and these campaigns received little coverage after the Bolshevik Revolution because the Bolshevik Party condemned the war as a quarrel 'between two packs of imperialist predators'.⁶¹ It was unpopular in the Red Army to study the Sarikamis operation because its main hero, General Nikolai Yudenich, later became an enemy, and the fact that Lavr Kornilov, another bitter opponent of the Bolsheviks, advanced farther than other generals during the campaign in the Beskids discouraged its study.⁶² In 1940, after his excellent monograph on the Sarikamis operation, Korsun submitted a manuscript analysing the nineteenth-century wars in the Caucasus, but the military press Voenizdat refused to publish it.⁶³ Foreign publications that covered the campaign of

1915–17 in the Alps were available to students at the General Staff Academy, but probably few of them wanted to read such publications in the thickening atmosphere of spy-mania in the 1930s. Yet the decision to raise mountain units proved that some ideas expressed in imperial Russian and foreign publications on mountain warfare had penetrated the Red Army, and some of its officers, perhaps those who had participated in World War I mountain campaigns, understood that special skills, equipment, unit structure, and logistical arrangements often made the difference between sound success and catastrophic failure in mountain warfare.

After Vladimir Lenin called Clausewitz ‘the most insightful military author’,⁶⁴ the Red Army General Staff had to acknowledge his credibility and lecture students at the Soviet General Staff Military Academy on his ideas, and Soviet military theoreticians cited *On War* to add weight to their own conclusions.⁶⁵ Clausewitz devoted four chapters of his masterpiece to mountain warfare. He made several curious observations that would not be obvious to a layperson. He warned about the tendency to inflate the strength of defensive positions in the mountains: although, indeed, ‘a unit that on open ground can be dispersed by a couple of cavalry squadrons ... can face an army in the mountains’, the idea of creating an ‘impenetrable front’⁶⁶ along a mountain ridge by relying on the advantages offered by mountain landscape is a delusion. Strategists who try this confuse the difficulty of manoeuvre in the mountains with the impassability of mountainous terrain: ‘where one is not able to march in a column, or with artillery or cavalry, one can, in most cases, still advance with infantry, or make some use of artillery’.⁶⁷ Well-trained attackers can outflank strong defensive positions built by the enemy and get into the rear, cutting enemy forces off from their supplies and provoking panic disproportionate to the strength of the enveloping units. These enveloping units, even if weak, can exploit the advantages of the mountainous terrain and prevent the attempts of the surrounded enemy to break out. Fear of such envelopment ‘weakens the contestant’s every fiber. His flanks become abnormally sensitive; indeed, every handful of soldiers that the attacker deploys ... in the rear provides new leverage towards his victory’.⁶⁸ Clausewitz came to a paradoxical conclusion regarding mountain warfare: while the defender can easily hold the enemy temporarily, ‘in a decisive battle, mountainous terrain is of no help to the defender; on the contrary ... it favours the attacker’. The attempt to create a mountain version of the Maginot Line with the hope that sheer defence

would make the mountains an impregnable fortress is 'so dangerous that the theorist cannot overstate his warnings'.⁶⁹ The conclusions on the tactics of mountain warfare made by Clausewitz were valid only if the formations operating in the mountains could manoeuvre across a rugged terrain and fight on it, for which they had to be well trained.

This was the key point of contention within the Red Army General Staff regarding mountain warfare: how much time and effort is it worth investing in the narrow specialisation of the divisions to be deployed in the mountains? While some senior officers believed that such an investment was fully justified, others supported the view expressed by a military scholar who stated in reference to mountain warfare: 'The only innovation of the West European bourgeois-aristocratic military thought in the nineteenth century was the organisation of special mountain units that allegedly were the only ones able to operate in the mountains. Suvorov's experience – crossing the Alpine ridges without special gear or training – refuted this idea.'⁷⁰ Such a stunning conclusion, ignoring the enormous casualties suffered by Suvorov's army precisely because it had no experience in mountain warfare, questioned the entire concept of special units trained, structured, and equipped for operations in a mountain environment. The Red Army policy on mountain divisions fluctuated depending on the outcomes of the struggle between a small vociferous minority who viewed this force as highly trained professionals and the large passive majority who questioned the need for a narrow military specialisation of the units operating in the mountains.