[redacted]

DEPARTMENT OF THE ARMY PAMPHLET NO. 20-292

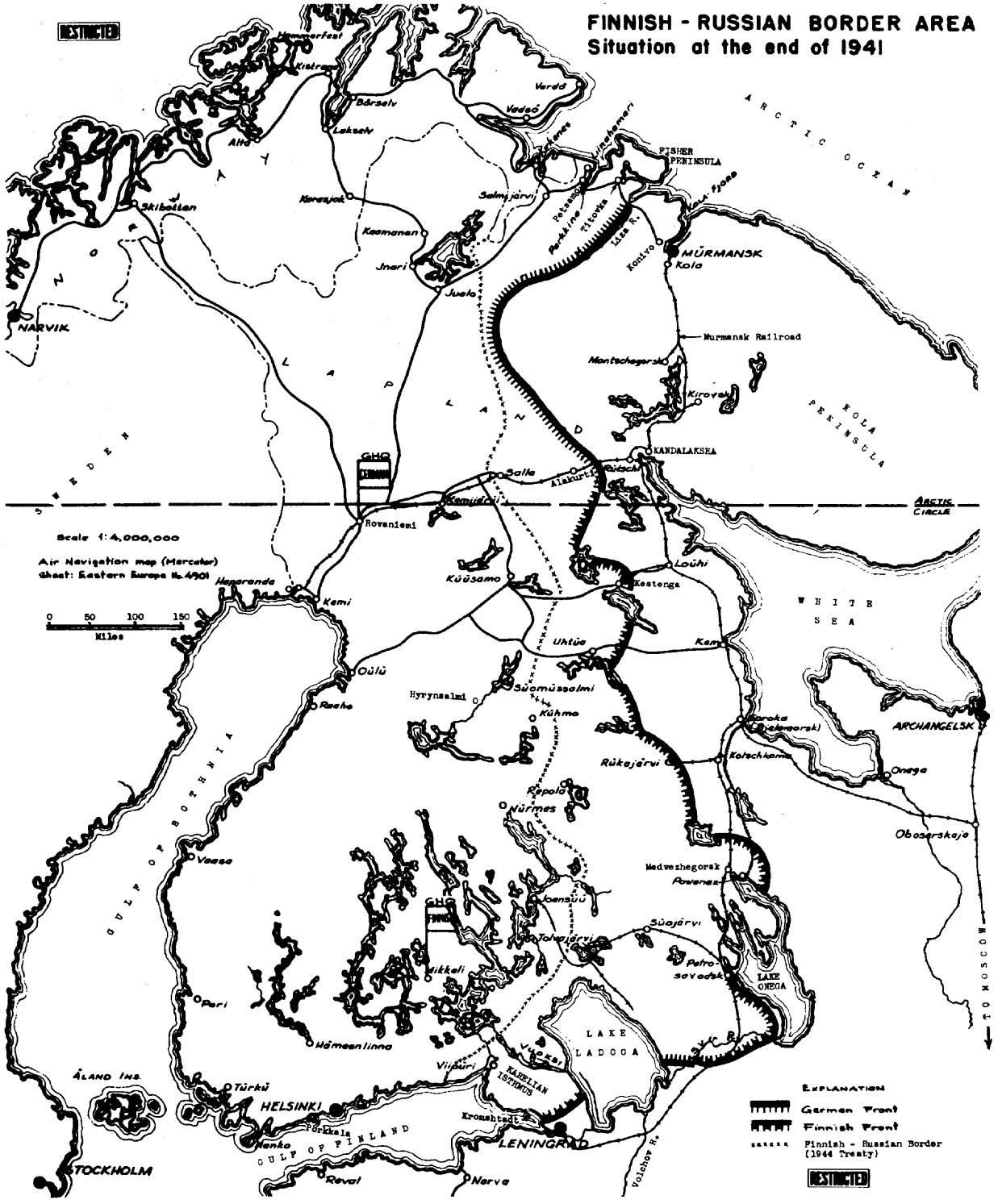
20-292
cy 2

HISTORICAL STUDY

WARFARE IN THE FAR NORTH

DEPARTMENT OF THE ARMY OCTOBER 1951

[redacted]


RESTRICTED
FINNISH - RUSSIAN BORDER AREA
Situation at the end of 1941
ARCTIC OCEAN
FISHER PENINSULA
MURMANSK
Kola
Murmansk Railroad
Montschegorsk
Kirovsk
KOLA PENINSULA
KANDALAKSHA
Salla
Alakurtti
Rovaniemi
Kemijärvi
ARCTIC CIRCLE
Scale 1:4,000,000
Air Navigation map (Mercator)
Sheet: Eastern Europe No. 4901
0 50 100 150
Miles
Hanerandа
Kemi
Kuusamo
Loukhi
Kestenga
WHITE SEA
Uhtua
Kem
Oulu
Raahe
Hyrynsalmi
Suomussalmi
Kuhmo
Kalevala (Belomorsk)
ARCHANGELSK
Kotschkoma
Onega
Rukajärvi
Repola
Nurmes
Oboserskaja
Vaasa
GULF OF BOTHNIA
Madvezhegorsk
Povenez
Joensuu
Suojärvi
Tolvajärvi
Pori
Mikkeli
Petrosovodsk
LAKE ONEGA
Hämeenlinna
LAKE LADOGA
Viipuri
KARELIAN ISTHMUS
ÅLAND INS.
Turku
HELSINKI
Porkkala
Hanko
Kronshtadt
LENINGRAD
GULF OF FINLAND
STOCKHOLM
Reval
Narva
Volchov R.
TO MOSCOW
EXPLANATION
German Front
Finnish Front
Finnish - Russian Border (1944 Treaty)
RESTRICTED

RESTRICTED

DEPARTMENT OF THE ARMY PAMPHLET NO. 20-292

This pamphlet supersedes MS. No. T-24 "Warfare in the Far North," published by the Historical Division, Special Staff, U. S. Army, in April 1948

WARFARE IN THE FAR NORTH



DEPARTMENT OF THE ARMY OCTOBER 1951

RESTRICTED

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *3 October 1951*

Department of the Army Pamphlet 20–292, Warfare in the Far North, is published for the information and guidance of all concerned.

[AG 385 (21 Aug 51)]

BY ORDER OF THE SECRETARY OF THE ARMY:

J. LAWTON COLLINS
Chief of Staff, United States Army

OFFICIAL:
WM. E. BERGIN
Major General, USA
The Adjutant General

DISTRIBUTION:
GSUSA (5); SSUSA (5) exc NGB (15); Tech Svc (25); Bd (10); AFF (25); AA Comd (2); OS Maj Comd (50); A (10); CHQ (10); D (8); R (3); Bn (4); FC (5); PMS & T (1); MAAG (2); SPECIAL DISTRIBUTION.

For explanation of distribution formula, see SR 310–90–1.

PREFACE

This pamphlet was prepared by Dr. Waldemar Erfurth at the EUCOM Historical Division Interrogation Inclosure, Neustadt, Germany, late in 1947. Dr. Erfurth represented the German Armed Forces High Command at Finnish Headquarters from June 1941 until the Finnish surrender in September 1944. He attained the rank of lieutenant general (General der Infanterie) in the German Army, and was a United States prisoner of war when this study was written.

Like all publications in the GERMAN REPORT SERIES, this is a translation from the German and presents the views of the German author without interpretation by American personnel. Throughout this pamphlet, Finnish and Russian combat methods, organization, and equipment are compared to those of the German Army. The descriptions of Finnish climate and terrain involve comparisons with that of Germany.

In the preparation of this revised edition, the German text has been retranslated, and certain changes in typography and chapter titles have been made to improve clarity and facilitate its use. The author's views, whatever they may be, find the same expression in the following translation as they do in the original German.

Those interested in a detailed history of the war in Finland, especially its political and diplomatic aspects, are referred to Dr. Erfurth's book *Der Finnische Krieg 1941–1944* (Wiesbaden, 1950). No English translation is available at this time.

CONTENTS

		Page
CHAPTER 1. THE CLIMATE		
Section I.	German Ignorance of the Artic	1
II.	Protective Measures of the Finns	4
CHAPTER 2. THE TERRAIN		
Section I.	General Characteristics	6
II.	Effect Upon Operations	7
III.	Individual Sectors	9
IV.	Significance of the Murmansk Railroad	10
V.	The Finnish Transportation Network	12
CHAPTER 3. ORGANIZATION AND TACTICS		
Section I.	Ski Troops	15
II.	Organization of Finnish Troop Units	16
III.	Finnish Training Doctrine	18
IV.	Marshal Mannerheim as a Commander	18
V.	Peculiarities of Finnish Tactics	19
VI.	Russian Tactics in the Far North	19
VII.	Lessons From the Russian Summer Offensive	22
CHAPTER 4. PROSPECTS		23
GENERAL REFERENCE MAP		Frontispiece

This pamphlet supersedes MS No. T–24, "Warfare in the Far North," published by the Historical Division, Special Staff, U. S. Army, in April 1948.

CHAPTER 1
THE CLIMATE

Section I. GERMAN IGNORANCE OF THE ARCTIC

The features peculiar to the theater of operations in the far north of Europe have given the recent wars in the Finnish area a character all their own. Terrain and climate always have a decisive influence on warfare. The tactical rules which had been worked out on the basis of experiences in central European theaters of war and which are adapted to normal conditions were applicable only to a limited extent in the cases of Karelia [1] and Lapland. In many respects warfare in the arctic follows rules of its own. The German High Command did not realize this fact until after the war was in progress. The German troops which were sent to Finland during World War II were not prepared for the special difficulties they encountered in combat in that trackless wilderness, in the endless virgin forests, and during the long arctic night. Only after paying dearly for their experiences did they become adjusted to the requirements of that theater. In the year 1941 Germany had no practical knowledge concerning the effects of intense cold on men, animals, weapons, and motor vehicles. The men in Berlin were not certain in their minds as to which type of military clothing would offer the best protection against arctic cold. In the past the German General Staff had taken no interest in the history of wars in the north and east of Europe. No accounts of the wars of Russia against the Swedes, Finns, and Poles had ever been published in German. Nobody had ever taken into account the possibility that some day German divisions would have to fight and to winter in northern Karelia and on the Murmansk coast. The German General Staff was inclined on the whole to limit its studies to the central European region. Only a few men (for instance, Baron von der Goltz, Count von Schlieffen, Baron von Freytag-Loringhofen) had attempted to have a larger area covered

[1] Karelia is a somewhat vague regional designation that applies to the area north and west of Lake Ladoga and west and south of the White Sea. The area was roughly bisected by the old (pre-1939) Russo-Finnish frontier, but most of it is now within the Karelo-Finnish Republic of the USSR.

in the study program of General Staff officers. However, in so doing, they had encountered the opposition of the older generation which had been brought up in the tradition of von Moltke and which considered it sufficient to study the countries immediately surrounding Germany. In the absence of any stimulation on the part of the leaders of Germany's foreign policy toward more extensive studies, the northern regions of Europe remained practically unknown to the German soldier. From the days of Count von Schlieffen to the year 1940, the German General Staff in its studies on strategic concentrations had no longer concerned itself with the problem of an offensive campaign into Russia. The fact that the German soldier, finding himself involved quite suddenly in an offensive against the Murmansk railroad, was able after a certain period of adjustment to accustom himself to the peculiarities of the theater and make the best of the difficult conditions encountered in that type of warfare is proof of the great adaptability of the German soldier and is deserving of highest recognition. The Finns and the Russians were thoroughly familiar with the organization, clothing, equipment, armament, and troop training methods best suited for the theater situated between the Gulf of Finland and the Arctic Ocean, as well as with the most suitable tactics to be employed. Both are good and tough soldiers, knowing by sure instinct what has to be done in this terrain and climate. When the German soldier first came to the arctic, he was a tenderfoot, but by following the example of his Finnish brother-in-arms he reduced the differences between himself and his model with comparative speed.

Because of the valuable qualities of the Finnish soldier, all German commanders on the Finnish-German front tried to have Finnish units attached to them whenever independent missions were assigned to the German units. How long Mannerheim wrangled with General Dietl at the beginning of the year 1943 about the return of the four Finnish battalions which had remained under the command of the German Twentieth Mountain Army! The endless Karelian forests had a discomforting, indeed a downright sinister, effect upon the German soldiers, many of whom had been raised in cities. They were depressed by the apparent limitlessness of the woods. On the other hand, the Finn who had grown up in the forests did not even notice the difficulties which made life hard for the German soldiers and, moreover, always knew how to act and what to do. After the heavy fighting of the summer and fall of 1941 in the Suojaervi area, near Kestenga, near Salla, and on the Liza, during which the German divisions suffered considerable losses without reaching their objective, the morale of some of the German troops had lowered noticeably. The realization that the prospects

of going on furlough to Germany were becoming steadily poorer because of the crisis affecting the Finnish railroads and the freezing-over of the Baltic Sea had a depressing influence upon the German troops. Since the mail service became increasingly slower and more irregular because of winter weather conditions, a feeling of isolation was spreading among the soldiers. During that period German officers would occasionally make remarks more or less as follows: "The German soldier is anxious to leave these never-ending Karelian woods; with half the losses, the Finns will accomplish twice as much here as the Germans."

Correctly interpreting this situation, the German Army High Command turned in the fall of 1941 to Finnish General Headquarters for assistance. This was willingly and generously granted by Marshal Mannerheim. Beginning in the winter of 1941–42, courses in winter warfare of approximately twenty days' duration took place regularly in Finland. The Finns provided the instructor personnel, the school troops, and the school facilities for these courses. The students (mostly officers, but also some noncommissioned officers) were taken from the German eastern front. The instruction courses were held at several places in southern Finland: at the Kankaanpaa troop training center near Pori, at Camp Parola near Haemeenlinna, and in the Tuusola Civic Guard School near Helsinki. The German troop training center at Gross-Born was utilized on only one occasion when, owing to the freezing of the Baltic Sea in the beginning of 1942, it was impossible to move the Germans participating in these courses to Finland by boat. In this one instance the Finnish instructors were taken to Germany by airplane.

In the beginning the purpose of these courses was training in winter warfare, since the particularly hard winter of 1941–42 had caused considerable losses and critical reverses on the German eastern front. When the Germans requested that these courses be continued also in the summer in order to make the greatest possible number of German officers acquainted with the Finnish theater of war, the curriculum was extended to include training in combat in woods. During these courses, Finnish instructors with Finnish school troops at their disposal trained German regimental and battalion commanders in the command of these units in the dense forest. Also younger officers were trained in the conduct of combat patrols and long-range reconnaissance missions. Moreover, courses in long-distance skiing were held during the cold season.

These courses took into account that the largest part of Finland and the bordering regions to the east, as well as the northern part of Russia, constitute continuous wooded regions which are for the most part completely unexplored, and that the northern winter, of

967134—51——2

a severity to which the central European is not accustomed (deep snow, all waterways solidly frozen, very low temperatures, long nights), lasts through the greater part of the year.

Section II. PROTECTIVE MEASURES OF THE FINNS

The Finn, who learns to use an axe and a saw from childhood on, was able to make use of the means available in the woods and to spend the night in the open even in the most severe cold. The clothing of the Finnish soldier (fur cap with ear and neck protector, warm underwear, woolen scarf, fur gloves, warm footgear [2]) offered good protection against the cold. The Finnish tents, which were made of plywood and could be heated, proved to be very satisfactory. They could be put up quickly and moved easily. In wintertime these tents were set up for even a rest of but a few hours. When tents could not be set up, the Finnish troops built log fires and windbreaks in the open very rapidly. Whenever a pause of several days occurred during an advance, barrack-like huts were constructed with amazing speed. These offered protection against the cold and, in case the troops stayed in the same place for some time, were improved until they were quite comfortable. Thanks to the background and appropriate training of the troops, frostbite was practically unknown among the Finnish soldiers. In December 1941, when news reached Finland about the heavy losses the German Army was suffering in Russia because of the severe winter, Marshal Mannerheim made the following remarks on the subject: "Losses among the troops because of frost weigh heavier on the commander's conscience than battle casualties. Because in this case there always remains the disturbing feeling that losses due to the cold might possibly have been avoided if greater precautions had been taken."

The Finnish Supreme Commander could not understand why the High Command of the German Armed Forces and the Army administrative agencies had not made greater efforts in proper season to increase the German Army's ability to withstand the arduous Russian winter. The impression which Mannerheim, in his capacity as a general of the Czarist Army, had gained of German soldiers on the Russian front in the First World War had given him a high respect for the careful and timely planning of the administrative agencies of the German Army. All the less could he understand the crisis which materialized in the winter of 1941–42 on the German eastern front, especially since he was not aware of the causes which had

[2] In wintertime the Finnish soldier wears boots of a larger size than in summertime so that he can wear two pairs of woolen socks.

brought it about, such as, for example, the insufficient transport capacity of the railroads.

On the Finnish front, too, during the first year of joint warfare, many difficulties arose among the German troops which had an unfavorable effect upon the course of the war in the year 1941. However, the arctic climate was not the only peculiarity of the northern theater of war which made life hard for the German soldier. In comparison with the unhappy experiences of the German forces in Russia which resulted from the sudden beginning of winter, the German Army in Lapland was actually able to adjust itself to the requirements of the climate in the Far North with comparative speed and without great losses. The troops were able to cope in a surprisingly efficient manner with the inclemencies of the weather, the great variations in temperature (ranging from 95° F. in the summer to −40° F. in the winter), the heavy snowstorms, the long polar night, and the constant daylight in the summer. The ability of the German soldier to adjust to conditions on the Lapland front was enhanced by the facts that (a) the change-over from offensive to defensive in the fall of 1941 had been executed at such an early date that the construction of fortifications had progressed sufficiently by the time winter started; (b) there was an abundance of wood in the Karelian forests; and (c) supplies from Germany (winter clothing, warm quilted trousers, quilted blouses with hoods, snow shirts, a second blanket for every man, and good rations rich in vitamins) reached the troops on time despite the transportation crisis which materialized in Finland during the winter of 1941–42. There were difficulties only in the Murmansk sector, where the construction of fortified winter quarters in the rocky subsoil of the tundra was extremely difficult. Moreover, it was necessary to bring the required wood from great distances to the treeless coast of the Arctic Ocean. This instance once more proved the absolute necessity of making intensive and timely preparations for winter in the Far North. Nevertheless, it may be said that once the German troops became acclimated to Lapland their physical condition was and continued to be entirely satisfactory.

CHAPTER 2

THE TERRAIN

Section I. GENERAL CHARACTERISTICS

The peculiarities of the Finnish theater of war that caused the greatest combat difficulties were the absolute lack of roads and the close character of the terrain which, with its vast zone of virgin forests, is so very different from the European landscape in latitudes farther south. The Karelian woods are under no forestry management such as is commonly applied in central Europe. The primeval forest is the result of natural reseeding. Old and young stands of trees are intermingled and frequently give rise to impenetrable thickets. This boundless forest is virtually unexplored. Throughout the trackless, desolate region deepest solitude and deathly silence reign supreme. Lakes, swamps, moors, and loose rock are characteristic of the Karelian landscape. Although on the Karelian Isthmus (the corridor between the Gulf of Finland and Lake Ladoga) and in the area between Lake Ladoga and Lake Onega the woods in some places are very dense and include old stands of trees, the timber becomes lighter and weaker the farther one goes north, until at last only scattered trees and bushes extend upward from an inextricable tangle of large rocks. In the Far North, rocky ground covered with reindeer moss, lichens, and blueberry, cranberry, and juniper bushes predominates in the wilderness. In the part of Karelia between Lake Onega and the White Sea, the tree line is about five hundred feet above sea level. Birches grow on the slopes between the conifer-covered dales and the bare tops of the mountains, which are less than a thousand feet high. The conifers disappear completely north of the Arctic Circle. This is a favorable region for birch forests, so characteristic of Lapland, with their short trunks often branching out like bushes. In the Petsamo region the completely treeless tundra extends up to the coast, where it changes into bare shingle along the Arctic Ocean.

This is an heroic landscape which has remained completely untouched by modern civilization. Since the dim past little or nothing has changed there. As in those days of long ago described in the songs of the Finnish epic, the "Kalevala," the hunter and fisher, the Lapp nomad with his reindeer herds, the individual loving solitude lives in the primeval wilderness, constantly struggling with the forces of nature.

Section II. EFFECT UPON OPERATIONS

Experiences gained during the Finnish-Soviet Winter War of 1939–40 had furnished certain definite indications for the conduct of operations in Karelia and Lapland. The course of this war had taught the following lessons:

1. The natural conditions along the frontier between Finland and the Soviet Union, the extremely extensive, pathless wasteland of the frontier region, the uneven terrain covered with loose rock and consequently passable only with difficulty, and the negligible development of roads are not suited to operations with large masses of troops of low mobility. Over broad stretches of country it is in many cases impossible to conduct operations involving large organizations, and in some instances it is pointless.

2. From the strategic point of view the importance of the different sectors of the frontier region varies widely. Gain or loss of areas far removed from any kind of communication is of no decisive importance to the further course of war.

3. The characteristics of terrain and climate in the Far North are such that winter is the more favorable season for offensive campaigns, while summer is more suitable for defensive operations. Early and late winter are particularly favorable for attack operations; midwinter with its deep snow is a less appropriate time for offensive warfare.

4. The transitions from winter to summer and from summer to winter constitute the muddy periods when use of the roads temporarily ceases or is greatly limited. The muddy period in the fall does not last as long as that in the spring. Because of the hard granitic soil of Finland and Russian Karelia, the roads usually dry out much quicker there than in southern Russia. In the Far North the principal concern is the melting of the snow which has fallen during the winter. The Finns have great experience and have developed special techniques (snowplows, road-graders, etc.) to keep the main highways free from snow and open throughout the winter for the use of mail trucks and buses. The effect of brief periods of rain, which in Russia proper turn the roads into a hopeless condition, is negligible in Finland and the border area. During the muddy season, especially in the spring, there is no chance for effective air support because it is impossible for units of any considerable size to take off from the completely flooded airfields. Provisions were made to maintain flying operations on a limited scale through installation of latticed wooden runways. In these cases it was necessary to park the airplanes either on the runways or in their immediate vicinity. Such a procedure cannot be applied for organizations of

any considerable size unless one accepts the necessity of expending enormous amounts of material and labor in the construction of latticed wooden runways and taxiing strips to the hardstands. Since both opponents were faced by identical conditions, air force activity, with only a few exceptions, was almost completely suspended on both sides during the muddy season.

The period between the Winter War of 1939–40 [3] and the outbreak of the Finnish War against Russia in June 1941 was too short and the German Armed Forces High Command was too involved in other problems at that time to make possible the application of Finnish experiences to the advantage of the German troops. It was soon realized though that the horse-drawn and the motorized organizations of the German Army and the Waffen-SS which had been sent to Finland were too cumbersome. The Finnish Army, highly mobile both in summer and in winter because of its economical but very appropriate organization, would have been a good model for a suitable reorganization of the German troops operating in Finland. Fortunately, Dietl's mountain corps, which had been brought from northern Norway and assigned the missions first of occupying the Petsamo area and later of attacking in the direction of Murmansk, was equipped with pack animals like all German mountain troops. Even though the Karelian area certainly cannot be considered as mountainous terrain, this type of organization proved very satisfactory since the pack animals were able to proceed off the roads and were not susceptible to the cold. As a consequence, during the later course of the war the German organizations selected for duty in Finland consisted preferably of mountain troops. Nevertheless, it should be pointed out that even the trains of the mountain troops were much too bulky and cumbersome for the conditions prevailing in Finland.

During the Winter War the Finns gained experience in defensive operations conducted during the season of the year least suited for such operations. In World War II [4] Finnish and German troops took the offensive at the beginning of July 1941 along the long front between the Gulf of Finland and the Arctic Ocean. Not only during this war of movement but also throughout the entire duration of the immediately ensuing war of position, all operations in the Finnish theater in World War II took place in the same regions as did the Winter War. This facilitated the collection of certain experiences gained during both wars. The Winter War experiences of the Finnish Army were fully confirmed during World War II.

---

[3] The Winter War began 30 November 1939 and ended 13 March 1940.

[4] Finland declared war on Russia on 26 June 1941 and sued for peace on 19 September 1944.

Section III. INDIVIDUAL SECTORS

In both wars the attackers as well as the defenders concentrated their main forces on the Karelian Isthmus and in the area northeast of Lake Ladoga. There never were any doubts or differences of opinion at Finnish General Headquarters about the strategic importance of the Karelian Isthmus and its suitability for the operations of strong forces. The road net in that region is well developed and in good repair so that operations by strong forces can be carried out on the Karelian Isthmus in both summer and winter.

The terrain estimate of the area northeast of Lake Ladoga was not quite so clear to the Finns. During the Winter War comparatively weak Finnish forces by bold counterattacks stopped the advance of the Red Army immediately northeast of Lake Ladoga and in the wooded and lake area of Tolvajaervi. The German Army High Command wanted the main body of the Finnish forces to advance in this region in the summer of 1941. The Finns, however, felt that the number and condition of the roads in Russian Karelia northeast of Lake Ladoga would be inadequate for the advance and the supply of troops in any considerable numbers. This view proved to be erroneous in the course of the Finnish summer offensive in the direction of the Svir and Petrosavodsk. Very soon there was a lack of divisions rather than roads. Additional forces had to be brought by rail from the Karelian Isthmus, where they could be spared, to the region northeast of Lake Ladoga. Thanks to this most timely reinforcement, the objective of the Finnish offensive towards the Svir was reached in a swift operation. Farther north on the Finnish eastern border, Finnish and German troops pressed forward on the same roads over which the Red Army had invaded Finland during the Winter War. The following are the roads which run from the Murmansk railroad in the direction of the Finnish border and which were used by the Finns and the Germans:

1. The Kotshkoma–Rukajaervi road, the continuation of which via Repola toward Nurmes or Kuhmo had been inadequate for the Finns for moving troops and supplies in the year 1941. This inadequacy made it necessary to build a parallel military road for rather long distances.
2. The Kem–Uhtua–Suomussalmi road.
3. The Louhi–Kestenga–Kuusamo road (this road had been spared by the Russians in the Winter War).
4. The Kandalaksha–Alakurti–Salla–Kemijaervi road.
5. The "Russian" road along the arctic coast, which had been built after the Moscow Treaty of 1940 from Konivo on the Kola Fjord via Titovka up to the Finnish border and which from the summer of

1941 had been improved in the zone of the German troops. (The Russian Winter War invasion in the Petsamo region did not come from Murmansk but from the Fisher Peninsula.)

Out of this arose the well-known World War II designations of sectors:[5]

1. Rukajaervi (Kotshkoma),
2. Uhtua (Kem),
3. Kestenga (Louhi),
4. Salla (Kandalaksha), and
5. Petsamo (Murmansk).

The regions between these sectors, entirely remote from any traffic, remained completely untouched by the war. No attempt was made by either side to penetrate deeper into the vast, trackless wastes of the border marshes. After the war of movement had given way to position warfare, Russian partisan detachments and Finnish *Sissi*[6] patrols attempted at times to encircle the flank of one sector or another in order to interrupt the flow of supplies or to rouse the sparse population of the border zone. But these undertakings only bore the stamp of minor warfare and were of no consequence to the main task.

Section IV. SIGNIFICANCE OF THE MURMANSK RAILROAD

The Murmansk railroad played a very special role in World War II. It was the most important strategic objective for the Finns and Germans; only by seizing it could the Soviet Union be cut off from supplies coming from the U. S. A. and Great Britain over the shortest route by way of the Arctic Ocean.

The fight for the Murmansk railroad disclosed the undeniable superiority of the Red Army over the Germans and Finns in the realm of transportation. The fact that all offensive plans of the Finns and the Germans came to naught in the region between Lake Onega and the Arctic Ocean can be traced in the last analysis to the existence of the railroad and its undisturbed operation by the Russians. The importance of this fact warrants our taking a look at the transportation situation in the Russo-Finnish border region.

The railroad from Petrosavodsk to Murmansk was built during World War I and was a continuation of the Leningrad–Petrosavodsk line constructed back in 1899. As the means of communication with the only ice-free Russian harbor on the Murmansk coast, it was not only of great importance in marine commerce but also

[5] The designation was derived mostly from the main locality in the German-Finnish zone, sometimes also from the objective on the Murmansk railroad (designated in parentheses).

[6] Detachments composed of border population familiar with conditions in the wilderness.

in a war against Finland it assured the Red Army of a great strategic superiority over its Finnish neighbor. Primarily, it enabled the Russian Army to assemble and shift troops rapidly along the eastern frontiers of Finland. The automobile road from Rovaniemi to Petsamo (the so-called Arctic Highway), built by the Finns and completed in 1929, had promoted tourist traffic to Finnish Lapland, but for military transportation it could not compare at all with the capacity of the Murmansk railroad. The northernmost Finnish railroad running from Kemi (on the Gulf of Bothnia) via Rovaniemi to Kemijaervi was the least efficient of the Finnish railroads.

The efficiency of the Murmansk railroad during the last war was estimated as follows: The railroad bed was not good and repairs were often necessary. But the Russians had the required personnel and materiel ready at numerous points for rapid repairs. The average speed of the trains was 20–25 miles per hour. The Leningrad–Petrosavodsk line was double-tracked. At the time of the Finnish surrender (1944) the intended double-tracking of the rest of the line had not yet been carried out. The average daily traffic on the Soroka–Kandalaksha line in the summer of 1942 amounted to 10–15 trains in two sections in both directions. An increase up to 40 trains in two sections daily is alleged to have been possible. Bituminous coal was the fuel generally used for the locomotives. In 1939 the line was electrified from Kandalaksha to Murmansk. The average speed on this stretch is said to have been 40 miles per hour.

By the laying of a new single-track railroad in 1938–41 from Soroka via the region south of the White Sea to Oboserskaya (on the Archangelsk–Moscow railroad), the Murmansk railroad was connected with the Archangelsk railroad and thereby to the railroad net of inner Russia, greatly increasing its strategic possibilities. When enemy action impeded railroad traffic at any point along the Leningrad-Sodoka line, the front in the Far North up to the arctic coast could always be supplied by making use of the new Oboserskaya–Soroka railroad. That was the case, for example, in the summer of 1941, after the Finns had first cut the Murmansk railroad at the Svir River, and later had taken possession of the entire line from the Svir via Petrosavodsk to Medvezhegorsk and beyond. The supply of the Soviet front in the Far North as well as Anglo-American lend-lease shipments to Russia remained completely undisturbed by the loss of the southern portion of the Murmansk railroad.

As far as is known the Finnish-German offensive of 1941 at no point reached its objective—the vital northern stretch of the Murmansk railroad. Soviet resistance could not be broken despite repeated attempts; but the Red Army, which eventually passed to the offensive, did not fare much better. In stubborn and costly fighting the most

that could be gained was small improvements of position, but at no point was a decisive success achieved.

After the Germans and Finns had failed to gain possession of the Murmansk railway in 1941, and after Operation LACHSFANG[7] (Salmon Catch) of 1942 had to be abandoned as too ambitious, other means were tried to reach the same objective. All the expedients which were employed, namely, bombing of railroad bridges and viaducts by the Luftwaffe, frequent air attacks on Murmansk and other railroad stations, and demolitions by combat patrols or by parachuted commando troops, led to no lasting result. Only slight damage was ever inflicted. This the Russians were able to repair after a few hours' work. The strategic problem—the destruction of the railroad either completely or for a long time—was never solved.

Section V. THE FINNISH TRANSPORTATION NETWORK

The transportation situation of the Finns was quite critical during the war. The Finnish Chief of Transportation, Colonel (later General) Roos, was an outstanding specialist in the field of transportation. He did what was possible; nevertheless, serious crises arose, especially at the end of 1941.

All personnel and the bulk of the freight transported to and from Finland moved over the Baltic Sea. The German army in Lapland was supplied for the most part by water via Kirkenes and Liinahamari. Lesser quantities went via the Baltic Sea, the Finnish railroad, and then overland by the Arctic Highway. A small portion of supplies to the front, evacuation to the rear, and small numbers of replacements went via Sweden.

Transport by water via the Baltic was seriously curtailed and delayed by Russian U-boats, mines, the necessity of convoys, shortage of tonnage, lack of buoys, inadequate storage facilities in the Finnish harbors, and shortage of unloading personnel. From the middle of January the Baltic Sea freezes for a rather long period, so that shipping stops altogether at this time of the year.

Railroad transportation in Finland suffered not only from shortage of rolling stock (a result of the expansion of the railroad system and of the increasing demands made by the war) but also from the low and differing capacities of lines and stations, the lack of shunting yards and of sufficient Finnish railroad personnel, as well as from delays in the unloading of cars, the effects of the cold upon wood-burning engines, and partisan activity.

---

[7] LACHSFANG was an elaborate plan for a junction of the Finns and German Army Group North in the area southeast of Lake Ladoga.

The German Army command was able to deliver some serviceable broad-gauge rolling stock captured from the Russians. On the other hand, Finnish requests for the construction of new railroad equipment in Germany could not be met.

The northern line from Rovaniemi to the front was a special headache to the Finnish and German railroad authorities. The line was originally intended to handle the traffic of the primitive economy of a thinly populated and self-sufficient region. The Finns worked on this line continually during the entire duration of the war to increase its capacity. The section from Oulu via Kemi to Rovaniemi had been improved. To relieve pressure on the northern line, the Twentieth Mountain Army with its own labor force and material built the Hyrynsalmi–Kuusamo field railroad, about 200 miles long. The work, which was to facilitate the supply of the right flank corps of the Twentieth Mountain Army (at first the Finnish III Corps, later the German XVIII Corps), was considerably delayed because of lack of skilled labor and because the difficulties of building the railroad had been underestimated.

The German and Finnish troop trains always moved over Finnish railroads quickly and smoothly. The Finnish railroad personnel showed itself resourceful and very skillful in improvising. German soldiers on furlough went through Turku in the summer and via Hanko in winter. The bottleneck was not in railroad transportation but in sea transport. Russian U-boats, mines, lack of shipping, and other things caused this bottleneck. A monthly average of about 25,000 Germans on furlough was carried to and from the Reich.

Despite all improvements and expedients, the capacity of the Finnish railroads imposed a limit on any large-scale increase in the number of German troops located in Lapland, a limit which could not be exceeded because of the problems incidental to supplying the troops. To be sure, under favorable weather conditions and during the long days of the arctic summer the Finnish railroad authorities were able to get more out of the low-capacity northern line for an operation of brief duration. An increase in the number of troops and especially horses would have led to reductions in the level of supplies on the German front in Lapland. Railroad construction troops and material would have to be assembled in advance of any extensive and lengthy operation in order to first build the lines that would be required. Only with considerable German help would this have been possible.

Oversea transportation to and from Finland was considerably interfered with by enemy action during the war. Besides a total loss of Finnish and German shipping sunk in the Baltic, ships repeatedly

ran aground because there were no buoys. These ships were then laid up for lengthy periods. Ships had to be used as escort vessels for convoys because of the presence of Russian naval vessels based at Kronshtadt and Leningrad. This resulted in loss of their services as transport or supply ships. It was unfortunate that the German-Finnish offensive of 1941 did not succeed in permanently knocking out the Soviet naval bases.

CHAPTER 3

ORGANIZATION AND TACTICS

The course of the fighting for the Murmansk railroad confirmed the lessons of the Winter War and seemed to justify the following conclusions:

1. Warfare in primeval wilderness and in the tundra is tied to the few available roads. This is especially true in the summer. When the situation required an encircling movement off the road in the border area, time-consuming road construction work became a prerequisite, requiring not days but weeks. Decisions once made could not be reconsidered. Once troops had started advancing through the wilderness or once the order had been given committing them, nothing could be changed. The movement had to run to its completion. Everything required endless time to bring results.

2. The most favorable season of the year for a war of movement in high latitudes is the winter. The attempt to reach the Murmansk railroad would perhaps have been successful if it had been undertaken, as Mannerheim had suggested, at the beginning of March and with sufficient forces. In the Far North the winter roads play an important role. Running over the ice of lakes and moors, they are the nature-given traffic communications in the long winter. The winter road over the ice of Lake Ladoga played an especially important role during the war; over it went the supplies for besieged Leningrad and the evacuation of a considerable portion of the Leningrad population. Neither the Germans nor the Finns were able to interfere with these movements. Overland communication in Finland for seven to eight months of the year takes place by sleigh, the method preferred for use in winter on the snow-covered ice. The ice covering usually does not melt until June, which is later than the snow thaws on land roads.

Section I. SKI TROOPS

During early and late winter, troops equipped with skis and akjas can operate off the roads and bring along all that is really needed for existence and for combat; but they must leave behind everything that cannot be carried easily through primeval forest or rocky wilderness. The superior skill of the Finnish troops in covering long distances gave them a high mobility and consequently a decided ascendency over troops of the Red Army in the Winter War. The Soviet command

recognized the great importance of using skis in fighting in the Far North. According to Finnish accounts, the Russians formed and trained special elite ski units in Siberia and concentrated them before World War II on the eastern border of Finland. These Soviet troops soon acquired great skill and during the war became almost as good as the Finnish ski units, whose marching speed is surprisingly great even in especially difficult terrain. Combat operations, even in trackless regions, are executed much faster on skis in winter than on foot in summer. The open flanks of the Finnish-German sectors between Lake Onega and the Arctic Ocean could only be effectively protected by mobile Finnish ski patrol detachments. The fight against the Soviet partisans was carried on by the Finns with the passion of skilled and experienced hunters. It was most successful in winter when the enemy's tracks could be followed in the snow, and he could be brought to bay.

The strength of the Finnish soldier lies in individual combat. The Finns possess an infallible instinct for finding their way in the dense growth of the pathless wilds. They are accurate trail readers and move noiselessly in the woods. Nothing is heard or seen of Finnish troops whether resting or marching, even from the closest proximity. Terrain training is of a very high order. A special technique for movement through woods has been developed and practiced so that the troops advance quickly, in the right direction and without losing contact. A Finnish company moves in the primeval forest just as smoothly and unerringly as a German company in the open landscape of central Europe. All Finns are enthusiastic hunters and sport lovers and fighting wakens in them all their hunting instincts. The aggressiveness of the troops is very keen. Their achievements in long-range combat patrolling cannot be surpassed.

Section II. ORGANIZATION OF FINNISH TROOP UNITS

The Finnish infantry is equipped with skis in winter. Accustomed from earliest infancy to move on skis during over half of the year, the Finn accomplishes marvels in covering long distances. The use of the simple Finnish toe-binding enables the soldier to put on and take off his skis quickly. The enemy is approached on skis in small, well-separated groups echeloned in depth. The crouching skiers, camouflaged in snow shirts, rapidly approach the enemy in short bounds. Just before the final rush they quickly kick off their skis. Often the men drag their skis along, or else a member of the group gathers all the skis and brings them forward.

The Finnish cavalry in general has the mission of mounted infantry. The guiding principle in its training stresses encirclement and attack

deep in the enemy flank. It is able to carry out this task because the Finnish horse is used to traveling even over difficult wooded terrain covered with rocky debris. In the winter the cavalry troops are also equipped with skis.

Training and organization of the Finnish artillery is primarily designed for combat in woods and achieved a high level of efficiency during the last war, despite the fact that the armament was to some extent old-fashioned and lacked uniformity. Since opportunities for observation were limited in the wilderness each battery, as a rule, needed several observation posts. Therefore, every battery had at least two forward observers. By means of a signal-communication net specially organized for this purpose, every forward observer was able to deliver fire with all batteries of the regiment. In the defense it was even possible to deliver fire with all medium and heavy mortars. The forward observers of the mortars in turn were able to do the same. The forward observers were connected with the firing positions by wire and radio. Great stress was laid on surprise fires. Survey was well perfected and very rapid when the aiming circle was employed.

In tank combat the Finns lacked practical experience. Not until World War II did the Finns undertake to organize an armored division. The materiel consisted of captured Russian equipment, to which a few German tanks were added in the last year of the war. Training was based on German regulations. The Karelian Isthmus is especially favorable for armored operations. The Russians employed numerous tank units there in the Winter War and in the summer of 1944. But tanks were also used in the Red Army's offensive on the Svir in April 1942.

On the long Finnish east front no tanks were used up to the time of the Finnish capitulation. When the Russians advanced against the Petsamo region in October 1944, the Red Army reportedly used only a few tanks against the German front. These weapons moved on the roads; undoubtedly tanks would encounter great difficulties on the rocky slopes of the tundra. In the Kandalaksha sector a Soviet tank unit advanced through the trackless wilderness and participated in the attack on the hilly country in the Salla area.

Finnish training of antitank units was hampered by lack of practical experience. Sufficient quantities of modern materiel were available by the end of the war.

The technical and tactical aspects of Finnish signal communications were still in the first stages of development. The use of bare wire, occasioned by special conditions of combat in woods and the critical situation in the manufacture of field signal cable, was remarkable. For this purpose a galvanized iron wire 2-mm. thick was strung overhead. In winter, if the situation was urgent, it was also

possible to utilize the insulating property of completely dry snow by laying wire in the snow as a metallic circuit. Messenger dogs and carrier pigeons were not used in the Finnish Army.

Section III. FINNISH TRAINING DOCTRINE

The Finnish troops had been trained according to German principles and were in possession of the German training regulations. A comparatively large number of the senior Finnish officers had served with the 27th Prussian Light Infantry Battalion in their youth and had fought against Russia in the First World War. They were thoroughly familiar with the ideology of the German soldier. However, in a number of Finnish officers of high rank the influence of French principles of command was unmistakable. Some of the Finnish generals who held the highest posts in the last war had been detailed to the École de Guerre after World War I, and thus became acquainted with French doctrine. Perhaps this influence is responsible for the fact that many of the Finnish higher commanders remained farther behind their troops than the German commanders did in the last war. However, it is also possible that this difference in concept as to the place of the commander in battle resulted from the fact that the Finnish Army had been trained mainly for defensive warfare. It is evident that there was no one in Finland before the summer of 1941 who gave any thought to the possibility of a large-scale Finnish offensive against the Red Army.

Section IV. MARSHAL MANNERHEIM AS A COMMANDER

Marshal Mannerheim received his training as a soldier in the Imperial Russian Army and attained a high rank in it. He studied warfare under the most varied circumstances (in the Russo-Japanese War, World War I, the Finnish War for Freedom, the Winter War, and World War II) on the side of the Russians as well as on the side of their opponents. His wealth of experience, extensive intellectual culture, and outstanding traits of character destined him to find an undisputed place among the great military leaders of history. Characteristic of his art of strategy was his caution, based on the realization of his great responsibility. "I must be cautious," the Marshal once said to the German general in his headquarters, "because the Finnish Army is so small, the theater of war so gigantic, and the losses suffered thus far are so high." In typically Finnish fashion he loved to study things out and to deliberate before deciding on a course of action. But once he had made a decision, he carried it out energetically and unwaveringly. His authority in the Finnish Armed Forces was unlimited.

Section V. PECULIARITIES OF FINNISH TACTICS

For the first time in its existence the Finnish Army had the opportunity to prove its mettle in an offensive on a large scale during the summer of 1941. It performed its mission with the highest honor, at first east of Lake Ladoga, then on the Karelian Isthmus. On the long eastern boundary of Finland the offensive of the year 1941 soon lost the momentum and character of a large-scale battle and broke up into local actions fought by isolated combat groups. In this type of warfare the Finnish soldier felt at home and did excellent work. As the Winter War and World War II have shown, fighting in the lonely and trackless wilderness of eastern Finland must necessarily assume the character of guerilla warfare, in which the Finns are unsurpassed. Submachine guns, hand grenades, and the Finnish dagger (*puukko*) here played the chief roles.

Finnish tactics aim to penetrate the front of the enemy, to separate the enemy's strong points from each other, to cut off these strong points completely from all arteries of supply, and to encircle them. In this manner the famous "*mottis*" (a Finnish word with no English equivalent, which means an encircled enemy center of resistance) were formed in the Winter War. Here the fighting completely demonstrated the great superiority of the Finnish soldier over the Red Army man. In the Winter War the fighting for the *mottis* clearly represented an attempt to starve the enemy into surrender. This was so because the Finns had little heavy artillery with which to break the Russian resistance. During World War II, when the Finns were well equipped with German artillery and ammunition, the resistance of surrounded strong points was crushed much more quickly. The struggle for the *mottis* was always a very stubborn one and demanded the utmost in bravery. It ended either in victory or annihilation because the Russian soldier continued his stubborn resistance even if there was little prospect of success. He fought courageously until his destiny was fulfilled.

Section VI. RUSSIAN TACTICS IN THE FAR NORTH

The events of the Winter War created in many of the nations not participating in the struggle the impression that the Red Army with its crushing superiority in numbers and modern armament had accomplished much less than might have been expected. After a 100-day war characterized by bitter fighting, the situation of the Finns had become critical only on the Karelian Isthmus. On the entire eastern boundary of Finland the Soviet attack had been checked and repulsed with great losses for the Russians. To the Red Army man

the Finnish soldier, insufficiently armed and lacking ammunition, had proved himself to be a superior fighter.

The achievements of the Red Army in the Winter War lagged far behind expectations. This resulted in an erroneous opinion even in Germany concerning the military worth of the Russians. It was a surprise when the Red Army in World War II accomplished so much more in Russia proper and showed a strength and hardiness not expected by the Germans. How can this disparity in the achievements of the Russians in the two wars in Finland be explained? On 4 March 1943 Mannerheim made the following remarks on this subject to the German general assigned to Finnish Headquarters:

> The Russians have learned a lot from you. Timoshenko himself said precisely that to our commissioners after the Winter War. This means that the Soviet generals are apt pupils and very quickly put into practice what they have learned. Today the commanders of the Red Army attack boldly and aggressively, and employ envelopment tactics just as the German generals do. In the Winter War of 1939–40 the poor showing of the Russians was not camouflage; it was the true picture.[8] Since that time they have learned a great deal and made tremendous progress.

There can be no doubt today that the Red Army evaluated the experiences gained in the Winter War in a surprisingly short time. Another surprising thing is the fact that the Red Army did not lose its vigor during World War II, as so often happens in the course of a long conflict. Despite serious crises and enormous losses, the Red Army maintained its power of resistance and attack and even improved in quality in several respects. This was due to its rapid adaptation of the technical developments of the period. Whatever the Soviet infantry lost in combat value was more than counterbalanced by the rapid increase of the tank arm. The magnitude of this admirable achievement is without parallel in the history of wars and present day armies. However, because of the peculiar character of the north country, the Red Army was unable to assert its superiority over the Finns in the Winter War. After the Red Army had beaten off the Finnish-German offensive of the year 1941, it tried in the spring of 1942 to throw the enemy back by counterattacking on the Svir front, in the Kestenga sector, and on the coast of the Arctic Ocean. These attempts, based on the old methods, were just as unsuccessful and costly as the Soviet offensive of the Winter War against the eastern frontier of Finland and the attacks against the Murmansk

---

[8] In this connection Marshal Mannerheim had reference to a speech of *Reichsmarschall* Goering delivered a short time before, in which Goering had described the Russian fighting in the Winter War as the greatest bluff in history. This speech stirred up great resentment in Finland.

railroad executed by the Germans and Finns in 1941. The experiences gained by both sides in these wars warrant the conclusion that the Karelian wilderness is not suitable for decisive operations on any large scale. The offensive attempts were not repeated by either side until the summer of 1944. In the long interim uneventful position warfare prevailed on the extensive front between the Gulf of Finland and the Arctic Ocean.

Then, on 10 June 1944 the offensive on the Karelian Isthmus, prepared by the Red Army on a large scale, began as a complete surprise to the Finns. The Russian attack was carried out according to the latest principles which had been developed in technical science and in the tactics of war. The Russian method of attack, so successfully applied against the German east front since the fall of 1942, namely, smashing a limited portion of a position by the combined attack of an immensely superior air force and massed artillery and then driving through the resulting gap with numerous tanks, led to rapid and complete success on the Karelian Isthmus. The Russian penetration widened with destructive speed to a break-through. The Finnish High Command quickly realized that it was impossible to regain the old positions by the committing of reserves. The only thing to be done was to withdraw the troops, while they were still able to fight, from the attacked sector to a secondary defense line where Finnish reinforcements brought up from sectors not under attack, and supporting troops and weapons provided by the German High Command, could join the withdrawing Finnish troops. This covering position was established in the Viipuri–Vuoksi area, where the Finnish Army previously had brought the assault of the Red Army to a halt during the Winter War. This position, which was only very hastily organized, had the advantage of being located in terrain which allowed the Russians to make only limited use of their offensive weapons. The main portion of the position lay in extensive wooded terrain which denied observation to the Red Air Force. Numerous lakes and the broad Vuoksi River assured comparative safety from tank attacks. The Soviet offensive came to a standstill at this Viipuri–Vuoksi position and never got started again.

After about a month the Russians definitely discontinued their offensive against the Finns and moved strong forces from the Karelian Isthmus to the region south of Leningrad, where the offensive of the Red Army against German Army Group North was making good progress. This decision of the Russians to shift their main effort may have been prompted by the consideration that it would be easier to gain successes opposite the German front, which had already been shaken, than opposite the Finnish front, which had become stabilized.

The Soviet Army High Command may have also been influenced in their decision to break off the offensive against the Finns by the very costly experience they had had in this area during the Winter War.

Section VII. LESSONS FROM THE RUSSIAN SUMMER OFFENSIVE

The course of the Soviet offensive north of Leningrad in the summer of 1944 led to the following conclusions:

1. The Karelian Isthmus is the most suitable area on the Finnish-Russian frontier for decisive operations of large-sized units. Here the road and railroad nets permit the quick concentration of large forces for a large-scale attack in the territory between Lake Ladoga and the Gulf of Finland. (This confirms experiences of the Winter War.)

2. The Red Army's method of attack brought into play the great superiority of the Russians in numbers and modern means of combat. The Finnish positions, which had been well organized during a period of two and a half years, were quickly penetrated and rolled up in a violent assault. (Experiences from the Soviet offensives against the German east front confirm this.)

3. The large-scale Soviet attack in the summer of 1944 was, however, only initially successful. The Finns were able to bring it to a standstill on the Viipuri–Vuoksi line and to drive it back eventually. This Finnish victory was gained because of:

a. Mannerheim's early decision not to fight for the position when it was penetrated but to reorganize his forces on a secondary line.

b. The solidity of the Finnish soldier and the preservation of his inherent steadiness and fighting qualities despite reverses.

c. The timely German assistance with troops, planes, armor-piercing weapons, and ammunition.

d. The natural strength of the Viipuri–Vuoksi line.

e. The season of the year was favorable for defensive operations. It is probable that in winter the Viipuri–Vuoksi line would not have been able to check the enemy for any length of time.

CHAPTER 4

PROSPECTS

The capitulation formula dictated by the Soviet Government and accepted by the Finns in September 1944 again confirmed the cessions of territory which had been stipulated by the Peace of Moscow of 1940. The cession of the Karelian Isthmus, the country northeast and north of Lake Ladoga, and the hilly region of Salla was confirmed and, in addition, the region of Petsamo had to be ceded to the Russians. The leasehold of Hanko was given back to the Finns. On the other hand, Porkkala, which is located directly in front of the gates of Helsinki, became a Soviet strong point for the next fifty years.

These territorial changes alter the basis of all staff planning for warfare on the Finnish-Russian frontier and demand entirely new points of view on economic, military, and political matters. The axiom of Heraclitus that "war is the father of all things" has again proved its validity in the fighting in high latitudes. The last Finnish war introduced a new chapter in the history of the earth. From now on the arctic region is accessible to man in both war and peace. The events of the wars in the Far North proved that even large numbers of men are able to live, work, and fight in the desolate regions north of the Arctic Circle. Modern technical science has provided the means for overcoming difficulties of climate and terrain in the frigid zone and has even made life tolerable there. The man of the 20th century has the means of pushing into the arctic region in rather large numbers, establishing healthy homes and places to work, and preserving the creative impulses and the joy of life of the pioneers in the Far North. Airmail and radio establish communication with the outer world. It was shown during the war that suitable organization can provide all the necessities for spending the winter in high latitudes. Today no real obstacles exist to opening up the arctic region. If strong incentives and a prospect of good returns exist, courageous and enterprising men will be attracted by the land of the midnight sun. The rich mineral treasures which lie buried in the earth at the northern cap of the globe will act as powerful incentives for penetrating the polar region. On the Kola Peninsula, in the Petsamo region, in northern Sweden, great treasures lie in the earth which are needed by the modern man of industry and will be exploited by him. Navigation is possible in the Arctic Ocean throughout the year. In order to avoid air and submarine attacks, most of the con-

voys from England and America to Murmansk and Archangelsk traveled during the dark winter months. When the Far North of Europe develops into an industrial region, the harbors on the Arctic Ocean (Murmansk, Liinahamari, Kirkenes, Narvik) will flourish. The shortest air route between the Old and the New World is via the North Pole. Therefore this will be an area of intense activity in the future, both in peace and in war. In this connection problems which arose during World War II in the fields of radio navigation and radar instruments still remain to be solved. The disturbances and deflections caused by the proximity of the magnetic pole will require exhaustive research. To this must be added the difficulties occasioned by the tremendous size and emptiness of the region which increase the difficulty of installing a sufficiently dense net of radio stations and radar instruments. It is in these fields that future development will present complicated problems, the solution of which, however, is already indicated.

The new boundary between the Soviet Union and Finland—Norway too has now become an immediate neighbor of the Soviet Union—creates a new strategic situation in the Far North. Karelia with its numerous waterways and lakes and its trackless wilderness no longer lies as a protective zone in front of Finland proper but has become a Russian troop concentration area. If there should be another armed settlement of differences in the European arctic region, the Soviet armies will stand immediately in front of the land regions most important to the defense of Finnish independence. This fact also makes Sweden's position much less secure than formerly. There is no doubt that the Russians, having the energy and flair for doing things in the big way characteristic of the Soviet Union, will immediately organize Karelia into a powerful base from which all Scandinavia could be held in subjection. Soon new branch railroads and military roads will be built from the Murmansk railroad through the Karelian wilderness in the direction of the new Finnish boundary. The chief objectives toward which Soviet endeavors point extend from Viipuri to Turku and the Aaland Islands, from Salla to Kemi and Oulu, and from Murmansk and Petsamo to Kirkenes. New forces have appeared in the arctic region. These territories are no longer at the end of the world far removed from human contacts. Who can say what the future has in store for the land of the midnight sun? Indications increasingly point to the growing importance of the polar regions for the future of mankind.

U. S. GOVERNMENT PRINTING OFFICE: 1951